PICK IT UP: A LOOK AT REFERENTIAL DEVICES IN ESTONIAN CHILD-DIRECTED SPEECH

Virve-Anneli Vihman
University of Tartu

Abstract. This paper compares the forms of expression of core verbal arguments in Estonian child-directed speech (CDS) with those in Estonian speech between adults (ADS). The data, consisting of nearly 600 utterances, is taken from a mother speaking to her two-year-old child, and two adult women speaking to each other. The analysis confirms the observation that one-on-one conversation with toddlers includes a reduced number of declarative sentences (43% vs. 62.5% in the ADS sample), in favor of imperatives and interrogatives. Leaving out the unexpressed subjects of imperatives, we find that CDS contains 20% more overt arguments than ADS, and in the object argument role, nearly 30% more. Avoidance of ellipsis and a preference for lexical (rather than pronominal) noun phrases characterises the CDS in our sample; the data analysed support the principles of Preferred Argument Structure, aligning grammatical role, morphosyntactic form and pragmatic prominence, with some peculiarities accounting for the specific character of mother-child interaction.

Keywords: child-directed speech, reference, morphosyntactic form, Estonian, argument expression, preferred argument structure

DOI: http://dx.doi.org/10.12697/jeful.2015.6.2.03

1. Introduction

As much of the research on language acquisition, and particularly child-directed speech, has focussed on English and related languages (though exceptions include, e.g.: Bernstein-Ratner and Pye 1983, Choi 2000, Lieven and Stoll 2013, Ochs and Schieffelin 1994, Stoll, Abbott-Smith and Lieven 2009), there are gaps in the field regarding acquisition of languages with flexible word order, elaborate case systems, and extensive use of ellipsis (see Slobin et al. 2011). Languages in the Uralic family provide fertile ground for study in this regard. This paper examines the expression of core verbal arguments in one Estonian mother's speech to a child (aged 2;0), and compares the results with adult-to-adult Estonian spoken language data (adult-directed speech). In a language

with pragmatically driven word order, it is important to ascertain how variable the input a child hears actually is. For accessing basic argument structure, is the child required to make sense of the case system and fill in elliptical arguments or is the variability in argument structure modified and minimalised in the case of child-directed speech? The notion of Preferred Argument Structure may hold important cues to how children crack the code to syntactic structure in languages with variable word order and complex case systems. This paper reports findings from a preliminary analysis of data from Estonian mother and child interaction, providing a basis for further work in reference tracking and argument structure in the input speech to children acquiring Estonian.

1.1. Child-directed speech

As a child acquiring any language must base much of the learning process on the words and constructions s/he hears in the ambient speech, a characterisation of the input is important for any acquisition study (cf Huttenlocher et al. 2007, Hoff 2006). It is of particular importance in cross-linguistic research, where the researcher must tease apart the various possible sources of variability, accounting for both individual differences and cross-linguistic variation. Differences in children's paths of development regarding any particular grammatical feature may be related to differences in the structure of the language they are acquiring, to individual differences among the children, or to differences in the input. Hence, there is a great need for more data from typologically diverse languages, and more comparison across languages, both in acquisition research in general, as well as research on the input (see, e.g., Bowerman and Brown 2008, Lieven and Stoll 2009, Lieven 2010, Slobin 1985, Slobin et al. 2011).

Previous research has shown a close match between input speech and order of acquisition of linguistic elements (Huttenlocher et al., 2010), as well as showing that children have an early but only partial grasp of the typological features of their own language (e.g. Bowerman and Choi 2001). Various studies have underscored the causal role of input in acquisition and the role of statistical regularities in input (e.g. Huttenlocher et al. 2002, Ninio 2006). It has long been accepted that caregiver speech often differs from adult-directed speech in certain regular ways, including modulation of phonology, prosody, tempo, lexicon, phrasal and clausal syntax, and use of person marking (Soderstrom 2007).

Child-Directed Speech (CDS) in Estonian has been shown to conform to various features typical of caregiver speech cross-linguistically, such as modulation of vocabulary and frequent use of particular words and combinations (Argus 2010, Orusalu 1996). For this study, it is relevant that Estonian CDS has been characterised as featuring shorter, monoclausal utterances, often with verb ellipsis and much repetition. Regarding reference to argument structure participants, it has been noted that CDS includes the frequent use of proper names and third person singular forms to refer to first and second person, and the use of first-person plural marking to indicate second person singular (e.g. *lähme tuttu* 'let's go to sleep', Orusalu 1996).

In addition to characterising CDS in general, it is also important to note that studies indicate CDS modulation changes along with the child's development (e.g. Snow 1972), but this needs further study. In Estonian, for instance, Siska (2013) found a decrease in the use of imperatives in Estonian CDS across three periods of development of one child (based on the mean MLU of the child's utterances). The question of how much interaction can be traced between the child's advancing linguistic competence and the complexity of the input begs further study, but is beyond the scope of the current paper, which examines closely only one developmental stage and one mother-child dyad.

2. Issues for learnability in Estonian

The modulation of caregiver speech is motivated by various factors, including cultural, emotional and linguistic variables. While many aspects of CDS may prove to be helpful for language acquisition, some may actually pose problems, or prove to be neutral with regard to ease of acquisition (Newport, Gleitman and Gleitman 1977). Regarding the syntax of Estonian, some characteristics of the language which may pose challenges for the child acquiring the system include:

a. the elaborate case-marking system, including fourteen cases formed on the basis of a number of different, not necessarily transparent, morphological paradigms (see Argus 2009 for an overview of the morphophonological challenges of the nominal case system and its acquisition);
b. differential object and subject-marking: objects alternate between partitive case and genitive (singular) or nominative (plural nouns, certain sentence types) cases, while subject-like arguments, which

typically take nominative case, may also be found in partitive (e.g. existential, presentational, weather predicates), adessive (e.g. possessive and experiencer clauses) or allative (e.g. certain modal and cognitive clauses) case. Argus (2009) shows that the earliest nominal forms typically do not make the crucial distinctions used in object-marking, while an experimental pilot study (Argus 2008) suggests that even 7-year-olds have not fully achieved adult-like object case alternation;

c. pragmatically driven word order, which allows topicalisation and focussing based on constituent order, while the coding of grammatical roles relies on case-marking;
d. omission of salient referents: where the discourse or extralinguistic context supports the referential tracking of subject and object, both core arguments may be elided, and they often are (on ellipsis in Estonian: Erelt, Erelt and Ross 2007, Hint 2015 (this volume), Lindström 2001, on children's usage of ellipsis, see Allen, Skarabela and Hughes, 2008, Graf et al. 2014)

Hence, the child acquiring the syntactic system of Estonian has a number of issues to resolve, including expression of argument structure, coding of nominal arguments, and factors governing word order and the choice of referring expressions. The choice of referring expression is based on a mixture of features, including salience, definiteness, animacy and activation status (Pajusalu 2009). This paper examines the form of expression of core verbal arguments in speech to children in comparison with speech to adults, in order to gain a better understanding of the input upon which children base their initial formulations of argument structure, discourse pragmatics and basic syntax.

3. Preferred argument structure

As observed by Du Bois, Kumpf and Ashby (2003), despite the diversity of patterns of matching and mismatching between syntax, semantics and pragmatics both across languages and across constructions, there is a high correlation between grammatical role, pragmatic salience, and morphological form in actual online speech. The concept of Preferred Argument Structure (PAS) comes from the observation that lexical choice, referential form, and grammatical role tend to converge in certain patterns, even though each is independent of the other. PAS posits that speakers:

(a) avoid introducing more than one new argument per clause, with the corollary that they avoid more than one lexical argument per clause; and
(b) avoid using a new argument as the subject of a transitive clause (A); with the corollary that they avoid lexical A arguments.

This information may be used by speakers and hearers in ordinary speech processing, but in the acquisition of language it is likely to play a crucial role. These assumptions have been shown to be accurate for adult and child speech across languages (Allen and Schroder 2003, Clancy 2003, for a study on PAS applied to subjects in spoken Finnish, see Helasvuo 2003). However, to my knowledge, child-directed speech has not received attention in the PAS literature. In the context of CDS, Preferred Argument Structure may go further than offering a simplified system for on-line processing; principles of PAS may guide both caregivers and children in initially narrowing the array of possible constructions in the language to some simpler building-block constructions. In the context of caregiver speech, it is sensible to ask whether the basic tenets of PAS may play a role in overcoming the learnability problem. In order to address this, a first step is to analyse the structure of CDS in light of whether child-directed utterances are more in line with the expectations of PAS than adult-directed speech.

The context of recorded caregiver-child interactions is often limited to the two interlocutors, and the subjects of conversation are typically bounded by the immediate surroundings (Soderstrom 2007). Considering (a) the circumscribed context of interaction, (b) typical reference to shared visual information and (c) joint focus of attention, one might expect patterns of reference to reflect this high degree of shared information, and indicate high salience and accessibility of referents (Givón 1983). On the assumptions of accessibility hierarchies and findings from reference tracking in discourse (Ariel 1990, Gundel et al. 1993), this would lead us to expect a low usage of lexical noun phrases and a high use of ellipsis.

However, modulation of caregiver speech is determined not only by the circumscribed context of recording, but by the very nature of the interaction. This includes not just communicative intent (referential traceability, conveying a message optimally) but also sensitivity to the child's level of linguistic development. From this perspective, we would expect to see heightened clarity and simplicity in the child-directed speech of caregivers, though it is unclear how to define that (cf

Newport, Gleitman and Gleitman 1977). Ellipsis is likely to increase the effort on the part of the hearer, rather than aiding speech processing, so we might expect, rather, a decrease in ellipsis. On the assumption that explicitness increases clarity, then we would also expect an increase in lexical NPs. However, the aim of clarity is also assisted and supported by the circumscribed context and shared visual field, hence a decrease in ellipsis may, instead, be compensated by a higher use of pronouns rather than lexical NPs.

4. Method and data

For this study, one recording of an Estonian mother's speech to a child aged 2;0.14[5] was analysed. The corpus in question comprises "dense data" on one child, Andreas, whose language development is rather precocious. Aged just over two years, his mean length of utterance in this recording is 2.56. The recording contains a total of 449 child utterances and 347 caregiver (mother's) utterances. This study includes 308 caregiver utterances. For comparison, a sample of adult-directed speech of two female speakers was selected from the University of Tartu's Corpus of Spoken Estonian[6], from which 272 utterances were included in the analysis.

It would be useful in future research to compare more speakers, as well as comparing single speakers across the two interlocutor contexts, adult- vs. child-directed speech. While individual differences among adults are to be expected, however, they may also be less of an issue than we might guess. Studies on CDS indicate much repetition within speakers and similarities between speakers of the same language (e.g. Cameron-Faulkner, Lieven and Tomasello 2003, Stoll, Abbott-Smith, Lieven 2009). While the characteristics of Estonian CDS merit further study, and in particular the question of correlations between children's speech production and the input to which they are exposed, we can nevertheless learn something from the close study of one mother's speech to her two-year-old.

5 The child's age is given as years;months.days. The analysis was conducted on data available in the CHILDES database (MacWhinney 2000) in the Vija corpus (childes.psy.cmu.edu), collected by Maigi Vija, and the coding was done by Kriste Lauk for her final Bachelor's degree thesis at the University of Tartu (2013). I thank her for allowing me to use her data; it has been reanalysed for the purposes of the current investigation.

6 www.cl.ut.ee/suuline/Korpus

4.1. Coding

As the unit of analysis here is the verbal clause, from all the utterances in the recordings, we included only clauses containing an overt verb (following Allen and Schröder 2003). In addition, in this analysis, existential, non-canonical, and copula clauses were removed. According to Seil (2012), over 80% of clauses with a verb in Estonian caregiver speech were either transitive or intransitive (disregarding copula and non-canonical clauses). The clauses were coded manually for factors pertaining to the clausal level (1–7 below), and those associated with the core arguments (8–12). Lauk's (2013) thesis initially investigated word order variation in the CDS in comparison to ADS, and hence not all of the coding listed below was included in the present analysis.

Verbal clauses were coded for: (1) Clause type (declarative, interrogative, imperative, subordinate, relative); (2) Transitivity (transitive, intransitive); (3) Tense (past, present[7]); (4) Polarity (affirmative, negative); (5) Voice (active, personal passive, impersonal); (6) Person, as marked on the verb (first, second, third; singular, plural; impersonal); (7) Word order (various combinations of S, V, O, and X).

Core arguments of verbal clauses were coded for: (8) Grammatical role: (S – subject of intransitive, A – subject of transitive, O – object, Oblique); (9) Case (out of 14 cases, only five – nominative, partitive, genitive, adessive, allative – were used with core arguments in the utterances analysed here); (10) Morphological form (lexical, pronominal, ellipsis); (11) Person, as coded in the arguments (first, second, third; singular, plural; impersonal); (12) Animacy (human, animate, inanimate, unclear).

The coded data were then analysed for frequency and various co-occurrences. Results are presented in the next section.

5. Results and discussion

The analysis of our coded data focussed on frequency of various forms and co-occurrences of various conditions. The aim was to gain a clearer picture of the input speech the child needs to parse in order to acquire transitive and intransitive argument structure, and to investi-

7 Due to the dearth of compound (past or present) perfect verbs in the data coded, we do not consider them separately. Note, too, that Estonian does not mark future grammatically, and hence future is not included as a tense category.

gate to what degree caregiver speech differs from adult-directed speech. Note that the analysis includes just one mother's speech to her two-year-old child and is compared to different adult speakers, hence we cannot yet draw clear conclusions regarding whether this particular mother is modulating her speech when talking to her child, but on a general level, we can begin to paint a picture of what sort of speech the child is parsing in order to construct and develop his emerging grammar.

The results of the analysis are presented in figures showing a direct comparison of the child-directed and adult-directed speech. As shown in Figure 1, on the broadest level of sentence type classification, the input to children includes slightly more variation between sentence types than adult-to-adult speech. Whereas the ADS is heavily dominated by declaratives (62%), the CDS includes a proportionally greater amount of interrogatives and imperatives (about one quarter of the clauses for each type), at the expense of declaratives (43%).

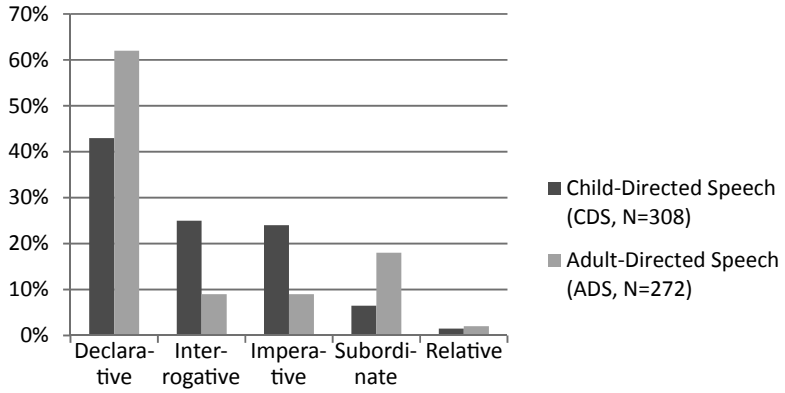

Figure 1. Clause distribution, according to sentence type.

5.1. Argument expression

This difference in clause type has effects on the expression of arguments as well, as imperative clauses typically do not include overtly expressed subjects. As mentioned above, argument ellipsis is common in ordinary spoken Estonian, especially with first and second-person subjects. First and second-person pronouns are inherently deictic, and depend on the extra-linguistic context for their interpretation. These are likely to be omitted in many languages, as they are highly salient as

discourse participants (Ariel 1990, Givón 1983, Gundel et al. 1993). In Estonian they are also usually marked with verbal inflection, with the exception of certain constructions, such as negative, (some) conditional and (some) experiencer clauses. Nevertheless, restrictions apply even on first and second-person ellipsis: Duvallon and Chalvin find that nearly half of all second-person singular verbs in their data (from the Corpus of Spoken Estonian) have zero subjects, while only 18% of first-person singular forms have zero subjects (2004: 272). In dialect data analysed by Lindström et al. (2009), first-person singular arguments are dropped in 11–54% of examples in Estonian dialects, exhibiting great variability.

Third-person referents are less likely to be omitted, requiring a strong context to support reference resolution. Third-person referents may also be dropped less often because of the possibility of clauses with 3sg verb inflection being interpreted as generic, "zero-person" clauses, which bear no overt, distinguishing marking apart from the default, 3sg verbal inflection. Finally, it should be noted that negation may affect subject omission, as negative verbs are not marked for person. Subject pronouns have been shown to be used more frequently in negative than affirmative clauses in online MSN chats among friends, for instance (Sepp 2010). Object ellipsis also occurs in Estonian, particularly in contexts in which the object referent is salient and clear to speaker and hearer.

For the child acquiring the language, ellipsis of core arguments presents a challenge and may increase the effort required for parsing. Nevertheless, omission of arguments may also provide the child with information about argument structure and core participant relations, especially once the child has gained enough competence to be attuned to information from verbal inflection. Hence, we turn to the data to compare the form of expression of core arguments in both sets of data. Figure 2 shows the morphological realisation of subject and object arguments in both CDS and ADS.

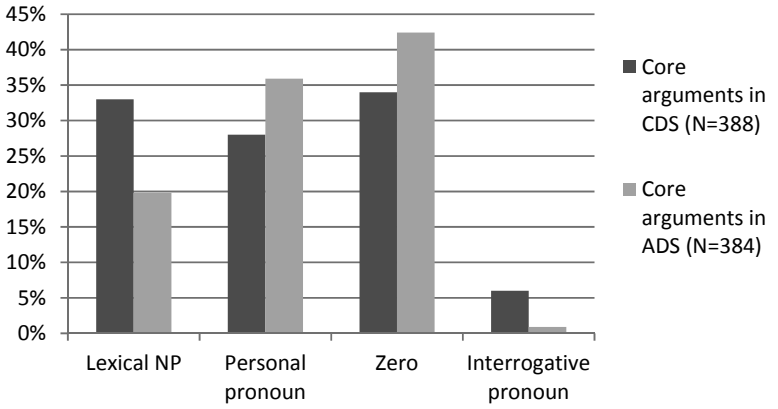

Figure 2. Morphological form of core arguments in CDS and ADS.

We can see in Figure 2 that, whereas the adult-directed speech leans toward zero expression of core arguments (42.4% of all core arguments were elided), only about a third (33.8%) of the core verbal arguments in child-directed speech are omitted. What's more, despite the circumscribed context, highly familiar surroundings and topics of discussion, the 8.6% difference in proportion of zero arguments between the two datasets is compensated for in CDS not by pronouns (only 27.6% in CDS), but rather by full noun phrases, which are likewise used in a third (32.7%) of all core argument slots.

Hence, lexical noun phrases are used much more in speech directed to children (32.7% in our data) than to adults (19.8%), complemented by lower use of both ellipsis and pronouns than in ADS. These may initially seem like surprising results, considering the context of recordings with few unknown or cognitively inaccessible referents. Is the caregiver using lexical nouns and noun phrases in the interest of clarity, i.e. detailing names in full rather than using elliptical forms of reference? Can we interpret the use of lexical noun phrases as somehow being in the service of a simplified form of discourse in the interest of easing child comprehension? Omitted arguments do not provide overt material to learn from, but the tendency to omit subjects more often than objects may nevertheless provide a cue to the asymmetry present in argument structure. Let us investigate the data on core argument expression in more detail.

Figure 3, below, shows the distribution of core arguments present in the analysis according to grammatical roles. The analysis includes

only the single argument of intransitive verbs and the two arguments of transitive verbs, hence S, A, and O are included in the figure, which shows the proportion of overt and omitted arguments in CDS and ADS, respectively.

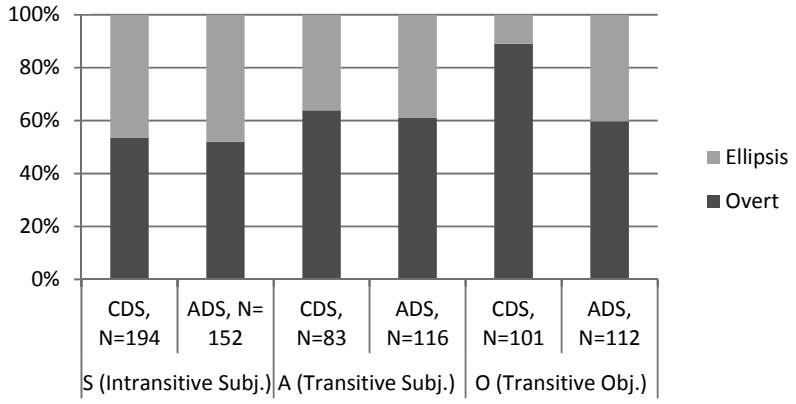

Figure 3. Proportion overall of overt and omitted core arguments, by grammatical role, in CDS and ADS.

It is clear from this figure that in adult-directed speech, the three core grammatical arguments are omitted in roughly similar proportions, from 38% to 46% across the three grammatical roles. In CDS, the subjects of both transitives and intransitives fall within this same range, with ellipsis occurring at similar rates (within 2%) as in ADS. On the other hand, the only column which is sharply differentiated from the others is the expression of objects in child-directed speech: here the caregiver uses far more explicit arguments than for subjects, as well as far more than we see in adult-directed speech (11% object ellipsis in CDS vs. 40% O ellipsis in ADS).

However, this analysis leaves out one important detail, namely the zero subjects of imperatives. Out of 120 elided subjects in CDS, over half (67) were subjects of imperatives. If we remove these from the analysis, then we find that the CDS includes much less ellipsis across the board, which is what we expected in a context where the spoken language is intended for both communication and language development. Thus, Figure 4 shows that the main difference lies not in the O argument in caregiver speech, but between arguments in caregiver speech in general vs. adult-directed speech. Hence, together with implicit imperative subjects, the CDS exhibits similar levels of subject

drop as ADS, but excluding the grammatically conditioned imperative zero subjects, CDS shows lower rates of ellipsis than ADS in all three grammatical roles, with the greatest difference still in object argument expression (see e.g. Graf et al. 2014 for various possible explanations for the asymmetry between subject and object ellipsis).

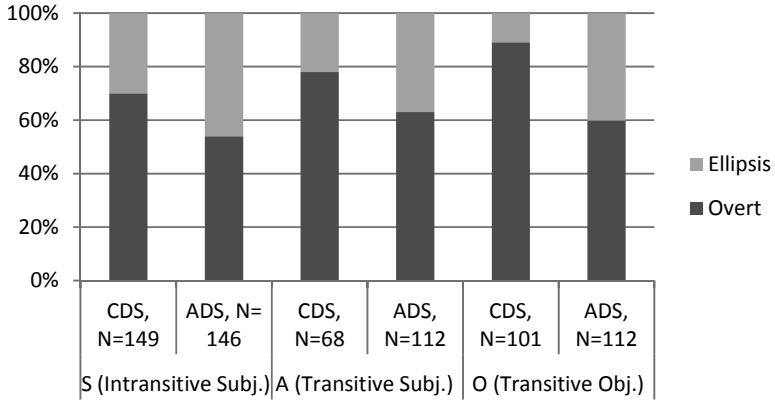

Figure 4. Proportion of overt and omitted core arguments, excluding imperatives.

5.2. Lexical noun phrases

Turning now from omitted to overt arguments, recall that the CDS includes a much greater proportion of lexical noun phrases than the ADS data (33% vs. 20%). Considering this, the question arises whether these NPs are similarly distributed and serve similar functions as in ordinary adult spoken language. On the surface, the numbers seem surprising, considering how circumscribed the setting is and how familiar both discourse participants are with the discourse topics.

Figure 5 affords a closer look at the lexical noun phrases in our child-directed speech data. As predicted by the principles of Preferred Argument Structure (PAS), the lexical NPs tend to be either subjects of intransitive clauses (S) or objects of transitive clauses (O).

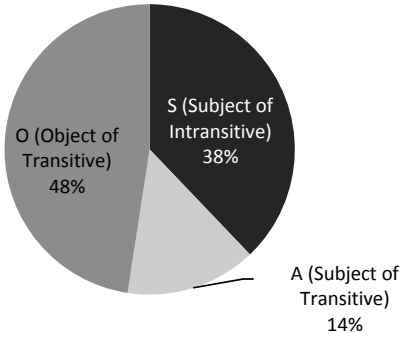

Figure 5. Grammatical roles of lexical noun phrases in Child-Directed Speech (N=104).

However, although the numbers of A arguments (subjects of transitives) are low, they are not negligible. Moreover, a look at the transitive examples with full NP subjects (a total of only 15 examples) reveals that a majority of those (9 out of 15) are in clauses with two lexical arguments. This seems to be in conflict with the expectations from PAS. We might have expected caregivers to follow the constraints described by PAS more meticulously than adults speaking to other adults, as it ought to boost both discourse cohesion and ease of parsing, as well as providing a more prototypical model of the language.

Hence, it is worth looking more closely at these lexical noun phrases. On closer inspection, it turns out that in none of the three grammatical functions are the NPs serving mainly to introduce new referents into the discourse. Of the 39 lexical NPs functioning as S arguments (subject of intransitive), only eleven (28%) introduce new (previously unmentioned) referents to the discourse. Of the 49 O arguments expressed with lexical NPs, only eleven (i.e. only 22%) introduce new referents. Finally, of the 15 A arguments realised as full NPs, not one introduces a new referent. This, of course, reflects both a better characterisation of the child-caregiver discourse as well as aligning well with the expectations of PAS: the A argument, while it may be expressed by full NPs, does not function to introduce new referents. What, then, are these lexical NPs used for?

The discourse status of each of the lexical noun phrases occurring in caregiver speech was next analysed for discourse accessibility. Note that the approach used here generalises over some potentially influential factors such as absence (cf Allen et al. 2008), as exemplified in the case of a cognitively accessible, but visually absent and previ-

ously unmentioned referent like *Georg ja vanaema*, 'Georg and Grandmother' in example (2) below. The NPs were labelled as either referring to speaker/hearer, a recently mentioned referent (within five utterances in the discourse) or a new referent. Some of the O arguments formed idiomatic expressions in conjunction with the verb, such as *tegema haiget* 'hurt (someone)' (lit. 'do hurt') or *sõna kuulama* 'obey / do as one is told' (lit. 'listen to [a] word'). These were excluded from the table below, as the S and A arguments included no such idioms. The distribution of the discourse status of the referents of 98 lexical NPs found in the core argument positions in the data is shown in Figure 6.

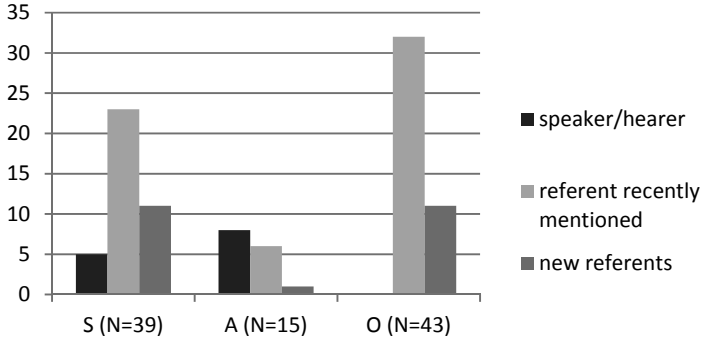

Figure 6. Discourse status of referents of lexical NPs in caregiver speech.

Comparing only the subject arguments, S and A, we find that, as predicted by PAS, the A arguments almost never introduce a new discourse referent, while the S arguments occasionally do (under 30% of instances). The one "new referent" listed in the figure refers to the child's foot, and so it is a new referent in terms of the discourse but salient for the child, especially as the clause is an interrogative inquiring whether the child's foot is hurt (i.e. the utterance comes in a pragmatically supportive context). Five of the lexical S arguments refer to the speaker or hearer, as shown in example (1). Lexical NPs referring to discourse participants are rather marked and unusual in adult-directed speech, and hence this category indicates one fundamental difference in patterns of reference in child-directed speech.

1. *emme* *vaatab*
   mommy.NOM look.3SG.PRS
   'Mommy's looking/ Mommy will look.'

Recently mentioned referents account for 23 of the 39 lexical S arguments (nearly two thirds), and 11 introduce new referents into the discourse. However, even with the new referents, because the context and the relevant topics of discourse are familiar to both discourse participants, 6 out of 11 (over half) are new referents in the context of the particular discourse, yet highly salient to both interlocutors, as in example (2):

2. *Georg* *ja* *vanaema* *tulevad* *kohe tagasi*
   Georg and grandmother.NOM come.3PL.PRS right-back
   'Georg and Granny will come right back'

Of the 15 lexical A arguments, six were recently mentioned in the discourse and highly salient referents, meaning that they referred to other family members or pets, and eight (over half) referred to speech act participants. In addition, two thirds of them occurred together with O: eight of the lexical A arguments are in clauses with overt, lexical NPs as the object of the transitive verb, two O arguments are interrogative pronouns, and five have elided O arguments. The example in (3) demonstrates a clause with two lexical NPs, neither of which refers to a new argument referent – the subject is the speaker ('mommy'), and the object is an idiomatic verbal object, which, together with the light, generic verb, expresses the equivalent of a lexical verb (e.g. *kallistama*, 'hug').

3. *emme* *teeb* *sulle* *kussu* *kalli* *või ?*
   mommy does 2SG.ALL hushy huggy or
   'Should mommy give you a hush-cuddle?'

The use of the light verb *tegema* is characteristic of Estonian caregiver speech. Argus (2010) reports that *tegema* is second only to *olema* 'be' in frequency in her data. The example given in (3) is probably derived from a formulaic expression, *tegema kalli* 'do hug'. Hence, although the O is lexical in form, it is deverbal, non-referential and formulaic.

6. Summary and conclusion

In examining the results on the expression of arguments in our small sample of caregiver speech, the extensive use of lexical noun phrases seems, at first glance, to be disproportionately high, as does the use of ellipsis. However, half the uses of ellipsis are accounted for by imperatives, which are represented in far greater numbers than in the adult-directed speech sample (24% vs. 9% of all utterances). In the other sentence types, we see a much lower use of ellipsis. Overall, indeed, overt nominals are preferred in the caregiver speech. Across all core arguments, child-directed speech contains nearly 20% more overt nominals (pronominal or lexical) than adult-directed speech in our sample, and in O arguments, 29% more. Moreover, not only are overt nominals preferred, but explicit labels (lexical NPs) seem to be preferred, as even first and second-person arguments, which are canonical instances of pronominal usage in adult-directed speech, often receive lexical nominal expression.

Hence, contrary to what is usually said about accessibility in the literature on adult spoken language, caregiver speech does not necessarily express salient referents with phonologically lighter, shorter nominals. However, the function of lexical noun phrases is different in child-directed than in adult-directed speech. They rarely introduce new referents as subjects, much more typically referring to salient people and things. Even as objects, the lexical noun phrases more often refer to discourse-old or contextually salient referents.

At first glance, the data examined in this paper do not seem to support the principles of Preferred Argument Structure. However, in fact the asymmetric linking of intransitive S, transitive A and transitive O to different types of referents and different morphosyntactic forms of referents may provide strong evidence for the child in the process of decoding the syntax of the language being acquired. As predicted by PAS, A arguments nearly never introduce new referents, and they are much less likely than S or O arguments to be expressed with a lexical NP.

Referential form and Preferred Argument Structure in Child-Directed Speech need more investigation. The current paper represents only a pilot study, as it is based on a limited set of data and a single mother-child dyad. The forms of pronouns were not investigated in any detail (see Kirsipuu et al. 2012, Vija and Pajusalu 2009 on Estonian children's speech). As has been noted, it is likely that the referential

forms used develop along with the child's developing competence. It is clear that reference to discourse participants must advance beyond the lexical expression of 'Mommy' and the child's name, used with the third-person inflection for verbs. It is likely that this takes place quite early, soon after the child's own reference-tracking competence begins to take a more sophisticated form. The productive competence in referential tracking of two-year-old children acquiring Estonian remains to be studied, but some directions for what to look for have been broached with the present study.

Acknowledgments

I wish to thank Kriste Lauk, who coded the initial data used in this study, the audience at the "Grammar and Context: New Approaches to the Uralic Languages" conference, held in Tartu in June 2013, for feedback which was useful in the writing of this paper, as well as an anonymous reviewer for useful comments. All weaknesses in the paper remain my own.

Address:
Virve-Anneli Vihman
Institute of Estonian and General Linguistics
University of Tartu
Jakobi 2
51014 Tartu
Estonia
E-mail: virve.vihman@ut.ee

References

Allen, Shanley E.M. and Heike Schröder (2003) "The role of preferred argument structure in early Inuktitut spontaneous speech data". In J. Du Bois, L. Kumpf, and W. Ashby, eds. *Preferred argument structure: grammar as architecture for function*, 301–338. Amsterdam: John Benjamins.

Allen, Shanley E.M., Barbora Skarabela, and Mary Hughes (2008) "Using corpora to examine discourse effects in syntax". In H. Behrens, ed. *Corpora in language acquisition research*, 99–137. (Trends in Language Acquisition Research, 6.) Amsterdam: John Benjamins.

Ariel, Mira (1990) *Accessing NP antecedents*. London: Routledge, Croom Helm.

Argus, Reili (2008) “Psühholingvistiline katse eesti keele objekti käändevahelduse omandamise uurimise meetodina.” [Psycholinguistic experiment as a method of studying the acquisition of case alternation of the object in Estonian.] *Emakeele Seltsi aastaraamat* (Tallinn) 54, 22–43.

Argus, Reili (2009) “The early development of case and number in Estonian”. In M. D. Voeikova and U. Stephany, eds. *Development of nominal inflection in first language acquisition: a cross-linguistic perspective*, 111–152. Berlin: Mouton De Gruyter.

Argus, Reili (2010) “Mida teeb tegema-verb hoidjakeeles”. [Constructions with the verb *tegema* ‘do, make’ in child directed speech.] *Journal of Estonian and Finno-Ugric Linguistics* 1, 2, 17–34.

Bernstein-Ratner, Nan and Clifton Pye (1984) “Higher pitch in baby talk is not universal: acoustic evidence from Quiche Mayan”. *Journal of Child Language* 11, 515–522.

Bowerman, Melissa and Penelope Brown, eds. (2008) *Crosslinguistic perspectives on argument structure: implications for learnability.* Mahwah, NJ: Lawrence Erlbaum Associates.

Bowerman, Melissa and Soonja Choi (2001) “Shaping meanings for language: universal and language-specific in the acquisition of spatial semantic categories”. In M. Bowerman and S. C. Levinson, eds. *Language acquisition and conceptual development*, 475–511. Cambridge: Cambridge University Press.

Cameron-Faulkner, Thea, Elena Lieven, and Michael Tomasello (2003) “A construction based analysis of child directed speech”. *Cognitive Science* 27, 843–873.

Choi, Soonja (2000) “Caregiver input in English and Korean: Use of nouns and verbs in book-reading and toy-play contexts”. *Journal of Child Language* 27, 69–96.

Clancy, Patricia M. (2003) “The lexicon in interaction: developmental origins of preferred argument structure in Korean”. In J. W. Du Bois, L. Kumpf, and W. Ashby, eds. *Preferred argument structure: grammar as architecture for function*, 81–108 Amsterdam: John Benjamins.

Du Bois, John W., Lorraine E. Kumpf, and William J. Ashby, eds. (2003) *Preferred argument structure: grammar as architecture for function*. Amsterdam: John Benjamins.

Duvallon, Outi and Antoine Chalvin (2004) “La réalisation zéro du pronom sujet de première et de deuxième personne du singulier en finnois et en estonien parlés”. *Linguistica Uralica* 40, 4, 270–286.

Erelt, Mati, Tiiu Erelt, and Kristiina Ross (2007) *Eesti keele käsiraamat.* [Handbook of the Estonian language.] Tallinn: Eesti Keele Sihtasutus.

Givón, Talmy, ed. (1983) *Topic continuity in discourse: a quantitative cross-language study.* Amsterdam: John Benjamins.

Graf, Eileen, Anna Theakston, Elena Lieven, and Michael Tomasello (2014) “Subject and object omission in children’s early transitive constructions: a discourse-pragmatic approach”. *Applied Psycholinguistics* 36, 701–727.

Gundel, Jeanette K., Nancy Hedberg, and Ron Zacharski (1993) “Cognitive status and the form of referring expressions in discourse”. *Language* 69, 2, 274–307.

Helasvuo, Marja-Liisa (2003) "Argument splits in Finnish grammar and discourse". In J. W. Du Bois, L. Kumpf, and W. Ashby, eds. *Preferred argument structure: grammar as architecture for function*, 247–272. Amsterdam: John Benjamins.

Hint, Helen (2015) "Third person pronoun forms in Estonian in the light of Centering Theory". *Journal of Estonian and Finno-Ugric Linguistics* 6, 2, 105–135 (this volume).

Hoff, Erika (2006) "How social contexts support and shape language development". *Developmental Review* 26, 55–88.

Huttenlocher, Janellen, Marina Vasilyeva, Elina Cymerman, and Susan Levine (2002) "Language input and child syntax". *Cognitive Psychology* 45, 337–374.

Huttenlocher, Janellen, Heidi Waterfall, Marina Vasilyeva, Jack L. Vevea, and Larry V. Hedges (2010) "Sources of variability in children's language growth". *Cognitive Psychology* 61, 343–365.

Huttenlocher, Janellen, Marina Vasilyeva, Heidi Waterfall, Jack L. Vevea, and Larry V. Hedges (2007) "The varieties of speech to young children". *Developmental Psychology* 43, 5, 1062–1083.

Kirsipuu, Helen, Piret Soodla and Renate Pajusalu (2012) "Referentsiaalsed noomenifraasid laste narratiivides" [Referential noun phrases in children's narratives]. *Eesti Rakenduslingvistika Ühingu Aastaraamat* (Tallinn) 8, 91–107.

Lauk, Kriste (2013) *Sõnajärg hoidjakeeles suulise kõnega võrrelduna*. [Word order in child-directed speech in comparison with spoken language.] Unpublished Bachelor's Thesis. Tartu: Tartu Ülikooli eesti ja üldkeeleteaduse instituut.

Lieven, Elena (2010) "Language development in a cross-linguistic context". In M. Kail, M. Fayol and M. Hickmann, eds. *Language acquisition across linguistic and cognitive systems*, 91–108. Amsterdam: John Benjamins.

Lieven, Elena and Sabine Stoll (2009) "Language development". In M. Bornstein, ed. *The handbook of cross-cultural developmental science*, 143–160. New York: Psychology Press.

Lieven, Elena and Sabine Stoll (2013) "Early communicative development in two cultures: a comparison of the communicative environments of children from two cultures". *Human Development* 56, 178–206.

Lindström, Liina (2001) "Verb-initial clauses in narrative". In M. Erelt, ed. *Estonian: Typological Studies* 5, 138–168. Tartu.

Lindström, Liina, Mervi Kalmus, Anneliis Klaus, Liisi Bakhoff, and Karl Pajusalu (2009) "Ainsuse 1. isikule viitamine eesti murretes." [Reference to 1st person singular in Estonian dialects.] *Emakeele Seltsi aastaraamat* (Tallinn) 54, 159–185.

MacWhinney, Brian (2000) *The CHILDES project: tools for analyzing talk*. 3rd ed. Mahwah, NJ: Lawrence Erlbaum Associates.

Newport, Elissa L., Harry Gleitman, and Lila R. Gleitman (1977) "Mother, I'd rather do it myself: some effects and noneffects of maternal speech style". In C. E. Snow and C. A. Ferguson, eds. *Talking to children*, 109–149. Cambridge: Cambridge University Press.

Ninio, Anat (2006) *Language and the learning curve: a new theory of syntactic development*. Oxford: Oxford University Press.

Ochs, Elinor and Bambi B. Schieffelin (1994) "Language acquisition and socialization: three developmental stories and their implications". Reprinted in B. Blount, ed. *Language, culture, and society: a book of readings*, 276–320. Waveland Press.

Orusalu, Silja (1996) *Lastega suhtlemise erisõnavara*. [Special vocabulary in communication with children.] Unpublished Bachelor's Thesis. Tartu: Tartu Ülikooli eesti keele õppetool.

Pajusalu, Renate (2009) "Pronouns and reference in Estonian". *Sprachtypologie und Universalienforschung* 62, 122–139.

Seil, Kadri (2012) *Sõnajärg hoidjakeeles võrrelduna lapse keelega*. [Word order in caregiver speech compared to child speech.] Unpublished Bachelor's Thesis. Tartu: Tartu Ülikooli eesti ja üldkeeleteaduse instituut.

Sepp, Pille (2010) *Pronoomeni kasutus MSN-vestlustes*. [Pronoun usage in MSN chats.] Unpublished Bachelor's Thesis. Tartu: Tartu Ülikooli eesti ja üldkeeleteaduse instituut.

Siska, Teele (2013) *Imperatiivi kasutusest ühe lapse kõnearengu varasel perioodil*. [Imperative in Child Speech on Early Developmental Phase.] Unpublished Bachelor's Thesis. Tartu: Tartu Ülikooli eesti ja üldkeeleteaduse instituut.

Slobin, Dan I., ed. (1985) *The crosslinguistic study of language acquisition*. 2 vols. Mahwah, NJ: Lawrence Erlbaum Associates.

Slobin, Dan I., Melissa Bowerman, Penelope Brown, Sonja Eisenbeiss, and Bhuvana Narasimhan (2011) "Putting things in places: developmental consequences of linguistic typology". In J. Bohnemeyer and E. Pederson, eds. *Event representation in language and cognition*, 134–165. Cambridge: Cambridge University Press.

Snow, Catherine E. (1972) "Mothers' speech to children learning language". *Child Development* 43, 549–565.

Soderstrom, Melanie (2007) "Beyond babytalk: re-evaluating the nature and content of speech input to preverbal infants". *Developmental Review* 27, 501–32.

Stoll, Sabine, Kirsten Abbot-Smith, and Elena Lieven (2009) "Lexically restricted utterances in Russian, German and English child directed speech". *Cognitive Science* 33, 75–103.

Vija, Maigi and Renate Pajusalu (2009) "Pronouns in Estonian child language". *Ad verba līberorum: Linguistics and Pedagogy and Psychology* 1, 1, 23–31.

Kokkuvõte. Virve-Anneli Vihman: Vaade viitamisvahenditele eesti hoidjakeeles. Artiklis võrreldakse tuumargumentide väljendamist eesti hoidjakeeles ja täiskasvanutevahelises vestluses. Andmed pärinevad ema vestlusest oma kaheaastase lapsega ning kahe naise omavahelisest vestlusest ja hõlmavad kokku ligi 600 lausungit. Andmed kinnitavad, et suhtluses selles eas lapsega kasutatakse vähem väitlauseid kui täiskasvanutevahelises vestluses (43% vs. 62.5%), neid asendavad käsk- ja küsilaused. Kui kõrvale jätta käsklause subjekt, mida tüüpiliselt ei väljendata, osutab analüüs, et hoidjakeeles kasutatakse võrreldes täiskasvanutevahelise suulise vestlusega 20% enam eksplitsiitselt väljendatud argumente ning objekti rollis on lausa 30%

enam eksplitsiitselt väljendatud argumente. Analüüsitud andmete põhjal iseloomustab hoidjakeelt ellipsi vältimine ning leksikaalsete noomenite eelistamine pronoomenitele. Tulemused toetavad nn *Preferred Argument Structure* (e eelistatud argumentstruktuuri) printsiipe, mille kohaselt kõnelejad eelistavad viia kokku grammatilise rolli, morfosüntaktilise vormi ja pragmaatilise staatuse. Lapsega suhtlemine seab mõned eripärad, kuid üldiselt peegeldub see ka hoidjakeeles.

Märksõnad: hoidjakeel, viitamine, referentsiaalsus, morfosüntaktiline vorm, eesti keel, argumentide väljendamine, argumentstruktuur