Putting things in places: Developmental consequences of linguistic typology

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1. Introduction

In this chapter, we explore how different languages describe events of putting things in places, and how children begin to talk about such events in their very early multi-word utterances. Our aim in focusing on the domain of “putting” events is to allow us to identify some important semantic and psycholinguistic factors that influence the course of acquisition. The overarching question is to determine the extent to which the development of linguistic event representations is influenced by the particular language the child is learning. Events of “putting” are frequently discussed in interactions between caregivers and children, providing us with a rich crosslinguistic database in a high-frequency semantic domain. By examining language-specific characteristics of early event representations, we can make inferences about the cognitive resources and abilities that children bring to the task of learning how to talk about events in their native language.

A major motivation for working crosslinguistically is to investigate the role of language typology in children’s mapping of meanings onto forms—in this case, the expression of particular sorts of transitive motion events. In his well-known typology of how languages encode motion events, Talmy (1991, 2000) distinguishes between “satellite-framed” languages and “verb-framed” languages on the basis of the element in the clause where information about path is characteristically encoded. Our analyses show that this typological distinction does play an important role in the course of language acquisition, but other features that crosscut this typology play a role as well. These include properties of the target language’s inflectional morphology and its semantic categories. We examine eight languages—four satellite-framed (English, German, Russian, Finnish) and four verb-framed (Spanish, Hindi, Turkish, Tzeltal).

2. Typology: verb-framed and satellite-framed languages

Verb-framed languages characteristically encode the path of motion (e.g., the path ‘in’, ‘out’, ‘upward’, ‘downward’) in the verb, whereas satellite-framed languages characteristically encode path outside of the verb (e.g., particles, prefixes, directional adverbs or inflections). (Note that, following Talmy, we are concerned with the characteristic, typical means of event coding in a language. Every language has subsystems or low frequency constructions which do not fall into the overall typological description.) Information about the manner or cause of motion is also treated differently in the two types of languages; however, in this investigation we focus principally on the encoding of the path of motion. To illustrate the differences among our eight languages, we adapt Talmy’s schema in distinguishing the following four conceptual components of a placement event:
Figure: the object that is caused to move  
Action: the placement action (caused motion toward a Goal)  
Goal: the intended end location of the Figure  
Relation: the resulting spatial relationship between the Figure and the Goal (a subtype of Talmy’s “path” category).

To begin with, compare descriptions of an event of *putting a pencil into a box* in English—a satellite-framed language, and Spanish—a verb-framed language. In English, the placement Action is expressed in the verb and the resulting Relation between the pencil and the box is encoded in a particle (*put the pencil in*) or a prepositional phrase (*put the pencil in the box*). The verb could also express the manner of the caused motion, as in *roll the pencil into the box*. The dominant English pattern is schematized in Figure 1, using a schematic representation that we will apply to all eight languages.

![Figure 1. English placement scheme (satellite-framed)](image)

In Spanish (Figure 2), by contrast, both the placement Action and the resulting Relation are expressed by the verb, which can be roughly translated as ‘insert’: *mete el lapiz en la caja* ‘insert the pencil at the box’. (For convenience, the following figures have only English glosses for the seven non-English languages.) Note that the preposition preceding the Goal expression, translated here as ‘at’, gives some general spatial information, but, unlike its English counterpart, it does not indicate the containment relationship obtaining between the Figure and the Goal. (For example, the same preposition occurs in the construction *poner en la mesa* means ‘put on the table’.)

![Figure 2. Spanish placement scheme (verb-framed)](image)

The dichotomy between verb-framed and satellite-framed is useful, but, as we will see, it is not the whole story; there is considerable variation within each of these language types, with consequences for the course of acquisition.
3. Intratypological variation

3.1. Satellite-framed languages

First consider the languages which, together with English, represent the satellite-framed type in our corpus: German, Russian, and Finnish. In German, as in English, the placement event is encoded in a verb and the Relation in a particle or a preposition. But the verb obligatorily expresses more information than simply placement: the speaker must choose between verbs such as *legen* ‘lay’ and *stellen* ‘make stand’ on the basis of the shape and final orientation of the Figure. Further, a subcomponent of the Action, which we may call the “Vector” (motion towards a Goal) is encoded not only in the verb, but also in the accusative case ending on the determiner of the Goal nominal. (Accusative contrasts with dative case, which is used for encoding a static locative relation.) Although German and English are both satellite-framed, they present rather different structures for the child to learn. Compare Figure 3 (German) with Figure 1 (English):

![Figure 3. German placement scheme (satellite-framed)](image)

Russian (Figure 4) patterns similarly to German except that the accusative case-marking appears directly on the Goal nominal.

![Figure 4. Russian placement scheme (satellite-framed)](image)

Although Finnish (Figure 5) is also a satellite-framed language, it shows a different patterning: information about the Relation (containment) is combined with information about an aspect of the Action (Vector: motion towards), and both are expressed simultaneously in the illative case ending on the Goal nominal (translatable as ‘into’). As in the Germanic and Slavic languages, the verb is neutral with regard to the specific path.

![Figure 5. Finnish placement scheme (satellite-framed)](image)
3.2. Verb-framed languages

We have already seen how putting a pencil in a box is expressed in Spanish (Figure 2), where the Relation and the Action are conflated and both expressed in the verb. Our other verb-framed languages are Hindi, Turkish, and Tzeltal. In the most usual Hindi encoding of an event of putting a pencil in a box, however, the Relation is expressed in the inessive case ending on the Goal nominal, rather than in the verb (Figure 6).

This case ending, unlike its Finnish counterpart, does not include information about Vector: the same case is used regardless of whether the scene described is a dynamic one (putting ‘into’) or a static one (being ‘in’). Given that Relational information is expressed here in a case ending rather than in the verb, it may seem surprising that we have classified this language as “verb-framed.” But Hindi is in fact verb-framed: like Spanish, it has a full set of “path verbs,” in Talmy’s terms, comparable to ‘enter’, ‘exit’, ‘ascend’, ‘descend’, ‘insert’, ‘extract’, and so on; and—again like Spanish but unlike satellite-framed languages—it does not allow the verb slot to be filled with a manner verb, as in ‘roll the pencil into the box’. Unlike Spanish, however, it does not require the use of a verb that expresses the Relation.

Turkish is also a verb-framed language that has a full set of path verbs and does not allow the main verb to express information about the manner of motion in events that encode change of state, such as placement events. But in describing an action of putting a pencil in a box, the speaker does not even have to express the Relation at all (Figure 7). The dative case ending on

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1 The fact that Hindi has (in-)transitive verbs in its lexicon which lexicalize the path together with motion does not entail that such path verbs are obligatory in descriptions of (caused) motion to a goal. Such motions can also be described using deictic verbs such as aau ‘come’ and jaa ‘go’, or semantically general verbs such as Daal ‘put/drop’ or rakh ‘put/place’ can be used in conjunction with locative case-marked nominals or spatial nominals to describe (caused) motion to a goal.
the Goal nominal expresses the “Vector” subcomponent of the Action (motion towards a Goal), but the fact that the pencil ends up in the box is typically left to inference: listeners know what spatial relation is likely to result when a pencil is moved to a box. If the Goal is a table, ‘put table-DATIVE’ would be interpreted as ‘put on table’.

![Figure 7. Turkish placement scheme (verb-framed)](image)

Tzeltal conforms to the canonical pattern of verb-framing in combining information about both the Action and the Relation together in the verb. But it differs from the other verb-framed languages in that many of its placement verbs pack in additional information: Figure 8 shows a Tzeltal verb, expressing not only that a Figure object is put into a Goal object, but also that the Figure is a long thin thing, and that the Goal contains other elongated objects to which the Figure ends up parallel.

![Figure 8. Tzeltal placement scheme (verb-framed)](image)

### 3.3. Summary of patterns

In comparing these eight patterns of expressing placement events, three phenomena stand out for special attention. First, two or more meaning components can be expressed simultaneously by one form (Talmy’s “conflation”). A typical example of conflation is provided by the verb meter ‘insert’ in Spanish, which expresses both an Action (of caused motion) and a resulting Relation (of containment). A second phenomenon warranting special attention—in a sense, the converse of conflation—is the fact that a meaning component can be distributed across more than one morpheme. This potential source of crosslinguistic variation has tended to escape attention in Talmy’s typology, but has been discussed by Sinha and Kuteva (1995) under the rubric “distributed semantics.” An example of distributed semantics is found in the German example (Figure 3), where information about the Action (caused motion to a Goal) is expressed in two places: both in the verb and in the accusative case ending on the determiner of the Goal nominal (contrasted with the use of dative case for static situations). Finally, a particular meaning
component may not be explicitly encoded at all, but rather left to be inferred on the basis of discourse context and world knowledge. An example of this can be seen in Turkish (Figure 7), where the relation of containment is inferred from knowledge of the canonical relationship between pencils and boxes. As noted, if the first part of the sentence is held constant and the word ‘table’ is substituted for ‘box’, the listener will infer that the pencil ended up ‘on’ the table.

In addition to calling attention to crosslinguistic differences in conflation, distribution, and the interplay between semantic underspecification and pragmatic inferences, we should emphasize that even when languages offer the same set of options for encoding a placement event, they may differ in the choices speakers typically make from among these options. Recall, for instance, that Hindi has more than one option for expressing an event of putting a pencil in a box. Speakers can use a Spanish-style verb like ‘insert’ that conflates the Action and the containment Relation, but they can also select a general verb like ‘put’ and express the Relation either with the inessive case-ending, as in Figure 6, or with a spatial nominal (‘inside’): (1) pencil put box-INESSIVE; (2) pencil put (box’s) inside; (3) pencil insert box-INESSIVE; (4) pencil insert (box’s) inside. In actual fact, the Hindi child rarely hears the ‘insert’ verb in the input; the pattern most frequent in parental speech involves combining the ‘put’ verb with the inessive case ending on the Goal expression (Narasimhan & Brown, in press).

4. Patterns in early acquisition: satellite-framed and verb-framed languages

We hypothesized that if children tune in to the typological characteristics of the target language early on, children learning verb-framed languages would predominantly use verbs in talking about placement events, and would use few if any nonverbal elements such as adpositions and directional adverbs. In contrast, children learning satellite-framed languages would home in on satellites such as verb particles, as well as adpositions and locative inflections, preferring such forms over verbs in talking about putting things in places.

All the analyses presented in the following are based either on diaries that parents kept of their children’s linguistic development or on video or audio recordings of spontaneous family interactions. Some of the data come from the CHILDES database. Other data were gathered and analyzed by ourselves as well as by a large number of colleagues, whom we would like to acknowledge.2

In our analysis of early development, we have focused on placement utterances that express causing an inanimate object to move to a place (e.g., ‘put’, ‘place’, ‘attach’). We did not include utterances describing self-motion plus placement (expressed by verbs such as ‘bring’), putting clothing on, or giving something to an animate recipient. Moreover, we excluded answers to where-questions—which often ellipse everything but the Goal—as well as imitations and self-repetitions. For each language, we selected two children whose corpora provided sufficient data.3

Starting from the point at which these children began to combine morphemes to encode

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2 English: Roger Brown, Michelle Chouinard, Eve Clark, Jacqueline Sachs; German: Heike Behrens, Harald Clahsen, Max Miller; Hindi: Rukmini Bhaya-Nair, Pritha Chandra, Ayesha Kidwai, Rajesh Kumar, Bhumika Sharma, Rachna Sinha; Russian: Sabine Stoll; Spanish: José María Albalá, María Benedet, María Carrasco, Celis Cruz, José Linaza, Victoria Marrero, Rosa Graciela Montes, Rosanna Mucetti, Susana López Ornat, Elizabet Serrat Sellabona, Catherine Snow; Turkish: Ayhan Aksu-Koç, Aylin Küntay.

3 The data are listed by researcher, with the child’s designation (name, pseudonym, code) in parentheses when available. The age is about 2:0. Sample size varies by child, with at least two hours of recordings per child. English: Roger Brown/CHILDES (Adam), Jacqueline Sachs/CHILDES (Naomi); German: Sonja Eisenbeiß (Liam), Harald Clahsen (Leonie); Finnish: Melissa Bowerman (Rina, Seppo); Russian: Sabine Stoll (Ch1, Ch2); Turkish: Ayhan Aksu-Koç (Azra, Deniz); Spanish: Susana López Ornat (María), José Linaza (Juan); Tzeltal: Penelope Brown (Lus, Xan); Hindi: Bhuvana Narasimhan (Ish, Aar).
placement events, we coded all placement utterances in their samples regardless of utterance length.\(^4\)

Three major questions are addressed in the analysis: (1) When children are capable of combining two or three morphemes to talk about placement, which morphemes do they select to talk about placement? (2) Does the selection differ for satellite-framed and verb-framed languages? (3) What are children’s favored patterns in each of the eight languages? In our analysis of children’s placement utterances at this beginning point, we have tried to establish the dominant patterns for the four satellite-framed and four verb-framed languages.\(^5\) Describing these patterns revealed the complexities of the crosslinguistic variation children and researchers are faced with, and the complexities involved in producing a comprehensible overview of the basic patterns and the generalizations emerging from them. In order to simplify the presentation of the dominant patterns in each of the eight languages, we have abstracted away from language-particular details which were not relevant for the analysis, presenting one example for each pattern. For each example we provide an English gloss that captures the relevant morphology (e.g., locative case markers), but omits morphological markers that do not serve to encode Figure, Action, Relation, or Goal (e.g., person, number, or tense marking). Moreover, we have focused on semantic elements in the verb phrase, omitting the Agent of the placement action, negation elements, etc. For the sake of comparability, we have also normalized the word order according to English patterns.

Analyzing the dominant patterns for the description of placement scenarios, we found the following types of elements:

- particles in which the Relation or path is encoded either by itself (e.g., ‘in’) or in combination with the Vector or direction of the motion (e.g., ‘inwards’)
- verbs expressing the Action (e.g., ‘put’)
- verbs that conflate the Action with the Relation (e.g., ‘enter-CAUS’, ‘insert’)
- verbs that conflate the Action and the Figure (e.g., ‘lay’) and/or the Goal (e.g., ‘insert between two surfaces’)
- nouns referring to the Goal of the motion (e.g., ‘box’)
- deictic elements such as ‘here’ or ‘hither’, which contain deictic information only or a combination of information about deixis and the Vector or direction of the motion.

The components of the analysis are summarized in Table 1.\(^6\)

\(^4\) For subsequent developmental analysis, the data were also coded for a second time period 6-12 months after the children started to string morphemes together. Data for this second time point are only mentioned in this chapter only for Tzeltal (see Table 10).

\(^5\) The one or more most frequent construction types in each child’s spontaneous productions were designated as “dominant.”

\(^6\) Verbs of placement that include manner information, such as shove, stuff, cram and the like, are not included in the analysis. They are vanishingly rare in verb-framed languages, and although they are characteristic of satellite-framed languages, they are not characteristic of caregiver-toddler discourse in our data.
Table 1. Components of analysis of placement scenarios

<table>
<thead>
<tr>
<th>WORDS</th>
<th>SEMANTIC ELEMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>in</td>
<td>relation</td>
</tr>
<tr>
<td>inwards</td>
<td>Relation&amp;Vector</td>
</tr>
<tr>
<td>put</td>
<td>Action</td>
</tr>
<tr>
<td>enter-CAUS</td>
<td>Action&amp;Relation</td>
</tr>
<tr>
<td>lay</td>
<td>Action&amp;Figure</td>
</tr>
<tr>
<td>box</td>
<td>Goal</td>
</tr>
<tr>
<td>here</td>
<td>Deixis</td>
</tr>
<tr>
<td>hither</td>
<td>Deixis&amp;Vector</td>
</tr>
</tbody>
</table>

4.1. Satellite-framed languages

Recall that in satellite-framed languages, the path of motion is lexicalized not in the verb itself, but in a “satellite” (e.g., in a verb particle such as ‘in’ in Germanic languages, or a corresponding path prefix or suffix in other types of languages). In this section, we review children’s preferred patterns for expressing placement events in the four satellite-framed languages: English, German, Russian, and Finnish.

**English:** In four of the five dominant patterns found in the English child language data, the Relation is encoded by a particle like ‘in’. Thus, the English-speaking children produce utterances like ‘bead in’, ‘in mouth’, or simply ‘in’. In contrast, only two of the five most frequent patterns for placement utterances involve a verb. Such verbs typically encode information about the Action but provide no information about Relation or Goal. The dominant English patterns are shown in Table 2.

Table 2. Dominant English patterns

<table>
<thead>
<tr>
<th>WORDS</th>
<th>SEMANTIC ELEMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>in</td>
<td>Relation</td>
</tr>
<tr>
<td>bead in</td>
<td>Figure Relation</td>
</tr>
<tr>
<td>in mouth</td>
<td>Relation Goal</td>
</tr>
<tr>
<td>pour in</td>
<td>Action Relation</td>
</tr>
<tr>
<td>put table</td>
<td>Action Goal</td>
</tr>
</tbody>
</table>

**German:** None of the most frequent patterns of placement utterances in the German child data contains a verb. Rather, children acquiring German show an overwhelming preference for utterances with particles like ‘rein ‘inwards’, in which the Relation and the Vector are conflated. These particles occur either by themselves or in combination with deictic elements (da ‘rein ‘there inwards’) or noun phrases encoding the Figure (X ‘rein ‘X inwards’). In addition, noun-
noun combinations encoding the Figure and the Ground can be observed. The dominant German patterns are shown in Table 3.

Table 3. Dominant German patterns

<table>
<thead>
<tr>
<th>WORDS</th>
<th>SEMANTIC ELEMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>inwards ('rein)</td>
<td>Relation&amp;Vector</td>
</tr>
<tr>
<td>that inwards (das 'rein)</td>
<td>Figure Relation&amp;Vector</td>
</tr>
<tr>
<td>there inwards (da 'rein)</td>
<td>Deixis Relation&amp;Vector</td>
</tr>
<tr>
<td>girl chair (mädchen stuhl)</td>
<td>Figure Goal</td>
</tr>
</tbody>
</table>

**Russian:** Russian children produce more verbs in placement utterances than English and German children, and they do not use path prefixes to express Relations or Vectors. Rather, they make use of locative cases which encode Vector information. However, just as in the English and German data, placement utterances without verbs can be found. In these utterances an element encoding the Figure is combined with a case-marked element encoding the Goal, e.g., vsë sumku ‘everything bag-ACCUSATIVE’. The dominant Russian patterns are shown in Table 4.

Table 4. Dominant Russian patterns

<table>
<thead>
<tr>
<th>WORDS</th>
<th>SEMANTIC ELEMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>put (položi)</td>
<td>Action</td>
</tr>
<tr>
<td>put on table-ACCUSATIVE (položi na stol)</td>
<td>Action Relation Goal-Vector</td>
</tr>
<tr>
<td>everything bag-ACCUSATIVE (vsë sumku)</td>
<td>Figure Goal-Vector</td>
</tr>
<tr>
<td>set bear (posadim mišu)</td>
<td>Action&amp;Figure Figure</td>
</tr>
</tbody>
</table>

**Finnish:** In the Finnish data, as in Russian, locative case markers appear from early on. In contrast to the Russian case markers, however, Finnish case markers conflate Relation and Vector. Moreover, only one of the two dominant patterns of placement utterances contains a verb. The dominant Finnish patterns are shown in Table 5.

Table 5. Dominant Finnish patterns

<table>
<thead>
<tr>
<th>WORDS</th>
<th>SEMANTIC ELEMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>put there-ILLATIVE (laita tänne)</td>
<td>Action Deixis-Relation&amp;Vector</td>
</tr>
<tr>
<td>there-ILLATIVE cow (tonne ammu)</td>
<td>Deixis-Relation&amp;Vector Figure</td>
</tr>
</tbody>
</table>
Summary: satellite-framed languages: In general, children learning satellite-framed languages focus especially on the spatial Relation or on the Vector, and secondarily on the Goal. They typically omit the verb. In three of the four languages the children express Vectors (e.g., ‘inwards’, ILLATIVE case). English-speaking children express spatial Relations (in, on) but not Vectors (into, onto).

4.2. Verb-framed languages

Recall that in verb-framed languages, Action and Relation are typically conflated in the verb. In this section, we review children’s preferred patterns in the four verb-framed languages: Spanish, Hindi, Turkish, and Tzeltal.

Spanish: Spanish-speaking children express an Action in all their favored patterns, using general verbs of placement such as poner ‘put’, in sentences such as ‘put it’ or ‘put it here’. They also frequently use verbs such as meter ‘insert’, in utterances such as ‘insert it’, in which, following the canonical pattern of verb-framed languages, Action is conflated with the spatial Relation of containment. The dominant Spanish patterns are shown in Table 6.

<table>
<thead>
<tr>
<th>WORDS</th>
<th>SEMANTIC ELEMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>put it (pongo ése)</td>
<td>Action Figure</td>
</tr>
<tr>
<td>insert it (mételo)</td>
<td>Action&amp;Relation Figure</td>
</tr>
<tr>
<td>put-it here (pónga-lo aquí)</td>
<td>Action-Figure Deixis</td>
</tr>
</tbody>
</table>

Hindi: As in Spanish and Turkish, placement events in early child Hindi are also encoded in verbs in all of the favored patterns. Hindi, like Spanish, has verbs such as ‘insert’, which conflate Action and Relation; however, in Hindi (as in Turkish), placement events tend to be encoded in general verbs of placement or action such as ‘put’, ‘do’, or ‘attach’, as in ‘attach in this’, ‘put here’, or ‘do this down’. The dominant Hindi patterns are shown in Table 7.

<table>
<thead>
<tr>
<th>WORDS</th>
<th>SEMANTIC ELEMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>attach this-INESSIVE (is-mE lagaa)</td>
<td>Action Goal-Relation</td>
</tr>
<tr>
<td>do this down (isko niice kar)</td>
<td>Action Figure Relation</td>
</tr>
<tr>
<td>put here-LOCATIVE (yahAA par rakh)</td>
<td>Action Deixis-Relation</td>
</tr>
</tbody>
</table>

Turkish: Children acquiring Turkish show an overwhelming preference for Actions encoded in verbs, leaving Relation to be inferred from context. All of their favored patterns involve verbs encoding placement actions, such as koymak ‘put’ or atmak ‘throw’. The dominant Turkish patterns are shown in Table 8.
Table 8. Dominant Turkish patterns

<table>
<thead>
<tr>
<th>WORDS</th>
<th>SEMANTIC ELEMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>this.place-DATIVE put (buraya koy)</td>
<td>Action Goal-Vector</td>
</tr>
<tr>
<td>this.one put (bunu koy)</td>
<td>Action Figure</td>
</tr>
<tr>
<td>put (koy)</td>
<td>Action</td>
</tr>
</tbody>
</table>

*Tzeltal: Tzeltal children also use verbs in all their favored patterns, e.g., ‘put’, ‘insert’. What is remarkable is the early use of very specific verbs that conflate the action with properties of the Figure and/or Goal, e.g., ‘set [bowl-shaped object]’ or ‘cover [with cloth]’. The dominant Tzeltal patterns are shown in Table 9.*

Table 9. Dominant Tzeltal patterns

<table>
<thead>
<tr>
<th>WORDS</th>
<th>SEMANTIC ELEMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>put (ak)</td>
<td>Action</td>
</tr>
<tr>
<td>insert (otzes)</td>
<td>Action&amp;Relation</td>
</tr>
<tr>
<td>set [of bowl-shaped object] (pach)</td>
<td>Action&amp;Relation&amp;Figure</td>
</tr>
<tr>
<td>cover [with-cloth]-for.her head (muk-bejol)</td>
<td>Action&amp;Figure Goal</td>
</tr>
</tbody>
</table>

*Summary: verb-framed languages: All of the favored patterns involve Action, encoded by the verb. Tzeltal and Spanish children use mostly verbs with canonical verb-framed conflation patterns (Action&Relation, e.g., ‘insert’). Hindi and Turkish children mostly use general verbs of placement (Action, e.g., ‘put’, ‘attach’).*

5. Interpreting the patterns in child language

As noted in the Introduction, a central feature of Talmy’s distinction between verb-framed and satellite-framed languages lies in the locus of lexicalization of path information: in the verb in verb-framed languages, in elements associated with the verb in satellite-framed languages. In encoding placement events, children tune in to the typological characteristics of their language at an early stage of development. Children acquiring Spanish, Hindi, Turkish, and Tzeltal typically use verbs, focusing on the action of putting. Children acquiring English, German, Russian and

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7 Since in verb-framed languages the verb often conflates Action with Relation, one may wonder whether it is the Relation on which learners focus rather than the Action per se. (We thank Jürgen Bohnemeyer for pointing out this alternative interpretation to us, as well as the one discussed in footnote 8.) While we cannot resolve this issue, we think Action is the more important element driving learners’ initial preference for verbs in these languages. In two of the four verb-framed languages in our sample, Hindi and Turkish, the most popular ‘putting’ verbs with which children express placement events do not in fact conflate
Finnish tend to use various sorts of directional locative markers, paying relatively more attention to the Vector and Relational elements of the placement scenario—that is, those semantic elements expressed outside of the verb.

However, at a finer-grained level of analysis, a more differentiated picture emerges. Within both of the typological groupings, languages differ in the degree to which they exhibit the properties typical of the language type. Within the set of satellite-framed languages, children acquiring Russian and Finnish pay more attention to the Action in placement utterances (encoded in the verb) than children acquiring English and German; that is, they are more likely to use verbs in their placement utterances. Children acquiring verb-framed languages do not pattern identically either. Children acquiring Hindi and Turkish explicitly encode the Goal (expressed in case-markers or spatial nominals) more often than do children acquiring Spanish. Unlike children acquiring Hindi, Tzeltal-acquiring children produce verbs which conflate Figure and Goal information (a pattern reminiscent of Atsugewi, a language which conlates information about properties of the Figure along with motion in the verb root (Talmy 1985).

The current findings suggest a scale of relative frequency of children’s early verb use in the eight languages, as shown in Figure 9. At one end, we have German and English, where verbs are rare (relatively little emphasis on Action). At the other end, we have Hindi and Tzeltal, where all of the children’s preferred patterns include verbs (overwhelming attention to Action). Russian, Finnish, Spanish, and Turkish occupy an intermediate position between these extremes.

<table>
<thead>
<tr>
<th>MANY VERBS</th>
<th>FEW VERBS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tzeltal</td>
<td>German</td>
</tr>
<tr>
<td>Spanish</td>
<td>English</td>
</tr>
<tr>
<td>Finnish</td>
<td>Russian</td>
</tr>
<tr>
<td>Hindi</td>
<td>Turkish</td>
</tr>
</tbody>
</table>

Figure 9. Scale of languages according to relative frequency of verbs at t1

Relation (see Figures 6 and 7); nevertheless the children home in on these verbs just as zealously as learners of Spanish and Tzeltal home in on Relation-conflicting verbs such as ‘insert’.

8 In Russian, the verbs used to express placement often encode the end posture of the Figure (‘standing’, ‘lying’, etc., see Figure 4), so one might wonder whether it is Figure rather than Action that attracts learners’ attention in this language. If so, learners of German, also a “posture verb” language (cf. Figure 3), should show a similar early preference for verbs, but they do not. (Nor can this explanation account for the relative popularity of verbs among learners Finnish, where placement verbs do not encode posture.) Also problematic for the “attraction to posture” hypothesis is that learners of “posture-verb” languages seem to have trouble grasping the distinctions made by posture verbs: (1) the German children in our sample initially tended to rely on “light” verbs like ‘make’ or ‘do’ rather than posture verbs, and (2) in an experimental study, learners of Dutch -- which, like German, obligatorily breaks down “putting” events according to the posture of the Figure -- vastly overextended ‘lay’ to all placement events (Narasimhan & Gullberg, submitted, Gullberg & Narasimhan, submitted). It is not easy, then, to explain differences in relative attention to verbs vs. satellites among learners of different satellite-framed languages through an appeal to different verb semantics. A more likely explanation, as we argue shortly, is variation in the perceptual salience of satellites in these languages.
A number of factors potentially contribute to the scalar distribution we find. One factor is *language typology*. There are many verbs - both types and tokens - in the speech of children learning verb-framed languages, and far fewer in the speech of children learning satellite-framed languages. It seems that the typology of the language plays a role in the frequency of verb use in children’s ways of talking about placement scenarios.

A second factor is the *perceptual salience* of the grammatical morphemes that encode spatial relations (particles, verbal affixes, case-markers, and adpositions). This factor can play a role that distinguishes between languages that belong to the same language type with regard to lexicalization patterns. Children learning satellite-framed languages are more likely to encode spatial Relations/Vectors when talking about placement scenarios if their language marks the spatial relation in a *transparent* way. For example, the spatial relation of containment, encoded by the English element *in* (either the particle/satellite *put in* or the preposition *in the box*), is syllabic, separable from the verb, and often stressed (*put it IN*). By contrast, the relation is relatively *non-transparent* in the Russian prefix *v*- ‘in-’, as in *vyložit* ‘inlay’, as well as the preposition *v* ‘in’, as in *v korobku* ‘in box:ACCUSATIVE’. In both instances, the Russian relational marker - whether prefix or preposition - is non-syllabic, unstressed, and phonologically part of the following content word. In Finnish, the “satellites” in the encoding of placement events are unstressed inflections either on the Goal nominal (e.g., *pöydä-lle* ‘table-ALLATIVE’ [onto the table] or on a demonstrative (e.g., *tä-nne* ‘this-ILLATIVE’ [into here]) or a relational nominal (e.g., *pöydän pää-lle* ‘table’s head-ALLATIVE’ [onto the top of the table]. In general, then, the “satellites” are less transparent in Russian and Finnish than in English and German. Thus although Russian and Finnish are satellite-framed, children learning these languages produce fewer satellites and more verbs than learners of English and German. We can conclude that the more perceptually salient the grammatical marking of the spatial relation, the more likely are children to encode Relation, using salient satellites and prepositions. Hence the early favored patterns in the English and German data sets include Relation or Vector more often than the patterns found in the Russian and Finnish data sets.

Finally, a third possible factor lies in the semantics of the linguistic elements, especially the verbs. For example, many Tzeltal verbs conflate the properties of Figure/Goal along with Action, whereas placement verbs in Hindi, Spanish, and Turkish typically do not. All of the early patterns in Tzeltal include verbs, often verbs that carry a good deal of semantic content.

The three dimensions we have identified—language typology, perceptual salience of relational marking, and semantic richness of verbs—all contribute to a scalar distribution of children’s favored patterns at the two-word stage. There are undoubtedly additional interacting factors that require further research to identify.

6. **Beyond framing typology**

The data allow us to pose a number of questions that go beyond Talmy’s typology. We consider three such issues: (1) specificity of semantic categorization (6.1), (2) crosslinguistic differences in child-directed speech (6.2), and (3) an intratypological comparison of English and German with regard to the explicit mention of the goal in placement utterances (6.3).

6.1. **Specificity of semantic categorization**

On the level of semantic organization, languages differ in how finely they divide the domain of placement. They also differ in the sorts of semantic distinctions that they require or encourage speakers to make in talking about placement situations. Here we go beyond Talmy’s typology, because the semantic specificity of linguistic forms—verbs, case-markers, adpositions—varies independently of verb- and satellite-framing. A major task for an individual acquiring a particular language is to become sensitive to particular ways of organizing conceptual space into
semantic categories, and to the mapping of those categories onto lexical items, grammatical morphemes, and construction types.

In our data we find two types of semantic variation in what is encoded by relevant words or morphemes. The first is degree of specificity of the spatial relation. For example, where Spanish can use a single preposition, en, English requires a choice between in, into, at, on, and onto. A second major area of variation is found in the required attention to spatial properties of the Figure and/or the Goal—that is, whether or not spatial properties of the Figure and/or Goal, or the end configuration of Figure and Goal, are incorporated in the verb. Languages make a range of distinctions of shape, substance, and orientation. Consider, for example, the distinctions made in English between lay, stand, and set, focusing on the orientation of the Figure, and put, pour, and scatter, focusing on physical characteristics of the Figure. Crosslinguistic comparison makes it evident that languages display different action categories in placement verbs. Consider two kinds of examples of semantic variation in our data: obligatory marking of Goal phrases (6.1.1) and specificity of verb categories (6.1.2).

6.1.1. Obligatory marking of Goal phrases

In four of our languages, prepositions or case endings obligatorily mark a Goal nominal. The semantic categories of these markers differ across languages, as can be seen in a simple comparison of the encoding of two cross-cutting dimensions, containment/support and static/dynamic (here more specifically: ‘location at’ vs. ‘motion toward’. Figures 10a, 10b, 10c, and 10d show that the four languages make strikingly different categorizations. As shown in Figure 10a, Spanish uses the preposition en ‘in/on’ for all four scenes. Children must then form a category for en that is indifferent to containment vs. support and to the static (location at) vs. dynamic (motion toward) character of the situation.

![Figure 10a. Spanish preposition](image)

By contrast, Turkish obligatorily marks the Goal with case markers that distinguish the two static scenes (locative case) from the two dynamic scenes (dative case). This is shown in Figure 10b. Children learning Turkish, therefore, have to ignore the containment/support distinction for the purpose of this case marking. Note that in both Spanish and Turkish you can distinguish, e.g., ‘apple INTO bowl’ from ‘cup ONTO table’ if you want to (with additional specifiers), but this distinction is normally left to inference.
Unlike in Turkish, case markers in Hindi are indifferent to whether the placement event is static or dynamic, but they are sensitive to whether it involves containment or support. The inessive case is used for both containment scenes, while the adessive case applies to both support scenes, as shown in Figure 10c.

Finally, Finnish requires speakers to make a four-way distinction: static containment (inessive case), static support (adessive), dynamic containment (insertion) (illative), and dynamic support (placement onto a surface) (allative). These four case-marked categories are shown in Figure 10d. Because of the case-marking, children learning Finnish have to attend to the distinction between both static and dynamic and between containment and support.
What are the consequences of these differences in categorization for children learning to mark Goals in these four languages? One potential consequence is in what is learned earlier. We might expect making one categorical distinction to be easier than making two; thus Finnish children would be predicted to have the hardest task. This is indeed what we find. At the stage when children are beginning to string morphemes together, the Spanish children are using en and the Hindi and Turkish children are making the contrast between the two relevant cases for their languages. (Similarly, English children at this age make the appropriate distinctions between containment and support.) But the Finnish children have trouble with their four-way case distinction: they consistently distinguish between static and dynamic scenes, but not, in the beginning, between containment and support; instead, they use illative-marked deictic forms (e.g., tonne 'there-ILL') for both kinds of relations, and do not yet apply case-marking to nouns like "table" or "cup". (Adults use the illative deictic forms similarly: these forms are semantically relatively unmarked and more broadly applicable than their allative counterparts.)

These developmental patterns might suggest that, in general, linguistic systems that require more semantic distinctions are harder to learn. This hypothesis can be explored by looking at another example, this time involving verbs.

6.1.2. Verb categories

Like prepositions and other Goal markers, verbs differ in the level of specificity with which they divide up events. "Light" verbs like ‘put’ apply to a wide range of events; "heavy" verbs like ‘attach by inserting tightly between two pinching surfaces’ apply to a relatively small range of situations. Our languages can be compared with regard to level of specificity, as shown in the following figures. The figures show some of the sorts of placement events that appear in our data: putting a stick of firewood on the fire, setting a bottle down on its side, putting a pencil into a cup of pencils, setting down a bottle, a frying pan, or a bowl on a table.

First consider English, shown in Figure 11a. In English, the verb put is typically used to describe all six of these events. Of course, we could make finer distinctions, but we generally don’t bother to, and in our data the children don’t either.
In German, by contrast (Figure 11b), adult native speakers typically make distinctions based on the shape and orientation of the Figure being placed. For example, they use the verb *legen* ‘lay’ for events in which the Figure is placed with the long axis horizontal, while they use *stellen* ‘make stand’ for events in which the Figure is placed vertically, or sitting canonically on its base. Our children also produce posture verbs, though they initially preferred verbless utterances and utterances with on “light” verbs like ‘make’ or ‘do’ (see footnote 8).

Tzeltal (Figure 11c) makes even finer distinctions, requiring five different placement verbs for these scenes, depending on precise characteristics of the orientation and spatial configuration of Figure and Ground objects resulting from the placement action. According to the hypothesis that learning more distinctions is harder, we would expect the Tzeltal children to have a hard time. But the Tzeltal children use a range of verbs when they start to use two-morpheme utterances to encode object placement, including not only a general ‘give/put’ verb (semantically more general than English *put*) but also several semantically specific verbs, including *ch’ik* (‘insert something between supports’), *lut* (‘insert tightly between forked objects’), and *pach* (‘set down something
bowl-shaped upright'). They seem to use these verbs correctly, and do not overextend them to inappropriate placement scenes.

Figure 11c. Tzeltal placement categories

Looking at the Tzeltal input, we find thirty-two distinct placement verbs, such as verbs with meanings 'stand-up-vertically', 'set-down-stacked', 'set-down-on-its-side', 'mix-in-with [particulate things]', 'pile [multiple things]', 'insert-long-thin-thing-into-tight-fit-at-one-end', and 'put-standing-at-an-angle'. However, the children use only a small proportion of these, as shown in Table 10, which includes data for the two Tzeltal children from the early two-word stage and from about six months later. Thus although children begin very early to create the relevant fine-grained categories, it takes them a while to finish the job (Brown, 2008; Narasimhan and Brown, in press).

Table 10. Range of placement verbs in Tzeltal child speech

<table>
<thead>
<tr>
<th>Early two-morpheme stage</th>
<th>Six months later</th>
</tr>
</thead>
<tbody>
<tr>
<td>give/put (ak)</td>
<td>stick-on (nap)</td>
</tr>
<tr>
<td>insert (ch’ik)</td>
<td>drop (ch’ay)</td>
</tr>
<tr>
<td>insert (lut)</td>
<td>tie-on (chuk)</td>
</tr>
<tr>
<td>make-enter (otz-es)</td>
<td>put-on-clothes (lap)</td>
</tr>
<tr>
<td>put-away (k’ej)</td>
<td>spoon out (lop)</td>
</tr>
<tr>
<td>set-down-upright [bowl-shaped thing] (pach)</td>
<td>insert.through.opening (tik)</td>
</tr>
</tbody>
</table>

To sum up: the kinds of crosslinguistic variation we have been examining create a complex learning problem. Categories with more distinctions are not necessarily harder; it depends on what the distinctions and contrasts are—that is, what situations are being classed together (see also Bowerman 2005). Finnish children do have a hard time with two cross-cutting distinctions which simultaneously determine which case to use, but Tzeltal children do not appear to find semantically specific verbs particularly difficult. The Tzeltal verb semantics relate to concrete image schemas of shape, manipulation, and orientation. They require attention to particular types
of objects, and children use them early on for objects that they have regular daily contact with. By contrast, the Finnish distinctions are general and abstract, referring to any type of object. The level of abstraction required seems to be a later developmental achievement.

This leads us to a final point: there may be an interaction between the ease of learning semantic categories and where the language puts its information. As we saw in the first section, Tzeltal children are encouraged by the structure of their language to attend to verbs at an early age. German children are not as oriented to verbs (at least for placement events), and, correspondingly, it takes them longer to make the needed semantic distinctions, e.g., between *legen* `lay` and *stellen* `make stand`. (Clahsen [1982] reports that German children initially produce many sentences without verbs.) Since in Tzeltal a lot of placement information is compressed into the verb, it is often unnecessary to separately mention the Relation or the Goal. Hence the favored pattern for the Tzeltal child at the beginning point is a verb alone, or a verb plus a deictic. What you can say with a verb alone in Tzeltal can also be said in Hindi by combining a verb with a noun. But when this information is packaged together with Action in a single verb, it can be taken for granted in the context and does not need to be separately mentioned. It seems, then, that learning semantic categories interacts with other aspects of language.

6.2. Child-directed speech: Variation sets

Regardless of the typology of the exposure language, the child has to make use of patterns of speech in discovering the structures of the language. When a caregiver *rephrases* a child-directed utterance, language-specific patterns of expression can be subtly revealed. Such repetitions and rephrasings are typical of speech addressed to very young children, who do not often readily respond to questions and commands.

Consider a mother who is instructing a child of age 2;3 (Sachs data, CHILDES; Sachs 1983):

(1) **MOT:** Nomi, don’t put your bread on the floor, honey, put it back on the table, Nomi. Put it up on the table.

Note the substitution of *back on* by *up on*. This gives the child the information that a verb particle (“satellite”), *on*, can be combined with a temporal adverb, *back*, and a directional adverb, *up*. Of course, such information can also be derived from comparing stored utterances, but the immediacy of the mother’s rephrasing, with no change in the situation, may draw the child’s attention to the linguistic contrast.

Example (2), also from the Sachs corpus, presents a more complex substitution pattern:

(2) **MOT:** I think I’ll put her over in your toy basket until you’re finished with breakfast, OK? I’ll put her right over here and you can go get her after you’re finished.

The directional adverb *over* is strengthened by the emphatic particle *right*, and a specified location, *in your toy basket*, is replaced by a deictic adverb, *here*.

We will refer to such sequences as “variation sets,” following Küntay and Slobin (1996), who introduced this term to designate a series of utterances produced with a constant communicative intent, but with changing form. Variation sets are characterized by three types of phenomena: (1) lexical substitution and rephrasing, (2) addition and deletion of specific reference, and (3) reordering. Such sequences provide the child with clues about the typological characteristics of the exposure language, presenting patterns of word-order variability, ellipsis,
and lexical alternation. Variation sets provide information about the meanings of lexical items. Successive utterances show which verbs can occur with the same array of arguments, along with demonstrating possible alternative expressions of noun arguments and relations. In addition, a sequence of utterances about the same events indicates how the language segments events into linguistic units.

Variation sets are frequent in child-directed speech in the early period that we are investigating. For example, Küntay and Slobin (1996), studying two Turkish mothers speaking to children in the age range 1;8-2;3, found that 21%-35% of utterances occurred in variation sets. Our examination of naturalistic data has drawn our attention to variation sets in several of the languages considered here: English, Russian, Hindi, and Turkish. Each of these languages presents the child with particular learning problems. The variation sets in the input serve to highlight critical features of the morphology and syntax of the language.

Consider the following variation set in English, where the mother is encouraging a child of age 2;1 to put J’s bottles in the refrigerator:

(3) let’s put J’s bottles in the refrigerator
    want to put them in the refrigerator with me
    let’s put J’s bottles in the refrigerator
    we’ll put it in the refrigerator
    let’s put it in the refrigerator
    we’ll put it in the refrigerator
    you can put it in
    I’ll let you put it in yourself
    you put it right in
    you put it in there
    put it right in the refrigerator

This English example is typical of variation sets in a language with fixed word order. Note that all of the utterances adhere to the same word-order schema: pragmatic introducer - verb - object - locative goal. The verb is always present. The object is quickly reduced to a pronoun, but it never disappears—that is, there is no object ellipsis. The Goal shows the most variation: in the refrigerator, in, right in, in there, and finally the most elaborated form, right in the refrigerator. This sort of sequence is typical of variation sets addressed to very young children who do not readily show signs of comprehension or compliance: moderate elaboration, followed by reduction, followed by more elaboration. Input patterns of this sort in English show the child that English is a fixed word-order language, with neither verb nor object ellipsis, and with various types of locative expressions and the optional expression of deixis (in there).

Russian presents rather different morphosyntactic information in variation sets, as shown in (4), where a mother is prodding a child of 2;0 to put his toys away.

(4) gather toys-ACC  ‘Gather (the) toys.’
    put in basket-ACC  ‘Put (them) in the basket.’
    blocks-ACC  ‘(The) blocks.’
    put  ‘Put.’
    put in basket-ACC toys-ACC  ‘Put (them) into the basket (the) toys.’
    throw thither  ‘Throw (them) over there.’
    in basket-ACC must put  ‘Into (the) basket (you) must put.’
    put  ‘Put.’

(For ease of presentation, examples from Russian, Hindi, and Turkish are presented only in English glosses with grammatical codes; the original examples can be found in the Appendix.)
Variation sets of this sort demonstrate a range of patterns of ellipsis: there is no Goal in the first utterance, no Figure in the second, no verb or Goal in the third, and so forth. Deixis is optional, appearing only in the fifth utterance (‘thither’). The verb is a constant element across utterances, except for the third utterance, ‘blocks-ACCUSATIVE’, where the case ending implies Action on the object. Note that the ACCUSATIVE is a reliable cue to the object (toys), and that it also indicates that the basket is the Goal. The preposition preceding ‘basket’ makes it clear that this is the Goal rather than the Figure. Given the physical situation, the variation set might serve to highlight these two functions of the ACCUSATIVE. Note, too, that there is considerable word-order variability. Again, repeated exposure to variation sets of this sort throws critical factors of Russian morphosyntax into relief.

The next example shows a Hindi variation set (consisting of non-consecutive utterances excerpted from a conversation involving play with with plastic blocks of different shapes which fit into slots on a board). This example is interesting in that the mother and older brother collaborate in constructing a variation set for a child of 1;7. (5) provides a morpholexical gloss and an English translation.¹⁰

(5) [mother puts blocks in front of a board with slots]
MOT: this-ACC all-ACC attach-CAUS give-IMP this-INESS
   ‘Attach all this in this.’
   come on, attach-CAUS give-IMP
   ‘Come on, attach (it).’
   that-INESS that-NOM not attach-FUT
   ‘It won’t attach in that.’
   here put-IMP
   ‘Put (it) here.’
BRO: that-INESS attach-FUT?
   ‘Will (it) attach in that?’ [referring to the slot into which child is putting block.]
MOT: no, this-NOM here attach-FUT, yes
   ‘No, this attaches here, yes.’
   [mother points to the slot where the block should fit]
BRO: there not attach-HAB
   ‘(It) doesn’t attach there.’ [addressing child who is unable to fit block in slot]
MOT: good, this-NOM attach-CAUS-IMP, this-NOM attach-CAUS-IMP
   ‘Good. Attach this. Attach this.’ [mother points to another new block]

Note that the verb is always present, and all other elements come and go. Note too that, as in Russian, ACC-marking is used to indicate action on an object (blocks). Interestingly, in Hindi, NOM and ACC case marking alternate on the object of the transitive verb: compare the first sentence of the Hindi variation set (object gets ACC marking with the verb "attach") and the last sentence (object gets NOM marking with the same verb). The use of the variation set by the mother illustrates this morphosyntactic distinction in ways that are helpful to the child. As the switch from NOM to ACC marking occurs in the same physical and linguistic context (referring to the same type of object/action, using the same verb and imperative construction), the child's attention is likely to be more quickly drawn to the relevant factor - namely, definiteness - that conditions the case alternation (the mother uses NOM to refer to a new block that hasn't been talked about before).

The ACCUSATIVE is not a unique form in every case-gender-number combination, so the situation is more complex than schematized here.

The verb glossed as ‘give’ in (5) represents a light verb which does not literally imply transfer but typically adds an aspectual value to the meaning encoded in the main verb.

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¹⁰The verb glossed as ‘give’ in (5) represents a light verb which does not literally imply transfer but typically adds an aspectual value to the meaning encoded in the main verb.
Finally, (6) presents a Turkish variation set in which a mother is encouraging a child of 2;0 to put a toy bird in its nest.

(6) how put? ‘How (do we) put it?’
    put hither ‘Put (it) here.’
    its.nest-DAT put ‘Put (it) to its nest.’
    its.nest’s inside-LOC like.this ‘Inside of its nest like this.’

Turkish exhibits the greatest amount of ellipsis. Even the verb is not constantly present, and the Figure is never lexicalized at all. Here the child is shown the Turkish preference for ellipsis of all but the least redundant elements.

Variation sets may enhance the effects of the sort of syntactic bootstrapping proposed by Lila Gleitman (1990, pp. 23):

Children’s sophisticated perceptual and conceptual capacities yield a good many possibilities for interpreting any scene, but the syntax acts as a kind of mental zoom lens for fixing on just the interpretation, among these possible ones, that the speaker is expressing. (1990, pp. 27): This examination of structure as a basis for deducing the meaning is the procedure we have called syntactic bootstrapping.

Naigles and Hoff-Ginsberg (1998) have studied the consequences of syntactic bootstrapping for acquisition:

The prediction of the syntactic bootstrapping hypothesis is that the more frames in which a child hears a verb, the easier that verb will be to learn because each additional syntactic frame has the potential to provide additional semantic information (Naigles and Hoff-Ginsberg 1998, pp. 101).

They argue that if a mother uses a verb in a diversity of constructions, the child is most likely to learn that verb quickly and use it appropriately.

The proposals of Gleitman and Naigles and Hoff-Ginsberg focus on verbs and the child’s task of keeping track of the frames in which particular verbs occur. A variation set “magnifies” the effects of syntactic bootstrapping: since a set of sentence frames is present in a single context of relatively brief duration, the child is spared having to collect, remember, and compare utterances produced far apart and in very different contexts. Instead, the utterances to be compared are conveniently grouped together in the same nonlinguistic context and follow each other in short succession, greatly reducing the memory burden required by syntactic bootstrapping.

Note, finally, that in our examples the variation sets highlight the meanings and patterns of expression not only of verbs, but of all linguistic elements.
6.3 Intra-typological variation in explicit mention of goal

In our final excursion beyond framing typology, we present a small case study of the expression of locative Goals in child-directed speech in two closely related languages of the same type, English and German. In both languages the Goal can be stated explicitly, using a prepositional phrase with a nominal, as shown in (7), using examples from child-directed speech.

(7a) Put the flowers in this bucket.
(7b) Die legen wir hier in ′n Topf.
this one lay we here in the pot
′Let′s put this one here in the pot.′

Both languages can also point toward the Goal with ellipsis of the Goal nominal, as in (8).

(8a) You can put it in.
(8b) Willst du deine Flasche reinlegen?
want you your bottle in lay
′Do you want to put your bottle in?′

Where the languages differ considerably is in the elaboration of deixis in combination with expressions of relative location. English is essentially limited to here and there, sometimes in combination with directional particles, as in (9).

(9) Put it in here / over there.

German speakers have a larger and more flexible set of choices: hier/da ′here/there′ can be combined not only with a large collection of directional particles such as rein ′into′, drinnen ′inside′ and drauf ′onto.there′, but also with the deictic particles her/hin ′hither/thither′ and with pronominal adverbs that mark out spatial regions, e.g., oben ′upper region′, unten ′lower region′, vorne ′front region′, hinten ′rear region′. For example, compare descriptions locating an object in the upper part of a cupboard. English requires two nominals— one labeling a region and the other the ground: in the upper part of the cupboard. German uses a pronominal adverb that denotes a space: oben im Schrank ′upper region in.the cupboard′. These elements occur in numerous combinations in parental speech to toddlers, such as the examples in (10).

(10a) Leg sie hier unten hin.
put them here lower region thither
′Put them here down there.′
(10b) Leg sie hier oben drauf.
put them here upper region onto.there
′Put them here up onto there.′

Note the form drauf (reduced from darauf) in (10b). It contains the deictic da ′there′ along with rauf, a specification of the ′on′ location to be found ′there′ along with an allative specification.

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11 We thank Jürgen Bohnemeyer and Heike Behrens for critical discussion in developing the ideas presented in this section.
12 The study was carried out by Heike Behrens, Melissa Bowerman, and Dan Slobin, using English data from the Naomi/CHILDES corpus and German data from Max Miller′s Simone corpus, sorted and statistically summarized by Behrens.
Expressions including *da* can compactly direct attention to the Goal without an explicit noun or pronoun. Heike Behrens (p.c. 1997) has suggested the term “residual ground” to designate such elements that point to contextually or deictically established ground referents without explicitly mentioning them. It may well be that detailed attention to deictic perspective and spatial divisions is more important in German discourse than the explicit naming of contextually given reference objects. There is some experimental evidence that is consistent with this proposal. Carroll and von Stutterheim (1993) compared English and German speakers in tasks of describing locations of objects. They observed English orientation to objects and object features, contrasting with German orientation to the spaces in which objects are located.

What might be the consequences of these subtle differences for the explicit mention of Goals in child-directed speech in the two languages? The available construction types in the two languages might lead English-speaking parents to make more frequent explicit mention of Goals, whereas German-speaking parents might more frequently make implicit reference to Goals by the use of deictic expressions.

This proposal was tested in a case study by Behrens, Bowerman, and Slobin, using data from two girls and their parents: English data from Naomi (Sachs’ data) and German data from Simone (Miller’s data). For each of the girls we analyzed a six-month stretch of data, beginning with the child’s first expression of a motion event that included specification of Goal and coding all motion event expressions made by both the child and her parents. Within these data, we attended specifically to object placement events, defined as reference to moving a physically present object to another location. For both girls, the data provide reference to comparable naturalistic situations—eating and playing with toys—encoded by verbs of placement. In English the verbs are *hand, pour, put, stick,* and *throw.* In German the verbs are *hängen ‘hang’, legen ‘lay’, machen ‘make’, schmeißen ‘hurl’, stecken ‘stick’, stellen ‘make stand’, tun ‘do’, and werfen ‘throw’.*

Consider first the implicit reference to Goals by the use of deictic expressions only. The English-speaking parents used this option 10% of the time, in comparison with 28% for the German-speaking parents. Perhaps as a consequence, they were much more likely to make explicit reference to the Goal: 53% in comparison with 30% for the German parents. Figure 12 shows the relative use of three types of constructions for verbs of placement in caregiver speech in the two languages: no explicit goal (e.g., ‘put it in’), deictic goal only (e.g., ‘put it in here’), and explicit goal (e.g., ‘put it in the box’). These limited data support the suggestion that English speakers, in comparison with German speakers, are relatively more concerned with explicit Goal reference.

![Figure 12. English and German: Verbs of placement in caregiver speech](image-url)
The children matched these patterns even more strongly than their parents. Simone never made explicit lexical mention of a Goal in the types of placement scenarios examined, and she used far more deictic expressions than Naomi, as shown in Figure 13.

![Figure 13. Verbs of placement in English and German child speech](image)

Finally, comparing each girl with her parents, it is evident that each child matches her parents more closely than she matches the corresponding child in the other language. Figures 14a and 14b compare each girl with her parents. Note that Naomi seems to slightly overproduce explicit Goals in comparison with her parents, whereas Simone never mentions a Goal.

![Figure 14a. English verbs of placement: Naomi and her parents](image)
In this intra-typological comparison we have again gone beyond the large-scale typological dimensions discussed earlier in this chapter. We find that an apparently small difference—the relative elaboration of locative systems that express speaker perspective—influences the use of referential encoding of Goals in placement events. Available lexical choices combine with available construction types to shape discourse patterns.

7. Overall conclusions

We suggest, on the basis of the data presented in this chapter, that children’s early talk about placement events reflects typological characteristics of the target language. In terms of our initial question, the development of linguistic event representations is indeed influenced by the particular language the child is learning. Specifically, children learning satellite-framed languages show an early emphasis on Goals and Vectors/Relations, whereas children learning verb-framed languages emphasize Actions. At the same time, factors that crosscut this typological dichotomy are also important, including (1) the varying perceptual salience of relational markers across languages, and (2) varying patterns of ellipsis and discourse framing. In addition, on the level of semantic categories, it is clear that children are language-specific in their semantic distinctions. We have also found significant crosslinguistic differences in input patterns which influence acquisition. Child-directed speech displays the grammatical and semantic properties of the language. Further, from among these patterns, the input presents those patterns that are preferred for specific discourse purposes.

The bottom line is that any reasonable model of language acquisition must consider a multiplicity of interacting factors - morphosyntax, pragmatics, lexicon, etc. - each with its own language-specific constraints and regularities. As a consequence, what we end up with is not infinite variation, but rather constrained variability.
References


Carroll, Mary and von Stutterheim, Christiane 1993. The representation of spatial configurations in English and German and the grammatical structure of locative and anaphoric expressions, Linguistics, 31: 1011-1041.


Appendix

Russian variation set (example 4)
soberem igruški ‘gather:1PL.OPTATIVE toy:DIM.ACC.PL’
skladyvaj v korobku ‘heap/stack:IMP in basket:ACC’
kubiki ‘block:ACC.PL’
skladyvaj ‘heap/stack:IMP’
skladyvaj v korobku igruški ‘heap/stack:IMP in basket:ACC toy:ACC.PL’
kidaj tuda ‘throw:IMP thither’
v korobočku nado klast’ ‘in basket:DIM.ACC must put/place:INF’
skladyvaj ‘heap/stack:IMP’

Hindi variation set (example 5a)
isko sabko lagaa do ismE ‘this:acc all:acc attach:caus give:imp this:iness’
calo lagaa do ‘go:imp attach:caus give:imp’
usmE wo nahii lagegaa ‘that:iness that:nom not attach:fut’
yahAA rakho ‘here put:imp’
usmE lagegaa? ‘that:iness attach:fut?’
nahii, ye yahAA lagegaa, hAA ‘no, this:nom here attach:fut, yes’
whAA nahii lagtaa ‘there not attach:hab’
acchaa, yeh lagaao, yeh lagaao ‘good, this:nom attach:caus:imp, this:nom attach:caus:imp’

Turkish variation set (example 6)
nasil koyalım ‘how put:1PL.OPT’
koy buraya ‘put:IMP this.place:DAT’
yuvasın koy ‘nest:3POSS:DAT put:IMP’
yuvasının içinde böyle ‘nest:3POSS:GEN interior:LOC like:this’