Over the course of development, children make their way through successive transitory stages that exhibit internal coherence. This phenomenon can be observed at all levels of linguistic analysis, but the gradual assembling of verbal constructions (Goldberg 2006, Tomasello 2003) is of special interest for linguistic theory. Children appear to match characteristics of the input quite closely, and the arguments they produce for a given verb do not differ markedly from those they hear (Morgenstern & Parisse, 2012). However, they do not always produce all of the arguments typically found in the adult patterns. In particular, children have difficulties producing forms with multiple arguments, especially three-argument constructions, and often undergo a progression from incomplete to complete patterns (Bloom 1990, Valian 1991).

Previous studies suggest children's ability to learn verbal constructions is highly sensitive to the input (Choi 1999). Verbs must appear frequently in a wide range of semantically accessible contexts and with a wide range of possible arguments for children to learn to use them (Slobin 1985). Theakston et al. (2001) have demonstrated that the sentential frames mothers use with a particular verb is a clear predictor of those used by their children.

This study examines the development of constructions based on the verb give, often cited in the literature as prototypical of verbs appearing in the ditransitive construction (Goldberg 2006). We analyze spontaneous language data from three English-speaking children aged 1;06 to 3;06, taken from the Providence Corpus (CHILDES), focusing on how children learn to express multiple arguments. After presenting some theoretical background and a survey of the literature, we introduce the data and methodological approach. Results of our analyses are then discussed and compared with previous studies.
1. Background

In this study, we adopt a usage-based perspective on the process of first language acquisition. Following Tomasello (2003), we assume that children initially learn concrete chunks of language through dialogue, and that these chunks are linguistic gestalts that can take different sizes and shapes. They then generalize across those various elements to assemble more abstract constructions (Fillmore 1988, Goldberg 1995) in the process of creating new utterances. These linguistic constructions are units of language that contain multiple elements used together for a coherent communicative function (Morgenstern, 2009).

Children can internalize the language to which they are exposed; and they can extract form-function pairings and use them with sensitivity to the pragmatic and dialogue context (Halliday 1967). But they also exploit the creative potential of language (Chomsky 1959, 1965), going beyond rote learning based on situations that are fixed in advance. Children are both lumpers, generalizing observations into patterns, and splitters, analyzing patterns based on item-specific knowledge. Their mastery of language is marked by how freely they combine constructions and produce utterances that are accepted and understood by their interlocutors in context through negotiation of meaning as part of the social practice of conversation (Gumperz & Levinson, 1996).

Just like other categories of constructions, verbal constructions can vary in their complexity, depending on the type and number of elements that are used and how they relate to each other. It has been assumed that children learn constructions with fewer arguments faster (Valian 1991). However, certain verbs following constrained complex patterns with mandatory arguments are very commonly used (such as “Agent GIVE Patient to Recipient” and “Agent SAY Patient to Recipient”). So how do children tackle these more “complex” constructions and comprehend their communicative function when they encounter them in the input? How do they extract the various elements of the constructions they hear from the larger wholes?

It has been found that children do not produce all the arguments at once at the beginning of multiword speech. Rather, they have a tendency to omit subjects even when they are grammatically required (Bloom 1990), and they do not produce complex constructions...
with two or three arguments at first. Nativist theories (Chomsky 1959, 1965; Pinker 1984) assume that despite the fact that they don’t use adult-like utterances, children operate with an abstract knowledge of grammatical categories. The “incomplete” form of young children’s productions is explained in such theories by performance limitations: the limitation in memory capacity governs their ability to realize sentence constituents overtly. Valian (1991) has argued that since children have full competence, they will avoid producing utterances that they know are wrong; instead, they will make less “complex” utterances (with fewer arguments), in particular more intransitive constructions than transitive constructions. But from a constructivist perspective, Theakston et al. (2001) have demonstrated that a clearer predictor of the sentential frames children use with specific verbs is the frames their mothers use with the same verbs. These authors have found no significant differences between adult speech and children’s speech in terms of preference for certain verb frames for particular verbs. Indeed, “constructionist approaches emphasize the fact that languages are learned, that they are CONSTRUCTED on the basis of the input together with general cognitive, pragmatic and processing constraints” (Goldberg 2006:3).

In their conversational exchanges with adults and in the surrounding language they overhear, children are naturally exposed to statistical information about how frequently various forms occur, and they seem to be extremely sensitive to this information. They opt for the most frequent and productive affixes in word-formation, for example, and only later master the less frequently used ones (Clark & Berman 1984). Children use specific verbs only in constructions they have heard in the input (de Villiers 1983). The role of the input and of token frequency in the acquisition of verbal frames seems therefore quite important.

In this study, we focus on the more complex case of a three-argument construction, in particular that of the verb give. While three-argument verbal constructions appear relatively less frequently in the input, give appears quite early in children’s data (Ninio, 2011). This verb is anchored in the experience of giving, or transfer, which occurs frequently and saliently in the child's everyday experience. Prototypically, an utterance with give involves three participants in a scene of physical transfer. Typically, a human giver transfers an inanimate object theme to a human recipient. In English the well-known dative alternation involves two constructions with similar semantics:

- The double object with the recipient expressed first followed by a theme.

- The caused motion where the theme is in the object position followed by a prepositional phrase with to expressing a recipient.

![Double object and Caused motion diagrams](image)

*Figure 1: alternative constructions in English*

Most acquisition research has focused on the dative alternation, in particular on the order of acquisition of the two construction types. From a constructivist perspective, Campbell and Tomasello (2001) describe a detailed study of a variety of English verbs that appear in these dative constructions. They have shown that there are individual differences when the children start using each construction and the order of acquisition. They seem to first acquire the type of dative construction they hear most in their mother’s speech. But as in other studies, the authors’ focus was on dative constructions in general, and not on the development of the pattern from its emergence in the data. In looking at individual verbs, the authors also noticed that many dative verbs were previously used in transitive constructions. The dative constructions are therefore not primary: verbs that appear in them have previous histories. This suggests that examining the overall evolution of the usage of particular verbs (and not just the dative alternation) would be informative.

The purpose of our study is to examine the developmental trajectory for the single prototypical verb give, with the aim of shedding light on how children progress from partial to complete verbal pattern. The study is based on a close study of longitudinal data from specific children, involving the observation, coding and analysis of all exchanges involving the verb give for the children in the study. Based on this analysis, we propose several possible explanations from our theoretical perspective, including sensitivity to input frequency, the features of semantic and pragmatic context, and the creative processes children make use of during acquisition and communication.

2. Data, method and quantitative results

We analyzed the development of verb constructions in young English-speaking children by focusing on spontaneous language data from three children, Naima, Will and Lily, from the Providence Corpus in the CHILDES database (MacWhinney 2000). Naima was filmed from 0;11 to 3;10, Will was filmed from 1;04 to 3;04 and Lily from 1;01 to 4.0. Although the periods of filming are not precisely the same, they include significant overlap that covers the crucial period of the acquisition of give and its arguments.

The three children differ slightly in their linguistic development. Figure 1 shows each child's growth in the Mean Length of Utterances. All children undergo a similar growth in this metric, differing in how quickly they reached larger MLUs. By this metric, Naima is the most precocious, Lily has an intermediary profile and Will is the slowest of the three children.

![Figure 1: Mean Length of Utterance of the three children in the data according to age.](image)

Table 1 shows the number of utterances containing the verb give in the three children’s data, along with the number in the parental input. There are relatively few occurrences in Will’s input data for the time span covered, while Naima and Lily have more opportunities to hear the construction. As we will later observe, the differing amounts of input data may
correlate not only with how often the children produce the construction but also with how creatively they manipulate the construction into different variations.

Table 1: Number of occurrences of give constructions in the three children’s data

<table>
<thead>
<tr>
<th></th>
<th>Will</th>
<th>Naima</th>
<th>Lily</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child</td>
<td>23</td>
<td>200</td>
<td>42</td>
</tr>
<tr>
<td>Adult</td>
<td>123</td>
<td>467</td>
<td>284</td>
</tr>
</tbody>
</table>

As a quick illustration, we can already observe dramatic differences in the children's acquisition profiles by examining their first two uses of give constructions. As Table 2 shows, Naima's first occurrences are around 1;3, while Lily's and William's do not appear until much later, around 2;5. Note, however, that Naima's early instances are significantly simpler than those of the other children: they are telegraphic (give Mommy) and clearly incomplete. By contrast, while the other children are also missing arguments, they are nonetheless much closer to adult usages, and William's also includes an utterance that is complete and grammatical by adult standards (Give me that).

Table 2: Ages of two first uses of give construction in the three children

<table>
<thead>
<tr>
<th>Child</th>
<th>Age</th>
<th>1st 2 « give » productions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Naima</td>
<td>1;3:07</td>
<td>give Mommy</td>
</tr>
<tr>
<td></td>
<td>1;4:03</td>
<td>give xx</td>
</tr>
<tr>
<td>Lily</td>
<td>2;3:05</td>
<td>What’s um um um who yy give Ariel, Mom?</td>
</tr>
<tr>
<td></td>
<td>2;3:18</td>
<td>Auntie give two ones at her house and I get more fishes</td>
</tr>
<tr>
<td>William</td>
<td>2;5:13</td>
<td>I give yy milk and toast.</td>
</tr>
<tr>
<td></td>
<td>2;7:08</td>
<td>Give me that.</td>
</tr>
</tbody>
</table>

For our close analysis of the data, we described the data in terms of features of both surface form and the corresponding meaning (or function) of its use. Form features include information about the general construction used (when identifiable), the verb (including its
tense, aspect and modality) and the various verbal arguments. Information about arguments include whether it is unexpressed or expressed lexically or pronominally; additional metalinguistic features indicate whether arguments are present or missing (relative to expected adult usage), and whether the usage is conventional or not. Meaning features focus on what kind of scene the utterances accompanied, including the event frame (typically one of physical transfer), the chronological relationship between the utterance and the event, the perspective taken (first person, second person, etc.), and the speech act.

Example of coding

```
na13.cha, line 2057, 1;4.18
give bear Mommy
```

Form
- construction type=prepositional dative (missing to)
- tense=present
- giver=Ø, theme=lex (bear), recipient=lex (Mommy)
- # arguments: 2 present, 1 missing
- non-conventional (giver/subject not expressed)

Meaning
- frame=physical transfer
- chronological relation=simultaneous
- person=1
- speech act = description

This coding was applied to all instances of give in the children’s data and on a representative sample from the parental data (200 utterances each).

3. Results and Discussion

We will present the results of the coding and analyses for the three children in turn.

3.1. William’s use of give constructions

William uses give constructions quite late in the data (his first use is at 2;05) but he quickly uses them with complete argument structure. Table 3 shows his first 15 productions.

Table 3: 15 first occurrences of William’s give constructions

<table>
<thead>
<tr>
<th>Time</th>
<th>Sentence</th>
</tr>
</thead>
<tbody>
<tr>
<td>2;05,13</td>
<td>I give yy milk and toast.</td>
</tr>
<tr>
<td>2;07,08</td>
<td>give me that.</td>
</tr>
<tr>
<td>2;10,03</td>
<td>we give him yy, here the medicine.</td>
</tr>
<tr>
<td>3;00,24</td>
<td>okay, I'm gonna take mine, I'm gonna give yours back.</td>
</tr>
<tr>
<td>3;01,11</td>
<td>grape gimme grapes too.</td>
</tr>
<tr>
<td>3;01,24</td>
<td>gimme red.</td>
</tr>
<tr>
<td>3;01,24</td>
<td>you wanna give it to her.</td>
</tr>
<tr>
<td>3;01,24</td>
<td>you have been give xx.</td>
</tr>
<tr>
<td>3;01,24</td>
<td>can you give me the more syrup?</td>
</tr>
<tr>
<td>3;01,24</td>
<td>give me some.</td>
</tr>
<tr>
<td>3;01,24</td>
<td>give me a trunk.</td>
</tr>
<tr>
<td>3;02,21</td>
<td>he's giving his tree.</td>
</tr>
<tr>
<td>3;02,21</td>
<td>did you give me this cereal?</td>
</tr>
<tr>
<td>3;02,21</td>
<td>do you give me this cereal at the, the zoo?</td>
</tr>
<tr>
<td>3;03,05</td>
<td>gimme that.</td>
</tr>
</tbody>
</table>

yy is the conventional manner to indicate that the production is incomprehensible and cannot be transcribed.

Between 2;05 and 3;0, his utterances are quite complete (at 2;05 the patient is produced as a filler transcribed yy). There are many imperatives and use of formulaic « gimme ». The subject and the recipient are mostly pronominal. After 3;0, his utterances become more complex. There are 88% “correct” utterances overall in his data, i.e. productions that involve no omissions relative to an adult usage.

On the whole, William does not appear to go through any significant developmental stages in his acquisition of give constructions: his first productions are nearly error-free, and he doesn't appear to change over the course of the data. His profile might well be taken as a paradigm illustration of the nativist theories of acquisition.

3.2. Naima’s use of give constructions
We now turn to Naima’s more creative and more productive data. Looking at one of the first examples in Naima’s data, we see that she uses a give construction very early on, at 1;04.

Example 1 Naima 1;04
CHI: give Mommy
MOT: you're giving me this one? OK, thank you.
CHI: Naima give
MOT: Naima's giving it to Mommy
CHI: Naima blueberries
blu bl-Naima
bluies naima
bluies naima

Naima follows the general pattern that she uses at that age: a fixed pattern of two-word utterances. Instead of producing Successive Single Word Utterances (Bloom 1973) as she did two months before, she uses what we could call “Successive Two Word Utterances”. She only expresses the verb and the recipient “give Mommy” as she hands the blueberry to her mother. It is not an imperative in the situation and it is not a complete construction. It is most likely derived from the numerous situations when she has heard the directive speech acts “give Mommy” or “give Daddy”. She is replicating the script that is usually produced as part of a giving scene in which she, Naima, is the agent, as she accomplishes the act of giving her mother blueberries. She then expresses the agent and the verb “Naima give” and then in the next production the agent and the object. She therefore completes the whole structure at the end of the dialogue but with a little scaffolding from her mother. Instead of one-word “vertical constructions” (Scollon, 1976), Naima at 1;04 uses two-word vertical constructions that are reformulated by her mother (“Naima’s giving it to Mommy”). Each utterance is telegraphic, but together they express a complete event. The same conventional participant structure gives Naima a way to express each of the different arguments semi-independently.

If we look at Naima’s general development of give constructions, we observe that she uses them much earlier than Will, but they are much more telegraphic in the beginning and get quite sophisticated at the end of the data.
Table 4: Examples of Naima’s first uses of give constructions

<table>
<thead>
<tr>
<th>Age</th>
<th>Utterances</th>
</tr>
</thead>
</table>
| 1;03 | Naima give  
   | Give Mommy |
| 1;08 | Give it Daddy card  
   | Give it to Lily  
   | Give it back to her |
| 1;11 | Mommy gave me some apricot juice to drink |
| 2;01 | yy giving Mummy the cake  
   | Who gave us the cake? |
| 2;05 | Daddy, give me your piece of egg yolk |
| 2;08 | I want you to give me another one |
| 3;10 | No, I don't take things back that I give.  
   | And then we're supposed to give you things that you don't want. |

From 1;03 to 1;07, 98% of Naima’s utterances with give are incomplete. There are a number of phonological deviations and instability, and mostly the recipient is expressed. The following examples show how the recipient is usually Mommy or Daddy at the beginning of the data. The mother provides the perfect scaffolding for Naima to figure out the construction and to add the missing arguments (“you” and “coffee-filter”).

Example 2. Naima 1;04,18 (comment about a photograph).
Mother: what's in this picture ?  
Child: Daddy .  
Mother: oh there's a picture of Daddy, mmmm .  
Child: yy .  
Child: give Daddy .  
Child: give Daddy, yy .  
Mother: oh you're giving Daddy the coffee+filter in that picture aren't you  
Mother: what are you giving him ?

From 1;08 to 2;03, there are still deviations but she uses numerous phonological fillers and seems to try to extend her utterances. She usually fills more than 2 slots for arguments: 75% of her utterances are complete with 2 or 3 arguments, which are often pronouns. After 2;03, most of the patterns are stable and her utterances become more complex. Since Naima has more occurrences than the two other children, we were able to analyse her construction types. At the beginning, there is an idiosyncratic profile dominated by
“give mummy” but the later period patterns look very much like the adults’ as they include the two main alternations with double object and prepositional dative. Period 3 is really similar to the adult profile.

<table>
<thead>
<tr>
<th>Table 5: Naima’s verbal construction types</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

The analysis of Naima’s uses of give constructions in her longitudinal data seem to show that she fits the description for a constructionist child. Her early productions do not demonstrate a coherent formal grammar but initially consist instead of a set of item-based constructional islands. As Cameron-Faulkner et al. (2003) show for their data, a great number of the most frequent and repetitive components of Naima’s first give constructions are those she hears from the adults around her. Her productions differ from the input for both pragmatic reasons (use of imperatives in child-directed speech, infrequent in the children’s productions except in set expressions) and cognitive-developmental reasons (missing arguments). But over time, thanks in part to her cognitive capacities, experience and amount of exposure, and in part to the adults’ recasts, reformulations and expansions in conversational exchanges (Clark 1998, Chouinard & Clark 2003), she will fully acquire the adult patterns.

Let us now turn to Lily’s development of the construction.

3.3. Lily’s use of give constructions

Quite similarly to Will, Lily’s first uses in the data are quite late compared to Naima’s. Her first production in the data is at 2;01.15. Table 5 shows her first productions.

Table 6: Examples of Lily’s first uses of give constructions

<table>
<thead>
<tr>
<th>Age</th>
<th>Utterances</th>
</tr>
</thead>
<tbody>
<tr>
<td>2;1.15</td>
<td>yy yy Gabby yy uh uh give her um necklace back uh [?] Gabby gets [?] back .</td>
</tr>
<tr>
<td>2;3.05</td>
<td>what's um um um who yy give Ariel mom ?</td>
</tr>
<tr>
<td>2;3.18</td>
<td>and and auntie give two ones at her house and I get more fishes too and I get more fishes at auntie's house and I get um red fish at auntie's house .</td>
</tr>
<tr>
<td>2;4.09</td>
<td>give it to Manuela .</td>
</tr>
<tr>
<td>2;4.16</td>
<td>what's, she's giving a haircut .</td>
</tr>
<tr>
<td>2;4.16</td>
<td>these give me a prize .</td>
</tr>
<tr>
<td>2;4.30</td>
<td>yeah and, and then I squeezed yy yy and then yy gave me a lollipop .</td>
</tr>
<tr>
<td>2;5.06</td>
<td>it's for Gabby and Debbie, I, um, put it right there for Gabby and Debbie and I can give it to them .</td>
</tr>
<tr>
<td>2;5.06</td>
<td>can I give it to her ?</td>
</tr>
<tr>
<td>2;5.06</td>
<td>xx give me a train .</td>
</tr>
<tr>
<td>2;6.04</td>
<td>I give you a tackle .</td>
</tr>
<tr>
<td>2;6.25</td>
<td>Gimme that one .</td>
</tr>
<tr>
<td>2;6.25</td>
<td>I gave you a kiss on the head .</td>
</tr>
<tr>
<td>2;6.25</td>
<td>give that to you .</td>
</tr>
<tr>
<td>2;7.01</td>
<td>Thanks for giving me a piece of your sandwich .</td>
</tr>
</tbody>
</table>

86% of Lily’s productions throughout the data are complete. She therefore begins late but is quick at mastering the construction. There are interesting extensions in the data that demonstrate a difference with William’s acquisition path as in the following example.

Example 3. Lily 3;8.24
CHI: how did you get that sneezes ?
MOT: someone gave me the sneezes I don't know who though .
CHI: mmmm I know who .
MOT: mmmm , who ?
CHI: that sneezy girl .
MOT: oh that sneezy girl .
CHI: um . she gives lots of sneezes to everyone .
MOT: mmmm .
CHI: I think that sneezy girl gave me the xx

MOT: oh my gosh.
CHI: the the the the the sneezes.
MOT: mmmm.
CHI: but I think the the coughy girl --I mean the cough girl would maybe give me my, my coughs.

Lily’s general profile therefore looks like William’s. But she produces more creative extensions and complex arguments and her degree of variation is more similar to Naima’s.

3.4. Comparison of the three children

The three children exhibit significant individual differences in their acquisition patterns, with markedly different pathways toward the building of give constructions. William is the least precocious talker in general: he starts using give quite late, but mostly correctly and completely. He is not, however, very creative with the construction, using it in formulaic, set ways. Naima is the most precocious of the three in various ways, and from an early age uses give in a piecemeal way to describe complete giving scenes. By the end of the period covered, she has also converged toward the full three-argument structure. Lily presents an intermediary profile, with her earliest give constructions appearing around the same time as William's and similarly well-formed already. But like Naima, she engages in piecemeal construction, displaying creativity and variation in how she combines and extends construction types.

The data analyzed confirms some constructivist hypotheses on the acquisition of argument structure. There seem to be some cognitive limitations (processing, short-term memory) that impede the production of all arguments. Despite the relative infrequent use of give constructions in general, the importance of frequency in the input is quite relevant. Significantly, the adult input was consistent across parents and across development in the sense that give utterances consistently appear with a complete set of arguments (either two, for imperative situations, or three). Thus they differed not in form or usage, but mainly in frequency. The forms being extremely rare in Will’s and mostly Lily’s input, more time is needed for the child to observe a sufficient number of forms in order to use them. Naima gets more input and starts using the construction earlier—so early, in fact, that her cognitive and linguistic development are not sufficient for her to use constructions expressing complete argument structure in the way an adult would.
Conclusion

The detailed case studies of three children presented demonstrate how individual trajectories—in the sense of individual children and individual verbs—can not only vary but also depend on the input to which children are exposed. The dramatic differences in how and when these children express the full three-argument give constructions are, upon closer examination, suggestive of the richness and variety of features that might affect learning, and particularly for the more complex multi-argument situation that may also appear relatively infrequently in the data. In particular, mastering the three-argument pattern might require children to have both certain maturational cognitive skills and sufficient exposure to the pattern in the input; the latter may take some time, given the relatively low frequency of give in the input. Moreover, in contrast to the focus on the particular alternative constructions observed in adult usages, children use give with a variety of argument patterns that reflect both the semantic and pragmatic features of the situation, the speech act and the stage of their linguistic development. Interestingly, development seems to involve not just imitation of observed input but also creative analysis and reanalysis of the input, as indicated by novel instances observed especially when the children start using complete patterns. It is through creative piecemeal assembly of the linguistic constructions they have at their disposal that children (or some children) gradually build larger and more complete utterances. Overall, these findings lend support for theories that emphasize the idiosyncratic and usage-based nature of linguistic development.

Bibliography


