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Investigating Children's Language: A Comparison of Conversational Sampling and Elicited Production

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This report compared production of infinitival object complements during conversational language sampling to production on an elicitation task. Subjects included 25 children between the ages of 3;7 and 5;4. The children produced more two-noun infinitives and produced infinitives with more main verbs on the elicitation task. In the conversational samples, the children produced infinitives almost exclusively with early-appearing main verbs. These findings suggest that conversational language sampling may underestimate children's grammatical knowledge.

A major aim of research in child language has been to investigate children's knowledge about the structure of their language. Inferences about this knowledge are frequently based on utterance production in conversational[3]

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[3] Language samples are typically recorded during interactions considered to be "spontaneous" and "naturalistic." "Spontaneous" suggests that the child is free to select any form or express any content in his or her utterances. "Naturalistic" suggests that the sampling situations are typical of the everyday situations of the child. In the current paper, I will refer to these situations as "conversational," as this seems to be a more neutral term.

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discourse. There are, however, some inherent difficulties in obtaining a representative sample of a child's language. Characteristics of the specific interaction in which the conversation takes place—such as the interactants, setting, and materials used to obtain the sample—may influence the quantity and types of utterances produced (see, for instance, Bacchini, Kuiken, & Schoonen, 1995; Evans & Craig, 1992). An even more basic issue is the extent to which conversational language does in actuality reflect a child's linguistic knowledge, rather than reflecting performance factors. This issue is particularly relevant now because of the increased availability of such language samples through computerized databases, such as the CHILDES database (MacWhinney, 1995; MacWhinney & Snow, 1985). This availability has led more researchers to use conversational data for investigating developing grammar.

Relative frequency of production is one type of measure that has been used as evidence that a child has acquired a particular structure. If a child produces a structure at some criterion frequency level, we conclude that the child knows that form. It is, however, not clear what we can conclude if the child's production of the target form does not meet the criterion frequency level. That is, there is the question of how to interpret the absence or infrequent production of a particular syntactic form in conversational language samples. It is not clear if this reflects a lack of knowledge within a child's grammar or if it reflects other factors such as lack of opportunities in the specific discourse situation. This becomes particularly problematic for less preferred structures that occur infrequently even in adult discourse and for structures that are not obligatory.

One way to circumvent this difficulty is to develop a task that prompts children to produce a particular construction that they might not otherwise produce or might produce infrequently. Such a task was developed by Eisenberg (1989) to investigate infinitive production. Infinitives are of particular interest because they cannot be produced with all verbs. Rather, main verbs must be subcategorized for infinitival complements and this lexically specific information must be learned verb by verb. It thus might happen that a child produces numerous infinitives but with only a limited range of main verbs. It must then be determined whether this reflects lack of opportunities to produce infinitives with other verbs (a performance issue) or whether this reflects limited subcategorization of verbs within the child's grammar for infinitives (a competence issue). We must, therefore, look not only at the number of infinitives produced but at the range of main verbs used with infinitives.

Infinitives have been reported in previous studies to be produced by children as young as 2 years of age (Bloom, Tackeff, & Lahey, 1984; Lim-

ber, 1973; Menyuk, 1969). The earliest infinitive sentences are of the form [Verb-*to*-Verb], as in *I want to see Mommy* (Bloom et. al, 1984; Limber, 1973). These infinitives involve a nonstated coreferential subject of both the main and complement verb and are termed in the current report as single-noun infinitives. Infinitives of the form [Verb-Noun-*to*-Verb] with a noun between the main and complement verb develop later than single-noun infinitives without such a noun (Bloom et. al, 1984; Limber, 1973). These infinitives, such as *I want you to read that book*, are termed in the current report as two-noun infinitives and have been reported to emerge by the time children are 3 years old, when mean length of utterance is around 3.5 (Bloom et. al, 1984).

The current paper is part of a larger investigation of the development of infinitival complements beyond the age of 3 years. An analysis concerning children's knowledge of this structure has been reported in Eisenberg and Caims (1994). The current paper seeks to look at the methodological issues involved in developing a data base for this structure. Specifically this study sought to compare infinitive productions within a conversational language sample to infinitives produced during an experimental elicitation task. The general prediction was that the elicitation task would provide the opportunity for children to demonstrate greater knowledge of infinitives than they would in the conversational sample.

It was expected that infinitives would be produced during both sampling conditions by all of the children in the current study since, as stated above, infinitives had been reported in previous studies to be produced by children as young as 2 years of age (Bloom et al., 1984; Limber, 1973; Menyuk, 1969). The comparisons made here concerned two aspects of infinitive development beyond the early emergence of this form. One question had to do with the structure of the infinitive sentences and was based on the observation that children tend to use earlier-learned forms more frequently. Would children produce fewer of the later-developing two-noun infinitive sentences in the conversational sampling than on the elicitation task? A second question involved the number of main verbs with which infinitives were produced. Since subcategorization for infinitives must be learned individually for each main verb, it would be expected to take place over time, with later learned verbs being less familiar. Would children produce a more limited range of main verbs in the conversational sampling than on the elicitation task?

In summary, the purpose of this study was to compare children's productions within two sampling conditions, conversational discourse and a structured elicitation task, for (1) the number of two-noun infinitives and (2) the range of main verbs with which infinitives were produced.

METHOD

Subjects

The subjects were 25 children between the ages of 3;7 and 5;4 with a mean age of 4;3. All of the children were monolingual English-speaking from white middle-class families and were recruited from nursery school programs in suburban New Jersey. The children all achieved scores within the normal range on Developmental Sentence Scoring (Lee, 1974), a norm-referenced measure of language production. Mean length of utterance (MLU) for each child was greater than 5.0. Normative data available from Miller (1981) indicated that, at this MLU, over 90% of children produce single-noun infinitives and at least 50% of children produce two-noun infinitives within a 15-min conversational sample. It was, therefore, expected that all of the children in the current project would produce some infinitives in their conversational samples.

Procedure

Each child was seen four times, although only the first two sessions are included in the current report. During the first session, a conversational language sample was elicited. The second session involved the administration of a story completion task for eliciting productions of sentences with infinitival object complements. It did not seem likely that merely observing and taping a conversational sample would influence production of a specific form on the elicitation task. The elicitation task, therefore, always followed the conversational sampling so that the consolidated opportunities for producing a single sentence form on the elicitation task would not influence the children's usual language production during conversation.

Conversational Sampling. A 30-min language sample was elicited during a conversation with the mother at the child's home. For 22 of the children, the conversation was primarily about nonpresent referents and events. For the other five children, the majority of utterances were about an ongoing activity involving play with toys or looking at picture books.

Elicitation Task. The elicitation task provided 30 opportunities to produce infinitives within a 30-min session. To provide the contexts for eliciting the target sentences, stories were developed. Each story consisted of several simple sentences so that the infinitive form was not modeled by the examiner. Presentation of the story involved the examiner's telling the story while simultaneously demonstrating the actions in the story. At the end of each story, the examiner started the target sentence by stating the sentence subject and main verb. The examiner then asked the child to complete the story and restarted the target sentence, producing just the sentence subject with rising

intonation. Following the child's production, the examiner directed the child to act out the utterance.

Story contexts were developed for each of two possible meanings. In one meaning, the actor of the main verb (the sentence subject) was also intended to be the actor of the complement verb (the infinitival subject). This context will be referred to as the same-actor context. For the second meaning type, the actor of the complement verb was intended to be someone other than the sentence subject. This context will be referred to as the different-actor context. Sample stories for each context are provided in Appendix A.

Three characters were used for the stories. The dolls included two Sesame Street characters, Ernie and Bert, and Mickey Mouse. A set was prepared to provide the props for the stories. A complete description of the task is given in Eisenberg (1989).

The main verbs that can take infinitival complements differ from each other in some important ways. These lexically specific properties are listed and illustrated in Table I. One difference has to do with subcategorization for object noun phrases in addition to the infinitival complement. Infinitive-taking verbs that are transitive can appear in sentences with just the infinitival object complement. Infinitive-taking verbs that are ditransitive can (and, for some verbs, must) take an object noun phrase as well. A second difference relates to the nature and interpretation of the infinitival subject. Most infinitival complements have a phonetically null subject, called PRO, but infinitives with some verbs have lexically specified subjects. Where there is a PRO subject, that subject must get its reference from somewhere. For most two-noun infinitives, the PRO infinitival subject corefers with the object noun phrase. This is referred to as object-controlled. For most single-noun infinitives and some exceptional two-noun infinitives, the PRO infinitival subject is coreferential with the main clause subject. These infinitives are, therefore, referred to as subject-controlled. There are also some single-noun infinitives that do not corefer with the main clause subject but, instead, are assigned reference based on the discourse context. These infinitives are termed uncontrolled. Based on these properties, Eisenberg (1989) suggested five sentence frames that infinitive-taking verbs could enter into. These sentence frames are listed in Fig. 1. The elicitation task included verbs that could enter into each of these sentence frames.

Five of the main verbs included on the elicitation task—*want*, *like*, *tell*, *try*, and *ask*—were reported among the infinitive-taking verbs produced by 2-year-old children by Bloom et al. (1984) and so were considered to be early-appearing. Two other verbs—*pretend* and *say*—were reported by Limber (1973) among the complement-taking verbs used by 2-year-olds, although they were not reported among the early-appearing infinitive taking

Table I. Lexically Specific Properties of Infinitive-Taking Verbs[a]

Properties	Categories	Examples
Transitivity	Transitive	*Mickey tried to swim*
	Ditransitive	*Mickey told Ernie to swim*
Infinitival subject	PRO	*Mickey told Minnie* [PRO *to swim*]
	Lexical	*Mickey wanted* [*Minnie to swim*]
Control of PRO	Subject controlled	*Mickey*$_i$ *promised* (*Minnie*$_j$) [PRO$_i$ *to swim*]
	Object controlled	*Mickey*$_i$ *told Minnie*$_j$ [PRO$_j$ *to swim*]
	Uncontrolled	*Mickey*$_i$ *said* [PRO$_j$ *to swim*]

[a] PRO = phonetically null subject.

single-noun sentences

a) transitive subject controlled — N_i-V-[PRO_i-to-V]
Mickey wants to swim

b) uncontrolled transitive — N_i-V-[PRO_j-to-V]
Mickey says to swim

two-noun forms

c) transitive with lexical subject — N_i-V-[N_j-to-V]
Mickey wants Ernie to swim

d) ditransitive object controlled — N_i-V- N_j-[PRO_j-to-V]
Mickey tells Ernie to swim

e) ditransitive subject controlled — N_i-V-N_j-[PRO_i-to-V]
Mickey promises Ernie to swim

Fig. 1. Sentence frames for infinitive-taking verbs. N = noun; V = verb; PRO = phonetically null subject.

verbs by Bloom et al. (1984). These and the remaining four main verbs that have not been reported for 2-year-olds—*force*, *beg*, *promise*, and *threaten*—were considered to be later-appearing. Each main verb was included in both same-actor and different-actor story contexts.

All of the complement verbs (the verbs targeted to appear in the infinitival clause) were selected from lists of verbs produced by 1- and 2-year-old children in single-clause utterances (Bloom, 1970; Bowerman, 1973) to ensure familiarity. These included intransitive verbs—*fall*, *sleep*, *stand up*, and *swim*—and transitive verbs—*carry*, *find*, *hug*, and *pick up*.

Statistical Analysis

An analysis of variance could not be conducted because the large variances within each sampling condition would have obscured any difference between the two conditions. Instead, a nonparametric procedure was used

to compare the scores (for example, number of two-noun infinitives) for the two sampling conditions. For each child, the number of two-noun infinitives produced in the conversational sampling condition was subtracted from the number produced on the elicitation task. If a child produced more two-noun infinitives in the elicitation condition, the difference was positive. Cases in which a child produced more two-noun infinitives in the conversational condition gave a negative difference. Since we predicted that the children would produce more two-noun infinitives on the elicitation task, we set up the hypothesis that more of the differences would be positive (or conversely that fewer would be negative). The Wilcoxen *t* test was used to examine this hypothesis (Heiman, 1992).

RESULTS

Only infinitives that had both a main verb and a complement verb were included in the analysis. Utterances such as *I just don't want to* or *Ernie to pick up Mickey* were, therefore, excluded from the transcripts. All other infinitives produced during the conversational sampling were included. A decision had to be made about the inclusion of utterances on the elicitation task. Some items were regiven if the child failed to act out the sentence or acted out the sentence in a way that did not match the story. For the current analysis, only the utterances produced on the first administration of an item were included. Stromswald (in press) has cautioned against setting criteria for utterance inclusion that would favor the predictions to be tested. Selecting only the first utterance on an item was a conservative strategy to avoid biasing the results in favor of the elicitation task. Including both productions would have inflated the number of infinitive productions. Including the second trial would have resulted in a larger number of two-noun forms.

Number of Infinitive Sentences

The children produced 355 infinitives during the conversational sampling. Of these, 322 (91%) were direct object complements of transitive verbs. The remaining infinitives included 11 subject complements of the copula (3%), 13 abbreviated *in order to* clauses (4%), and nine infinitival relatives modifying an indefinite pronoun (2%). It is the complement forms that are of interest for the current report since the elicitation task was designed only to elicit those infinitive forms. The elicitation task yielded 485 infinitival object complements.

Of the object complements produced during the conversational language sampling, 306 (95%) were single-noun sentences of the form [Verb-

to-Verb] such as *I want to put it on Tina* and 16 (5%) were two-noun sentences of the form [Verb-Noun-*to*-Verb] such as *I'm telling them not to eat no more of my lifesavers*. On the elicitation task, there were 318 (66%) single-noun sentences and 163 (34%) two-noun forms. There were also two productions of an infinitival passive. A larger number and higher percentage of two-noun infinitives were thus produced on the elicitation task than in the conversational sampling.

The number of infinitives produced by each child is shown in Table II. Single-noun infinitival object complements were produced by all of the children in both sampling conditions. The number of single-noun forms produced was not significantly different between the two sampling conditions ($T_{obt} = 131$; $n = 23$). Ten of the children produced more single-noun forms in the conversational sampling and 14 of the children produced more single-noun forms on the elicitation task.

The two-noun object complements showed a very different picture. The children produced more two-noun forms on the elicitation task than in the conversational sampling ($T_{obt} = 0$, $p < .01$; $n = 25$). All of the children who produced two-noun infinitive sentences in the conversational sampling produced more tokens of this sentence form on the elicitation task.

Rather than just looking at the number of infinitives produced, we might want to consider some cutoff criterion for productivity. Such a criterion would constitute evidence that a child has established a systematic pattern (Lahey, 1988). Lahey suggested a criterion of four different examples for a 1-hour sampling session as strong evidence for achievement of productivity, and three different examples as weak evidence. Since the samples for this study were only ½ hour in length, Lahey's weak criterion was applied.

All of the children met this productivity criterion for the single-noun infinitive form in both sampling conditions. For two-noun infinitives, 22 of the children met this productivity criterion on the elicitation task compared to only one child in the conversational sampling. Only nine of the children produced any two-noun forms in the conversational sampling condition, and no child produced more than three of these sentences (the minimum for productivity). In contrast, all of the children produced at least one two-noun form on the elicitation task, and 20 of the children produced at least four of this sentence form (meeting Lahey's stronger productivity criterion).

Main Verbs

The number of main verbs with which infinitives were produced is shown in Table III. Only main verbs with which each infinitive form would be grammatical in adult grammar were counted. This decision favored the conversational sampling and was aimed at limiting any bias toward the predicted outcome (as per Stromswald, in press).

Table II. Number of Infinitives Produced in the Conversational Sampling (C) and on the Elicitation Task (E)[a]

Name	Age (years; months)	All infinitives		Object complements		NV-*to*-V		NVN-*to*-V	
		C	E	C	E	C	E	C	E
Chris	3;7	9	19	8	19	5	9	3	10
Danny	3;8	11	23	10	23	10	14	0	9
Adira	3;8	10	15	10	15	10	14	0	1
Todd	3;8	14	10	13	10	13	7	0	3
Joel	3;9	13	16	13	16	11	11	2	5
Jennifer	3;10	9	21	8	21	8	14	0	7
Jeri	3;10	7	29	7	29	7	28	0	1
Laura	3;10	18	10	18	10	16	6	2	4
Noah	3;11	9	20	9	20	8	13	1	7
Alice	4;0	11	20	11	20	11	15	0	5
Donna	4;1	11	25	10	25	8	20	2	5
Kalman	4;1	7	18	4	18	3	13	1	5
Ron	4;2	13	21	13	21	13	15	0	6
Sarah	4;2	11	10	10	10	10	4	0	6
Sally	4;4	19	25	17	25	15	10	2	15
Paul	4;5	37	17	35	17[b]	33	10	2	6
Robin	4;6	15	16	15	16	14	6	1	10
Kelly	4;6	6	25	4	25	4	23	0	2
Debbie	4;8	19	24	15	24	15	9	0	15
Jessie	4;10	12	19	12	19[b]	12	12	0	6
Bonnie	5;2	29	15	25	15	25	5	0	10
Judy	5;2	12	15	12	15	12	7	0	8
Colleen	5;3	11	22	8	22	8	13	0	9
Jack	5;3	30	27	24	27	24	19	0	8
Justin	5;4	12	23	11	23[b]	11	18	0	4
Total		355	485	322	485	306	318	16	163
Mean		14.2	19.4	12.9	19.4	12.2	12.7	0.6	6.5
Standard deviation		7.6	5.2	6.9	5.2	6.7	5.8	1.0	3.6

[a] NV-*to*-V = Noun-Verb-*to*-Verb; NVN-*to*-V = Noun-Verb-Noun-*to*-Verb.

[b] This number includes one passive sentence.

Overall, the children produced single-noun infinitives with more main verbs on the elicitation task than in the conversational sampling ($T_{obt} = 47.5$, $p < .01$; $n = 23$). Seventeen of the children produced single-noun infinitives with more main verbs on the elicitation task and six of the children produced single-noun infinitives with more main verbs in the conversational sampling. For two-noun infinitives, the children also produced more main verbs on the elicitation task than in the conversational sampling. This was the case for all of the children ($T_{obt} = 0$, $p < .01$; $N = 25$) and for the nine children

Table III. Number of Different Verbs Produced in the Conversational Sampling (C) and on the Elicitation Task (E)[a]

Name	Age (year; month)	NV-*to*-V		NVN-*to*-V	
		C	E	C	E
Chris	3;7	2	3	2	5
Danny	3;8	4	7	0	6
Adira	3;8	4	6	0	1
Todd	3;8	4	3	0	2
Joel	3;9	7	5	2	4
Jennifer	3;10	4	7	0	5
Jeri	3;10	3	9	0	1
Laura	3;10	4	4	2	3
Noah	3;11	5	6	1	5
Alice	4;0	5	7	0	2
Donna	4;1	3	8	2	4
Kalman	4;1	2	7	1	4
Ron	4;2	2	7	0	6
Sarah	4;2	4	3	0	3
Sally	4;4	5	6	1	9
Paul	4;5	5	4	1	4
Robin	4;6	8	5	1	7
Kelly	4;6	3	9	0	2
Debbie	4;8	4	5	0	8
Jessie	4;10	5	7	0	4
Bonnie	5;2	4	2	0	5
Judy	5;2	5	5	0	5
Colleen	5;3	4	7	0	7
Jack	5;3	5	8	0	7
Justin	5;4	5	8	0	2
Mean: all children		4.3	5.9	0.6	4.4
Standard deviation		1.9	3.7	0.6	4.5

[a] This includes only verbs with which the form would be grammatical to adults. NV-*to*-V = Noun-Verb *to* Verb; NVN-*to*-V = Noun-Verb-Noun-*to*-Verb.

who produced two-noun infinitives in their conversational samples (T_{obt} = 0, $p < .01$; $n = 9$). All of the children produced two-noun infinitives with more main verbs on the elicitation task than in the conversational sampling.

A productivity criterion of three main verbs (again following Lahey's suggestion for the weak criterion) was applied to the data. Most of the children—22 on the conversational sampling and 24 on the elicitation task—met this productivity criterion of three different main verbs for the single-noun infinitives. For two-noun infinitives, 19 of the children met this productivity criterion on the elicitation task. In contrast, none of the children met this criteria for two-noun infinitives in the conversational sampling. No

child produced two-noun infinitives with more than two main verbs in the conversational sampling condition.

Table IV lists the main verbs used with infinitival object complements during the conversational sampling. The most commonly used verbs were the intentional verbs *go*, *want*, and *have*, each used by at least 20 of the children. The next most common main verbs, used by between six and nine of the children, included another intentional verb, *got*, and two additional verbs included by Brown (1973) among the semi-auxiliaries, *try* and *like*. Utterances with these six verbs accounted for 88% (288) of the infinitive sentences produced. These verbs have all been reported among the infinitive-taking verbs produced by 2-year-old children (Bloom et al., 1984), and so can be viewed as early-appearing. Of the 18 verbs produced with infinitives in the conversational sampling, only five (*allow*, *love*, *learn*, *help*, and *mean*) were not among the verbs reported by Bloom et al. (1984) in the infinitives of 2-year-old children, and none of these five verbs was produced by more than three of the children in the current study. The main verbs used by 3- to 5-year-old children during conversational speech in the current study was, thus, not appreciably different than that reported previously for 2-year-old children.

As indicated above, there were 11 main verbs included on the elicitation task. The number of utterances produced with each verb and the number of children producing each verb are shown in Table V. The five early-appearing main verbs reported by Bloom et al (1984) for 2-year-olds were produced with infinitives by at least 20 of the children. All but one of the remaining later-appearing verbs were produced with infinitives by at least half of the children.

DISCUSSION

As anticipated, both sampling conditions yielded a large number of infinitive sentences. The children produced many fewer two-noun infinitives during the conversational sampling than on the elicitation task. Many of the children produced infinitives with more main verbs on the elicitation task as well. This latter result is striking because the number of possible main verbs was necessarily limited in the elicitation condition. More interesting, though, is that the main verbs used in the conversational samples were almost exclusively early-appearing verbs, mostly verbs in catenative form. The picture that comes out of the conversational sampling looks very little different from that previously reported for 2-year-old children. Based only on the conversational data, the conclusion would seem to be that two-noun infinitives are still just emerging in the speech of children until after the age

Table IV. Number of Infinitives Produced with Each Main Verb in the Conversational Sampling

Verb	Number of utterances	Number of children	Produced with infinitives by 2-year-olds
go	92	23	Yes
have	62	21	Yes
want	96	20	Yes
got	17	9	Yes
try	8	7	Yes
like	7	6	Yes
use	7	4	Yes
suppose	10	3	Yes
tell	5	3	Yes
know how	4	3	Yes
allow	3	3	No
forget	2	2	Yes
love	2	2	No
need	2	2	Yes
learn (how)	2	1	No
mean	1	1	Yes
show how	1	1	Yes
help	1	1	No

Table V. Number of Infinitives Produced with Each Main Verb in the Elicitation Task

Verb	Number of utterances	Number of children	Produced with infinitives by 2-year-olds
want	55	25	Yes
try	71	25	Yes
like	40	23	Yes
tell	50	23	Yes
force	58	22	No
beg	32	21	No
ask	30	20	Yes
promise	38	17	No
say	40	16	No
threaten	36	14	No
pretend	28	12	No
has	2	2	Yes
go	1	1	Yes

of 5 and that children up to 5½ years of age show only limited subcategorization of main verbs for infinitives.

This conclusion is contradicted by the data from the elicitation task in several ways. (1) There were 16 children who did not produce any two-noun infinitives in the conversational sampling, thus appearing to have no knowledge of the two-noun form. On the elicitation task, however, 13 of these children produced two-noun infinitives with at least two main verbs, with 10 meeting the productivity criterion of three main verbs for the two-noun form. (2) There were five other children who, in the conversational sampling, produced two-noun infinitives only with transitive main verbs, such as *want*, that take an infinitive with a lexical subject. They, thus, appeared to lack knowledge of ditransitive infinitives. On the elicitation task, however, all five children produced two-noun infinitives with ditransitive verbs, such as *tell* or *ask*, as well as lexical subject transitive verbs. (3) There were 20 children whose conversational samples included infinitives with only early-appearing main verbs, thus appearing to have limited subcategorization of main verbs for infinitives. On the elicitation task, however, 18 of these children produced infinitives with at least three of the six later-appearing verbs included on that task, with 13 producing infinitives with five or six of these later verbs. In light of the more diverse and advanced productions on the elicitation task, the production limitations demonstrated in the conversational sampling cannot be attributed to lack of knowledge about infinitives but must relate to sampling factors.

Data from Ron, aged 4;2, illustrate this. The utterances produced by Ron in both sampling conditions are listed in Fig. 2. In the conversational sampling, Ron produced only single noun infinitives with the main verbs *go* and *want*. These verbs were produced in their catenative forms as *gonna* and *wanna*. One view of the catenative verbs is that they function as modal verbs rather than as true complement-taking verbs (Limber, 1973; Miller, 1981). Menyuk (1969) has suggested that these forms can be regarded as true complements if infinitives are produced with other main verbs and if two-noun infinitives are produced. Ron, however, did not do either of these things. It might be concluded, based only on the conversational data, that true infinitives had not yet emerged in Ron's grammar. On the elicitation task, however, Ron produced single-noun infinitives with nine main verbs and two-noun infinitives with five verbs, including both lexical subject transitive verbs (*want* and *like*) and ditransitive verbs (*tell*, *force*, and *ask*). The conversational data, thus, underrepresented Ron's knowledge of infinitives.

When syntactic structures are produced infrequently, or not at all, we would like to be able to determine when this does relate to limitations in grammatical knowledge. As shown above, the conversational sampling data did not provide the basis for distinguishing between sampling factors and lack of grammatical knowledge as the basis for limited production of two-noun infinitives. The elicitation task, however, does provide data that can

i. conversational sampling

we gonna paint them
I gonna make orange
I'm gonna put uh, I'm gonna put it...um doggies
I don't wanna
I don't want, I'm not gonna talk
I'm gonna make it pop
I'm going back here...to pop it
no, I'm gonna go play with Daddy
I'm go play with Daddy
I wanna be, I wanna be on peewee team
I wanna sit down
no, I don't wanna talk
I wanna play with him
I wanna go play with him now
I don't like to

ii. elicitation task

(Ernie) wants to stand up
(Bert) wants Mickey to find Ernie
(Bert) likes to carry, Bert likes Mickey carry him
(Mickey) likes to swim
(Ernie) forces to go in the pool
Mickey forces Ernie to fall into the water [Bert]
(Bert) forces to hug Ernie [Mickey]
(Mickey) tells to pick up Ernie
(Bert) tells to pick up Mickey [Ernie]
(Ernie) tells to Ernie, just to Bert to go to bed
(Mickey) tries to find Bert
(Ernie) tries to stick his foot out and Ernie will still fall into the water
(Bert) tries to fall and trip into the water
(Ernie) begs to swim
Ernie begs for Mickey to pick him up
(Bert) asks to pick up Ernie
(Mickey) asks Ernie to stand up
(Mickey) promises to go to bed
(Ernie) promises to carry Mickey [Mickey]
(Ernie) says to hug him [Bert]
(Bert) says to pick up Ernie

Subject NPs in parenthesis were not repeated by the child following the examiner's starting of the sentence
Underlined NP or NP in brackets represents the actor designated to perform the complement verb action

Fig. 2. Infinitive sentences produced by Ron (age 4;2). NP = noun phrase.

speak to this question. In this task, the children were presented with different-actor story contexts that provided opportunities for producing two-noun infinitives. We can, therefore, look at what a child actually produced in place

of the two-noun infinitives. The elicitation task also provided opportunities for the children to demonstrate the meanings of their infinitive sentences. We can, therefore, also look at the mapping between form and meaning in evaluating a child's knowledge about two-noun infinitives.

Use of this elicitation data to make conclusions about lack of knowledge of two-noun infinitives will be illustrated for Jeri, aged 3;10. In the conversational sampling, Jeri produced no two-noun infinitives. The utterances elicited for different-actor story contexts are listed in Fig. 3. Jeri's only two-noun infinitive was with the main verb *want*, a transitive sentence frame with a lexical complement subject. She produced single-noun infinitives with the main verbs *tell*, *force*, *try*, *pretend*, *promise*, and *say*. Note that the single-noun form is ungrammatical in adult grammar with the verbs *tell* and *force*. Jeri acted out all of these sentences by having a nonmentioned agent perform the complement verb action. Her demonstrations were consistent with the story contexts, but note that this form-meaning mapping is only allowable in adult grammar with the verb *say*. She, therefore, did not produce ditransitive forms when they were called for and she allowed single-noun infinitives to be uncontrolled for main verbs that take infinitives with a PRO subject. These data from the elicitation task support the conclusion that Jeri's grammar lacked the ditransitive infinitive form, although transitive infinitives with a lexical subject had emerged. No such conclusion was possible from the conversational data.

The conversational data also obscured differences among the children in their knowledge of two-noun infinitives. This can be illustrated by comparing three children whose infinitive productions were comparable for the conversational condition but differed on the elicitation task. In the conversational condition, these three children produced single-noun infinitives with the same set of early-appearing verbs—*go*, *want*, *like*, and *have*—and produced no two-noun infinitives. The utterances elicited for different-actor story contexts are listed in Fig. 4.

Adira, aged 3;8, produced single clause utterances with the verbs *force* and *threaten*. (Note that she acted out the intended complement verb.) With the verbs *teli* and *ask*, she produced ungrammatical quotation form utterances that lacked an object noun phrase. She produced single-noun infinitives with the verbs *want* and *say*, acting these out by having a nonmentioned agent perform the complement verb action. (Note again that this is allowable in adult grammar only for the *say* sentence.) These utterance forms have all been reported as earlier-appearing than the ditransitive infinitives. Adira also produced some interesting alternative forms. She produced a causative construction with *try*, involving a single-noun infinitive with a change of focus from that suggested by the story to the main clause actor rather than the complement clause agent. She produced an incomplete tensed complement

utterance	enactment
(Bert) wants Mickey to find Ernie	Mickey finds Ernie
Bert tells to pick him up	Ernie picks up Mickey
Mickey forces to do	Bert falls off steps
Ernie tries to fall into the water	Bert falls into pool
(Bert) pretends to pick him up	Ernie picks up Mickey
Ernie promises to hug him	Mickey hugs Bert
Mickey threatens to do it, to make him fall	Mickey pushes Bert; both Bert & Mickey fall
(Mickey) says to go in	Ernie goes into pool

Fig. 3. Utterances produced by Jeri (age 3;10) in different-actor story contexts.

with *promise*, although she had produced single-noun infinitives with this verb for the same-actor story contexts. Her one production of a two-noun infinitive actually involved a lexical substitution from the targeted main verb *beg* to *want*. These utterances seem to be efforts to code a meaning consistent with the story in the absence of an available infinitive form for these verbs. Taken together, this set of utterances provides evidence that the ditransitive infinitive form is not available in Adira's grammar whereas two-noun infinitives with lexical subjects may be emerging.

In contrast, both Jennifer, aged 3;10, and Sarah, aged 4;2, each produced ditransitive infinitives with three main verbs. The elicitation task, thus, revealed a difference between Adira and the other two children regarding knowledge of ditransitive infinitives. The elicitation task showed another difference as well for transitive infinitives with lexical subjects. Jennifer produced two such infinitives with *want* and *like*, whereas Sarah produced a conjoined sentence when this form was targeted. It seems likely that Sarah does not have infinitives with lexical subjects within her grammar, whereas both Jennifer and Adira showed knowledge of this form. Jennifer thus showed knowledge on the elicitation task of both ditransitive infinitives and transitive infinitives with lexical subjects. Sarah showed knowledge of only ditransitive infinitives, and Adira of only lexical subject transitive infinitives. (See Eisenberg & Cairns, 1994, for a discussion of these alternative paths in the development of infinitives.) The infinitive productions of these three children, thus, looked very different on the elicitation task although there was no such difference in conversation.

The current report has demonstrated that conversational language sampling may be a less adequate means than a structured elicitation task for investigating the development of infinitives in child grammar. Evidence from the elicitation task revealed that the children had knowledge of two-noun infinitive forms and had subcategorized a wide range of main verbs for

Adira (3;8)

utterance	enactment
(Bert) wants to find Ernie	Mickey finds Ernie
(Ernie) tells "you go to sleep"	Bet gets into bed
(Mickey) forces Bert	Bert falls off steps
(Ernie) tries to kick Bert in the water	Ernie kicks Bert & Bert falls
(Mickey) asks "get off my foot"	Ernie stands up
(Ernie) wants Mickey to carry Bert	Mickey carries Bert
Ernie promises Mickey can	Mickey hugs Bert
(Mickey) threatens Ernie	Ernie falls off steps
(Mickey) says to swim in the water	Ernie swims in pool

Sarah (4;2)

utterance	enactment
Bert wants him and he finds him	Mickey finds Ernie
(Mickey) likes him. He wants him to come in the pool	Ernie goes into the pool
Bert tells him to pick him up	Ernie picks up Mickey
(Mickey) forces him to go in	Bert falls off steps into pool
Ernie tries to but he can't stick his foot out	Bert falls into pool
Mickey asks Ernie to get off	Ernie stands up (gets off Mickey's foot)
Ernie begs him and he says yes	Mickey carries Bert
Ernie promises that he can hug him	Mickey hugs Bert
(Ernie) says "hug him"	Bert hugs Mickey

Jennifer (3;10)

utterance	enactment
Bert wants Mickey to find Ernie	Mickey finds Ernie
(Mickey) likes Ernie to swim	Ernie swims
Bert tells Ernie to pick him up	Ernie picks up Mickey
Mickey forces him to go in the water	Bert goes into pool
Ernie tries to make him go in the water	Bert goes into pool
Mickey asks Ernie "sit up"	Ernie stands up (gets off Mickey's foot)
Ernie promises that he can hug Bert	Mickey hugs Bert
Mickey threatens him to fall	Ernie falls off the steps
Mickey says, "swim, Ernie"	Ernie swims

Fig. 4. Utterances by Adira, Sarah, and Jennifer in different-actor story contexts. Numbers in parentheses following names indicate ages in years and months.

infinitives. This degree of knowledge was not evidenced in the conversational sampling.

Conversational language sampling may, thus, underrepresent grammatical knowledge. Children may fail to produce certain structures or fail to achieve productivity with a particular structure within a conversational sample for reasons that are not related to lack of grammatical knowledge. When children do not produce a particular form or produce that form infrequently, the conversational context does not provide a means for determining whether

the limited production is, in fact, due to lack of grammatical knowledge. Finally, we might make inaccurate comparisons among children based on conversational sampling alone, assuming comparable knowledge when this is not the case.

One advantage of the elicited production task is in providing specific and identifiable opportunities for the child to produce the structure of interest. In fact, this feature can be incorporated into conversational sampling, although it would lessen the degree of "spontaneity." That is, it should be possible to insert into a conversational interaction both verbal and nonverbal stimuli that would provide an appropriate and compelling context for production of specific syntactic structures. The difficulty in implementing this would be in ensuring that the child's attention was mobilized to that stimuli so that nonproduction of the targeted form would not be due to performance factors such as inattention. This performance limitation could also occur on a highly structured task, such as the story completion task used here, but such lapses in attention are more readily detectable.

Conversational language sampling has been a rich source of data about child language and will continue to be so. The results of this analysis suggest, however, that this data source must be used cautiously and may not be appropriate as the sole methodology for studying all aspects of child language. In addition, when conversational data are used, attention needs to be paid to developing a sampling context that is tailored for the specific structure of interest. Generic language samples may thus be of limited use in investigating children's linguistic knowledge.

APPENDIX A: SAMPLE STORY CONTEXTS

Examiner speech is in italics; examiner actions are in capitals

i. Same-actor story:
   Ernie wants—Ernie stands up
      Story telling and demonstration:
         HAVE ERNIE AND MICKEY SITTING TOGETHER; HAVE BERT STANDING, FACING THEM
         Ernie, Mickey, and Bert are playing school. Bert is the teacher.
         RAISE ERNIE'S HAND
         Ernie raises his hand.
         MAKE ERNIE TALK TO BERT
         "*Can I stand up*?"
      Starting the target sentence:
         Ernie wants . . .

Requesting story completion:
You finish the story.
Restarting the target sentence:
Ernie . . .↑

ii. Different-actor story:
Bert wants—Mckey finds Ernie
Story telling and demonstration:
HAVE BERT AND MICKEY STANDING TOGETHER; PUT ERNIE UNDER THE STEPS
Ernie is hiding.
MAKE BERT LOOK FOR ERNIE
Bert can't find him.
MAKE BERT TALK TO MICKEY
"*Please find Ernie for me.*"
Starting the target sentence:
Bert wants . . .
Requesting story completion:
You finish the story.
Restarting the target sentence:
Bert . . .↑

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