The acquisition of reference: a cross-linguistic study
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In interaction, it is crucial to make clear who or what is being communicated about. This is called reference and can occur in various ways. If the referent is present and perceptually available in the here-and-now, pointing can be used. However, if the referent is physically absent or perceptually not available, this strategy does not work. Reference through language is then the key to successful communication. In this thesis, the acquisition of linguistic reference by children has been studied.

Around twelve months, children usually utter their first words. At first sight, word knowledge might seem sufficient for successful linguistic reference. For example, with the word *cat*, a child can refer to a pet that purrs, whereas the word *dog* can be used to refer to a pet that needs to be taken for a walk. There is, however, more linguistic knowledge needed for full linguistic reference. That is, to refer to the purring pet, adult speakers have various morphosyntactic forms available. A speaker might chose for a noun with a determiner, for example *the cat, a cat or that cat*. In addition, pronouns, for example *it* and *that* or proper names, for example *Cleo*, may be used. The contexts in which these morphosyntactic forms can be used felicitously differ. For example, the use of a proper name is only appropriate if the hearer knows that the speaker owns a cat with this name. Otherwise, reference by means of the form *my cat* will be more successful. Pronouns are often used if the referent has been mentioned before in the discourse, as in the following utterances: *My cat is called Cleo. It is a calico cat.* Repeated use of a nominal form or proper name creates an effect of over-explicitness, as in: *My*
cat is called Cleo. Cleo is a calico cat. Cleo only walks in the back yard. Cleo does not dare to come in the front yard. Full nominal forms and proper names are therefore avoided if the referent was already a discourse topic in previous utterances.

In reference, children not only need to learn the morphosyntactic forms available in their language, but also the conditions in which these forms can or must be used. The choice of morphosyntactic forms in relation to context factors is part of the linguistic subfield of pragmatics. In this thesis, the interaction between morphosyntax and pragmatics in the acquisition of reference to people and objects is investigated in children acquiring Dutch, English and French between 2;0 and 3;3. The cross-linguistic aspect of this study enabled an investigation of the influence of the input on the acquisition of reference.

There are large similarities between adult Dutch, English and French with respect to the morphosyntactic forms that these languages have available for person and object reference (Chapter 2). For example, all three languages make use of nouns with an indefinite, definite, demonstrative or possessive determiner and of pronominal forms. There are, however, also cross-linguistic differences. Bare nouns are used as indefinite plurals (boys/jongens) or in reference to mass nouns (suiker/sugar) in Dutch and English, but not in French (des garçons/du sucre). As a result, determiners are more frequent in the French than in the Dutch and English input to children. In this thesis, this difference in frequency is related to a faster developmental path of determiner acquisition in French, compared to English and Dutch.

The choice of morphosyntactic forms in reference depends on the 'cognitive status' of the referent. This is the assumed presence of the referent in the speaker’s and hearer’s memory and the current level of activation of this referent in their consciousness. Several pragmatic factors influence a referent’s cognitive status, three of which have been investigated in this thesis. Firstly, the specificity of the referent plays a role. A good example of non-specific reference is the utterance: Do you want a cookie? The speaker then usually intends to offer any cookie in the box, not a particular one. The cognitive status of non-specific referents, which are neither present in the speaker’s nor the hearer’s memory, is lower than that of specific referents. Secondly, the cognitive status of a referent is influenced by the previous discourse. Referents that have been mentioned before, and are therefore ‘given’, have a higher cognitive status than referents that are new to discourse. Thirdly, for referents that are new to discourse, the assumed familiarity of the referent to the hearer plays a role. Familiarity can be the result of shared knowledge
between speaker and hearer (both know Cleo the cat) or because the referent is present in the here-and-now. The three pragmatic factors of (1) specificity, (2) givenness and (3) familiarity operate in different pragmatic functions of reference in discourse. For example, a referent can have the pragmatic function of ‘non-specific reference’, or reference can serve to introduce a referent to discourse that is not mutually known to speaker and hearer. The pragmatic function of labelling is also important in this study, since it is very frequent in adult-child interaction. Through labelling, a speaker names or identifies a person or object, as in: That’s a cat.

Morphosyntactic forms for reference differ in the cognitive status they reflect. For example, a cat conveys a lower cognitive status, and therefore a lower activation level of the referent in memory, than my cat, which, in turn, conveys a lower cognitive status than the pronoun it. Cognitive status is influenced by the three pragmatic factors investigated in this thesis. Therefore, these factors and their pragmatic functions can be related to morphosyntactic forms for reference. The specificity of the referent mainly plays a role in determiner choice (indefinite/definite). The new/given distinction and the familiarity of the referent to the listener influence both the choice of determiners and the choice of pronouns as opposed to full nouns and proper names. Generally, nouns with a definite or demonstrative determiner convey a higher cognitive status, and therefore more familiarity to hearer, than nouns with an indefinite determiner. According to linguistic theory, the latter form is therefore associated with non-specific reference and labelling. In addition, indefinite nouns are often used to introduce a not mutually known referent to discourse, as in: I showed a woman the way yesterday. The use of a definite noun would be strange if the listener does not know about this event. Definite or demonstrative nouns can only be used if the discourse-new referent is already familiar to the hearer, as in: I have just shown that woman the way and now she’s walking in the wrong direction anyway! A noun with an indefinite determiner cannot be used for a referent that is given in discourse, since his form indicates that the hearer does not know the referent. A noun with a definite or demonstrative determiner is therefore more appropriate for reference to a discourse-given person or object. Pronouns convey a higher cognitive status than full nouns and proper names. This form is therefore also strongly associated with discourse-given reference. A pronoun can also be used to introduce a referent to discourse, but only if the referent is physically present.

The form-function combinations described above hold for Dutch, English and
French. There are, however, also some cross-linguistic differences. According to linguistic theory, nouns with a definite determiner are more frequently used for non-specific (generic) reference in French than in Dutch and English. Moreover, demonstrative pronouns are more frequently used in Dutch in contexts where speakers of English and French prefer personal pronouns. If the input influences the acquisition of reference, language specific patterns of form-function combinations are also expected to occur in the language of young children.

Earlier studies have investigated the acquisition of morphosyntactic forms, the acquisition of social-cognitive skills necessary for reference and the acquisition of form-function combinations (Chapter 3). In all three languages, children of two years-of-age use both nouns with determiners and pronouns. The investigation of form-function use can and should therefore start around this age. Non-linguistic, social-cognitive studies have shown that several cognitive skills that are necessary for appropriate linguistic reference are also acquired at age two. For example, children of this age are able to distinguish new from given. This is of course necessary to distinguish between new/given in discourse, but also to distinguish non-specific (new for speaker and hearer) from specific reference (given for speaker and possibly for hearer). It is not clear whether children can apply this skill to the pragmatics of linguistic reference. Moreover, children's social-cognitive skills are still developing at two years-of-age. Two- and three-year-olds have difficulties in correctly estimating the hearer's knowledge about a referent. The most important finding from previous studies on the acquisition of reference is related to this development. Up to six years-of-age, children frequently make the error of using a noun with a definite determiner for referents that are new to discourse and not mutually known between speaker and hearer. Many questions on the acquisition of reference have, however, remained unanswered. This thesis focuses on three issues in the acquisition of reference. These issues form the basis of the research questions that have been formulated at the end of Chapter 3.

In previous studies, reference has mostly been investigated by having children of four years-of-age and older tell a narrative on the basis of pictures. It is therefore not clear how children refer in spontaneous conversations and which referential skills are acquired before age four. In this thesis, the development of the interaction between the morphosyntax and pragmatics of reference has therefore been investigated in younger children, between 2;0 and 3;3. In this age range, a large part of the acquisition of morphosyntactic forms in noun phrases takes place. It has been investigated whether the acquisition of a morphosyntactic
form influences the (appropriate) pragmatic use of that form. Close associations in acquisition would be compatible with a non-modular theory of language acquisition, in which different modules, that is, morphosyntax and pragmatics, can influence each other in development.

The role of the input in the acquisition of reference has hardly been investigated in earlier studies. As described above, there are small differences between Dutch, English and French in the use of morphosyntactic forms for pragmatic functions. Whether these language-specific patterns are also evident in the children's language has been investigated in this thesis. Furthermore, the influence of the frequency and consistency of form-function combinations in the input on the acquisition of reference has been examined.

The third issue focuses on a comparison of children's developing sensitivity to the pragmatics of reference in their use of determiners on the one hand and pronouns on the other. That is, the pragmatic factor of new/given in discourse plays a role in the choice of indefinite determiners as opposed to definite/demonstrative determiners and also in the choice of pronouns as opposed to nouns and proper names. The question is whether sensitivity to this pragmatic factor develops in parallel in the use of determiners and pronouns. If sensitivity to pragmatic factors develops across-the-board, the children should be able to apply the new/given distinction to the use of determiners and pronouns equally. Alternatively, sensitivity to this distinction might develop on a form-by-form basis, that is, unequally in the use of determiners and pronouns. The latter pattern could be the result of differences in cue frequency and cue consistency of form-function combinations in the input.

The acquisition of reference has been investigated in three Dutch-speaking, three American-English-speaking and four French-speaking children (henceforth: Dutch, English and French children) between 2;0 and 3;3 (Chapter 4). The children studied form representative groups in terms of the acquisition of these languages. Their language level has been compared to that of larger groups of children acquiring the same languages and no significant differences were found. The data are spontaneous-speech samples of 600 child utterances from the Childes-database every three months. A sample of input language, consisting of 300 utterances of the input to each child at 2;3 and 3;3, has also been investigated. All references to a person or object were subsequently selected from the 600 or 300 utterance-sample and coded for morphosyntactic form and pragmatic function. The analysis of sensitivity to the pragmatic factors of
specificity, new/given and familiarity on the basis of mutual knowledge mainly
focused on the use of nouns with an indefinite determiner as opposed to nouns
with a definite or demonstrative determiner. The analysis of the use of pronouns
as opposed to full nouns and proper names focused on the pragmatic factors of
new/given and familiarity on the basis of the physical presence of the referent.

In order to investigate the children’s sensitivity to the morphosyntax-
pragmatics interface in reference, it is necessary to establish when the relevant
morphosyntactic forms are available to them (Chapter 5). This analysis showed
that from 2;0 onwards, all the children were able to use the most important
pronominal forms (personal and demonstrative pronouns) and also proper
names productively. This means that these forms occur in at least three different
syntactic contexts. There are no large differences between the children acquiring
Dutch, English or French in this respect. Neither are there differences in the
age of productive use of determiners between 2;0 and 2;6. There are, however,
cross-linguistic differences in the frequency of use of determiners. The children
acquiring French use more determiners in obligatory morphosyntactic contexts
than the children acquiring English, who in turn use more determiners than the
children acquiring Dutch. This result was expected on the basis of earlier studies.
However, the analysis in this thesis has shown that this cross-linguistic pattern
can be related to differences in the frequency of determiners in the input. The
indefinite plural and mass nouns are expressed by means of grammatical bare
nouns in Dutch and English, whereas bare nouns hardly occur in French. The cue
for determiner production is thus stronger in French. Children might therefore
pick on the necessity of determiner production earlier in this language. In this
thesis, the difference in speed of determiner acquisition is used to investigate
whether earlier acquisition also results in earlier, correct use of determiners in
terms of the pragmatics of reference.

The pragmatic functions, which are derived from the three pragmatic factors
of specificity, new/given and familiarity, are found in adult-child interaction
from 2;0 onwards (Chapter 6). There are, however, differences in the relative
frequency of pragmatic functions. These differences can be partly explained
by the discourse topic and the activities engaged in during the recording of the
sample. For example, book reading leads to more instances of labelling than
playing with a toy train. Two pragmatic functions are very infrequent in both the
child and input data. There are few references to discourse-new referents that
are not physically present and hardly any to discourse-new referents that are not
mutually known. Conversations between adults and children are centred on the here-and-now. If input frequency influences acquisition, the children would need more time to acquire the appropriate use of morphosyntactic forms for these two infrequent pragmatic functions.

The most important results of this study consist of the use of morphosyntactic forms for pragmatic functions by the children between 2;0 and 3;3 and by the adults in the input (Chapters 7 and 8). The results show the extent to which children of this age are sensitive to the pragmatic factors of specificity, new/given and familiarity. In addition, both the influence of the speed of morphosyntactic acquisition and of the input on the acquisition of reference has been examined.

Chapter 7 focuses on reference with nouns with an indefinite determiner as opposed to nouns with a definite or demonstrative determiner. Children of two years-of-age often omit determiners in morphosyntactic contexts where these are obligatory in the adult language. Contrary to what has been proposed in the literature, determiner omission is not related to pragmatic factors. For example, children do not omit more determiners before nouns that refer to discourse-given referents. Children of this age are, however, sensitive to pragmatic factors in the use of nouns with a determiner. Firstly, the specificity of the referent plays a role in determiner use by the children in all three languages. As in the input, the children use nouns with an indefinite determiner more frequently for non-specific referents, as in I want a cat. Nouns with a definite and demonstrative determiner are more frequently used for specific referents, as in that cat is sweet. Secondly, the children are sensitive to the distinction between new/given in discourse in determiner use. They use the indefinite determiner more frequently for discourse-new referents and hardly use this form for discourse-given referents. The results from this thesis thus show that the children use determiners appropriately in terms of the pragmatic factors of specificity and new/given in discourse from the moment that determiners can be used productively.

The children do have difficulties in appropriately taking the perspective of the listener in determiner use. Between 2;0 and 3;3, they often use a noun with a definite determiner (instead of an indefinite determiner) for discourse-new referents that are not familiar to the hearer. This pattern of use was expected, since six-year-old children have also been found to make this error. This result is commonly explained by the fact that children’s Theory of Mind, that is, the insight that other people have feelings, thoughts and beliefs that are different from their own, is in development until at least four years-of-age.
Familiarity of the referent to the hearer plays, however, already a small role in the form-function use of the two- and three-year-old French children. From 2;6 onwards, they use nouns with an indefinite determiner more frequently for discourse-new referents that are not familiar to the hearer than for discourse-new referents that can assumed to be familiar. Sensitivity to familiarity is therefore emerging in these children. The same result, although to a lesser extent, is found for the English-speaking children. The Dutch children do not yet distinguish between familiar and not familiar referents in determiner use. In this thesis, the cross-linguistic difference in sensitivity to familiarity has been related to the earlier and faster acquisition of the determiner in French. That is, earlier acquisition of the morphosyntactic form appears to stimulate earlier, correct pragmatic use of that form. This also implies that form and function develop in close association. This conclusion supports non-modular theories of language development, which assume that different aspects of language can influence each other in development.

The input plays a role in the acquisition of reference in two ways. Firstly, language-specific form-function patterns are found in the children’s language from 2;3 onwards. As the adults, the French children use more nouns with a definite determiner for non-specific reference and labelling than the Dutch and English children. Secondly, the frequency and consistency of form-function combinations in the input influence acquisition. For example, discourse-given reference is very frequent in the input and the use of determiners for this pragmatic function is very consistent: the adults practically always use definite or demonstrative determiners and hardly use indefinite determiners. Children acquire this form-function pattern from the moment that the relevant determiner types are available. Discourse-new reference to entities that are not familiar to the hearer is very infrequent in the input. The children therefore hardly receive any evidence on how to use determiners for this pragmatic function. It is therefore plausible that the errors that children make in this respect are not only the result of their developing Theory of Mind, but also of a lack of insight into the use of determiners for this pragmatic function.

The use of pronouns in relation to the pragmatic factors of new/given and familiarity on the basis of physical presence has been investigated in Chapter 8. In all three languages, the children already distinguish between new and given in their use of pronouns as opposed to full nouns and proper names in the age range 2;0-2;6. Similarly to the adults, the children associate pronouns with
discourse-given reference. It takes until 2;6-2;9, however, before the children have reached the adult level in terms of frequency of pronoun use for discourse-given reference. That is, between 2;0 and 2;6, the children use more nouns than the adults for discourse-given reference where pronouns could also have been used unambiguously. At this age, the children might thus say *that cat is sweet; that cat never scratches* instead of *that cat is sweet; it never scratches*. In fact, the children are in the first case referring over-explicitly. The developmental pattern of pronoun use can be explained on the basis of the frequency and consistency of form-function use in the input. The adults use pronouns not only for discourse-given reference, but also regularly for discourse-new reference. Nouns and proper names, in turn, are used most frequently for discourse-new reference, but are also used to a considerable extent for discourse-given reference. This less consistent form-function pattern in the input may lead to an extended period of acquisition in the children. The role of the input is also evident in the occurrence of language-specific form-function patterns of pronoun use. As in the input, the Dutch children use many demonstrative pronouns for discourse-given referents (*Moet je die poes zien! Die is dik!*). The English and French children more often use personal pronouns, just like the adults in these languages (*Look at that cat. It is so fat!*).

The children seem to take account of the listener’s perspective from a very young age (2;0). They use pronouns only for discourse-new referents that are physically present and thus perceptually available and familiar to the hearer. Nouns and proper names are correctly used if the referent is new to discourse and not physically present. This early sensitivity to the listener’s perspective is contrary to results from earlier studies. Moreover, it does not correspond to the results on determiner use in this study, which show that the children make many errors and are not yet sensitive to the familiarity of the referent to the hearer. Other factors than familiarity are likely to play a role in the children’s early use of pronouns. The children may use pronouns only on the basis of whether they themselves can see the referent and irrespective of whether the hearer can see it or not. In this case, the children use pronouns from an egocentric perspective.

The distinction between new/given in discourse plays a role in the use of both determiners and pronouns. In this thesis, children’s developing sensitivity to this distinction is investigated in their use of both forms and can therefore be compared (Chapter 9). The results of this comparison show that children are sensitive to new/given in discourse from the moment that these forms are
available to them in language. There are, however, also differences. The children reach the adult level of form use earlier for determiners than for pronouns. That is, the children avoid using nouns with an indefinite determiner for discourse-given reference from the moment that they start to use this form, and thus behave like the adults. Until 2;6-2;9 however, they use more full nouns for discourse-given reference than the adults. This results in the over-explicitness in children’s reference mentioned above. The input can explain this developmental difference. The use of indefinite and definite determiners is very consistent in the input: indefinites are frequently used for discourse-new reference, but hardly for discourse-given reference. The use of pronouns, nouns and proper names for pragmatic functions is less consistent. Because of this less consistent form-function pattern, the children might need more time to discover the form-function pattern of pronoun use and, consequently, to reach the adult level.

The results from this study lead to conclusions with regard to developmental patterns in the acquisition of reference, modularity and the role of the input (Chapter 9). The children make appropriate form-function associations with respect to specificity and the distinction between new/given in discourse from the moment that determiners and pronouns are available to them in language. In addition, this study has yielded first evidence that the acquisition of the form, and not age, may trigger the acquisition of the pragmatics of reference. The French children, who acquire determiners earlier than the Dutch and English children, show more sensitivity to the perspective of the listener. This study thus shows that morphosyntax and pragmatics do not develop in isolation, which is put forward in modular language acquisition theories, but influence each other in development. The unequal development of determiner and pronoun use with respect to the new/given distinction shows that frequency and consistency of form-function combinations in the input also play a large role in the acquisition of reference. In addition, the role of the input is clear from early language-specific form-function patterns in the children’s language. All in all, the results of this study are most consistent with a non-modular, input-based theory of language acquisition.

The findings also raise new questions, which can serve as starting points for further research. The children are sensitive to specificity and new/given from the moment that they start to use language. The question is whether younger children might already connect these pragmatic factors to determiners and pronouns prior to language use. This could be further investigated by conducting comprehension experiments with children from twelve months onwards. The modularity issue
could be examined further by investigating children with Specific Language Impairment. Determiner acquisition is usually delayed in these children. The issue is whether this also delays their sensitivity to the perspective of the listener. Finally, it may be the case that the acquisition of form-function use in reference is related to larger syntactic frames. This could be investigated by examining reference with nouns and determiners, pronouns and proper names in relation to larger verb-frames in a dense database.