

# Native elements of discourse knowledge

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*Abstract.* Linguists working on the genetic predisposition of language specifics in human beings usually assume that the innate linguistic principles which constitute a universal grammar are either syntactic or phonological. However, there is no reason to assume that principles operating at other levels of representation could not be genetically determined. In this paper, it is shown how the innateness hypothesis is used to investigate particular discourse principles for the innateness property. Based on a poverty of stimulus existing at the inter-sentential level as well as early emergence of some of the discourse principles across Dutch and English, it is concluded that at least one of the principles operating at the inter-sentential – or discourse – level could be genetically determined.

## 1. Introduction

The question of how human beings gain a rich linguistic system given unsystematic and impoverished linguistic input has led scientists to believe that the attained state of adult grammar is the result of an innate predisposition amplified by the linguistic input in the environment of the language learner. Because of Noam Chomsky's great influence on this particular topic, many linguists have only concentrated on particular properties of innate grammar, e.g. the syntactic principles which control intra-sentential relations or the phonological and morphological properties of language. It will be argued here that there is reason to conclude that the innate language faculty may contain other principles than those which operate at the level of sentence elements, or at the phonological or perhaps morphological level. It will be shown that principles functioning at the discourse, or inter-sentential level,<sup>1</sup> may be part of the linguistic system which all humans are born with. By demonstrating a poverty of stimulus at the discourse level and early emergence of this principle using cross-

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<sup>1</sup> Since 'discourse' is unspecified for whether one or more speakers utter the sequence of sentences, I use the term 'inter-sentential' to refer to a multi-sentential sequence uttered by only one speaker.

linguistic evidence, it will be shown that inter-sentential principles could be genetically determined.

## ***2. A genetically determined language organ***

Since Noam Chomsky suggested in 1955 that part of the language knowledge that humans have could be innate, many linguists have tried to find specific evidence to support this view. Convincing evidence comes from investigations in first language acquisition, using particular experimental techniques which show that very young children have knowledge of linguistic properties (e.g. Crain and Thornton, 1998). The early emergence of a property of language supports the argument of nativists. However, the main argument for genetic language comes from the observation that some properties of language are impossible to learn. If a certain match between form and interpretation does not occur in a language, including the one children are learning, and there is no evidence which informs them that such the match does not exist, how do they then acquire this information? Crucially, children could not have learned it. Therefore, it has to be innate. An example of this so-called poverty of stimulus argument taken from Lightfoot (2000:155) shows that pronouns are subject to certain constraints.

- (1a) Jay hurt his nose.
- (1b) Jay's brother hurt him.
- (1c) Jay said he hurt Ray.
- (1d) Jay hurt him.

Clearly, the pronouns in these four sentences are subject to some principle. One could make a rough generalisation and say that they may refer back to a previously mentioned noun, but that leaves out the fourth structure, i.e. (1d), in which that is impossible. A child learning how to interpret and find referents for pronouns will hear all four possibilities, and will not be presented with evidence that in the fourth sentence 'him' cannot refer to Jay. Basically, if children are not told that 'him' in (1d) cannot refer to Jay, there is no evidence that will make them learn that the meaning of (1d) is constrained in a way that the meanings of (1a), (1b) and (1c) are not. One may argue that children are presented with negative evidence because their parents tell them that a certain structure or interpretation is wrong, but this has been shown to have no effect on the learning abilities of the child (Bowerman, 1987, 1988; Brown and Hanlon, 1970; Morgan and Travis,

1989; Marcus, 1993). Moreover, if some children were using this kind of evidence, this does not explain how children who are not presented with evidence like this (not all parents talk to their children in this way) know the principles and constraints of their language as well (for extensive discussion of lack of negative evidence, see Crain and Thornton, 1998). This crucial lack of negative input would result in children not attaining the final state grammar that all adults attain, because they are not able to learn the particular constraints on meaning and structure in their language. The only solution to this is that the property is innate. Poverty of stimulus arguments like the above are one of the main reasons that nativists assert that some properties of language are genetically determined.

### ***3. Innateness hypothesis***

Crain and Thornton (1998) present a useful overview of experimental research aimed at investigating genetically determined language properties. Some experimental results have led linguists to conclude that certain properties of language are not known at an early age and therefore cannot be innate. Crain and Thornton claim, however, that the experimental methodology may have led to erroneous conclusions and that by using qualitatively better experiments, early emergence can become visible. The failures of some experiments to show early emergence of certain innate properties of the language, give us clues on how to improve the experimental designs. Thus, Crain and Thornton provide a useful 'manual' for conducting experiments with young children by focusing on how to reveal children's linguistic knowledge at a very young age. They claim that a property of a language is innate if it is subject to the conditions stated in their 'Innateness Hypothesis'.

(2) Innateness Hypothesis:

- a. The property appears in the absence of decisive evidence from the environment.
- b. The property is universal.
- c. The property emerges early in the development.

(Crain and Thornton, 1998: 19)

Clause (2a) of this hypothesis is analogous to the poverty of stimulus argument. If a certain property of a language cannot have been learned based on the input that the child receives, then it can only be innate. As was shown above, poverty of stimulus exists when there is a lack of

negative evidence for a property of language. Since the child cannot have inferred from the linguistic input in his/her environment that certain meanings or structures are impossible, s/he cannot have *learned* this property of language.

Clause (2b) states that the property is to be universal. For a property to be universal, one would expect it to be manifested in several languages. If a certain constraint is found in more than one language, this indicates that the constraint may be part of the genetic linguistic predisposition that all human beings have. However, when a certain constraint is not found in any language except for one (if it were practically possible to test all languages in the world), and therefore can hardly be called 'universal', it cannot be concluded that the constraint is not innate. Since there are properties of language that are set by parameters, they may not show up in a particular language, but be present in a covert way (for further discussion on parameters, see among others Hornstein and Lightfoot, 1981; Roeper and Williams, 1987). The opposite is true as well. If a certain property of language does exist in more than one language, this does not imply that the property is innate. Crucial in any nativist argument is the poverty of stimulus: if there is no negative evidence, the child cannot have learned the property of the language and therefore it must be innate. Early emergence, which will be discussed hereafter, and cross-linguistic evidence only provide support for this.

In addition (clause 2c), if it can be shown that a property of language emerges at an early stage of language development, it provides support for the claim that the property is innate. That is to say, when there is evidence that children know a certain principle of the language they are learning at the age of two, it is more likely that this property is genetically determined. Two points must be noted though. First, and obviously, one cannot argue on the basis of only early emergence data that when children have knowledge of a principle at the age of two, they have not *learned* that principle in the first two years of their life. Logically speaking, it is not possible to argue that a certain quality is innate even if it is shown to be present a few hours after birth. Of course, if a property of language is a likely candidate for innateness, the fact that children know it from birth does provide further evidence in that direction. Secondly, if the property does not emerge early that does not mean that the property is not genetically determined. Theoretically, it could be the case that language properties are subject to a biological maturation, such as puberty or baldness is (Anderson and Lightfoot, to appear). For example, it could be that constraints which surface in structures like (1d), do not emerge until the fourth year in the development of the child, just as people do not start

to grow bald for reasons of maturation before they have reached a certain age. In light of the evidence that is available to us at the moment, it cannot be claimed that language properties are subject to a biological clock like this, but theoretically, this possibility is not excluded (Anderson and Lightfoot, to appear).

Summarising, the Innateness Hypothesis of Crain and Thornton (1998) defines certain factors that could help determine whether a property of language is innate or not. If a poverty of stimulus exists for the property, then the property is innate. This is then supported by evidence from different languages and early emerging knowledge in young children.

#### ***4. The inter-sentential level***

At the inter-sentential level, Noun Phrases (hereafter NPs) can roughly be interpreted in two ways, either by reference to a linguistic antecedent, or deictically. In the case of inter-sentential linguistic reference, the anaphoric NP refers to its antecedent across a sentence boundary. Therefore, the linguistic unit that contains the referent is a discourse - or inter-sentential - constituent. When the deictic option is chosen, a link has to be established with the real world in the direct environment of the speaker and hearer. In this case, a gesture in the form of pointing, a nod, or simply a gaze, is necessary to establish the reference. This is crucial, because if a deictic gesture is not used, the reference to the environment will fail and the hearer will not be able to understand what is referred to.

In the case of linguistic reference, instead of a gesture, there are inter-sentential principles that regulate the reference to the linguistic element. The process of interpreting NPs across a sentence boundary is regulated by principles as presented in Heim (1982) and Avrutin (1999). Avrutin's discourse model (based on Heim's File Change Semantics) uses file cards to keep track of the referents of NPs. The principles in his theory control reference between indefinite and definite NPs. That is to say, when an indefinite NP is interpreted, the referent is created on a new file card and presented as a variable there. However, when a definite NP is interpreted, the NP does not cause the creation of a new file card, but rather it is incorporated into an existing file card.

##### **(3) Inter-sentential Principles**

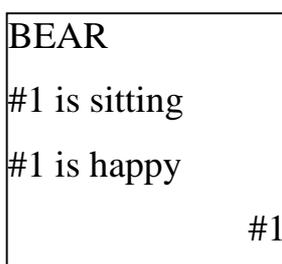
- a. A definite NP has to be incorporated into an existing file card.
- b. An indefinite NP causes the creation of a new file card.

(Adapted from Heim, 1982 and Avrutin, 1999)

When a sentence sequence such as (4) is interpreted, first a new file card with a new variable #1 is created when 'a bear' is encountered.

(4) A bear is sitting. The bear is happy.

The representation of the noun 'bear' on the file card stands for the real world referent, and represents the variability of the noun (Heim 1982 argues for indefinite NPs as variables, as does Avrutin 1999). The number 1 constant helps to keep track of the file card and the interpretation of the NP.

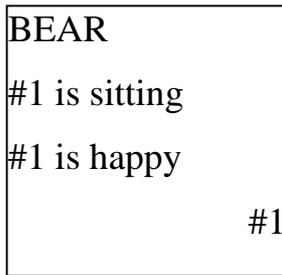


*Fig. 1 File card*

The number is linked to the created referent BEAR on the file card, and this number 1 is then linked to the first predicate, [#1 is sitting]. A new file card with a referent was created because an indefinite NP was encountered, following principle 1. However, when 'the bear' is heard, principle 2 requires that this NP be incorporated in an existing file card. In this case, this is not problematic, because a file card with the needed referent exists, and the process of incorporation follows. When the third element of this sequence is interpreted, a new file card is created, with a new number and a new referent, and the predicate follows, [#1 is happy]. The example given here uses a definite NP with a structure of determiner-noun, where the definite article 'the' serves as the determiner, and 'bear' as the noun. However, pronouns are also definite NPs. Therefore, NPs containing pronouns are subject to principle 1 as well. The definite NP 'the bear' could be substituted for 'it', but the process in the model of file cards would be exactly the same.

(5) A bear is sitting. It is happy.

Sentence sequence (5) would result in the same file card as presented in figure 1.



*Fig. 2 File card*

Thus, any definite NP, either in the form of a pronoun or definite article-noun construction, is incorporated into an existing file card. Crucial in this model is that the interpretation of the NP depends on which file card the NP is incorporated into. When the first predicate is incorporated into the file card with a variable, and that variable presents a referent in the real world, a bear, then the second predicate that is incorporated in that same file card also refers to that bear, and not any other.

(6) A bear is sitting. The bear is happy.

When a hearer has to find a referent for 'the bear' in a sentence sequence like (6), that second bear can *only* be the same bear as the first one, because of the incorporation principle (3a) which states that a definite NP has to be incorporated into an existing file card, and not cause the creation of a new one.

### ***5. The innateness hypothesis and inter-sentential knowledge***

The aim of this paper is to show that inter-sentential knowledge could be genetically determined in the same way as some syntactic knowledge is. Certain principles operating at the inter-sentential level may emerge at a very early age, and may exist universally. However, for inter-sentential knowledge to be innate, a poverty of stimulus at the inter-sentential level is crucial.

#### ***5.1 Poverty of stimulus at the inter-sentential level***

In order for a poverty of stimulus argument to exist, it has to be true that there is no negative evidence for a phenomenon in language available to children. Analogously to syntactic principles, there are inter-sentential principles which constrain the possible interpretations a sentence sequence

can have. The principles discussed in section 4 control the reference of 'she' in a sentence sequence like (7).

(7) A lady is dancing. She is wearing a blue dress.

'She' is understood as referring to the lady mentioned, not to any other female person in the mind of the speaker. Unless children have access to negative input such as that 'she' in this sequence cannot refer to anyone but the lady who was mentioned, they cannot have learned that it refers to only the lady mentioned and not Princess Diana, or any other female person in the mind of the speaker. Thus, because children do not have access to negative evidence such as that a certain interpretation of 'she', namely as referring to any other person than the lady mentioned, is not possible in a sentence sequence, a poverty of stimulus exists at the inter-sentential level.

Poverty of stimulus in the linguistic environment of the child is crucial for any nativist argument because it shows that the principle cannot have been learned and must therefore be genetically determined. Since it is clear that a poverty of the stimulus also exists at the inter-sentential level, it seems that inter-sentential principles may be part of the initial state of the language organ, in the same way as syntactic and phonological principles are.

Clause (2c) of the innateness hypothesis (Crain and Thornton, 1998) states that early emergence is one of the conditions which provide more evidence that a certain property is innate. Now that it has been shown that the input at the inter-sentential level is poor in the same way as the syntactic level, it will be interesting to see whether any inter-sentential principles emerge early. Experiments with children were conducted to investigate whether they have any knowledge of one of the inter-sentential principles discussed earlier: When a definite NP is interpreted, it has to be incorporated into an existing file card, resulting in the definite NP referring to the same object/person as was chosen for the first (indefinite) NP. If children know this inter-sentential principle, they will not allow the second definite NP to refer to any other object that is available in the environment and they will only allow this second definite NP to refer to the previously mentioned NP. If, however, children do not know the principle, then they could have the definite NP refer to any object in the environment. Thus, when the child is presented with a picture containing two objects, for example, a girl and a mother, and the girl is wearing a red dress, and the mother a blue one, and the discourse (8)

(8) A girl is dancing. She is wearing a blue dress.

is uttered, children will reject this when they know the principle, but will accept it as a correct description of the picture when they do not know the incorporation principle.

### *5.2 Early emergence at the inter-sentential level*

Experiments were conducted with children to investigate whether they have any knowledge of the incorporation principle (3a) at an early stage in their development. The experimental set up required subjects to look at a picture while hearing a sequence of two sentences, whose interpretation required the use of the incorporation principle. When the picture showed a dancing girl wearing a blue dress, and a woman in a white dress watching the girl, and the subject was presented with a sentence sequence like (9), this was expected to be judged as true by the subject.

(9) A girl is dancing. She is wearing a blue dress.

If, however, the same picture was presented with a different sentence sequence, like (10), this was expected to be rejected by the subject as a correct description of the picture.

(10) A girl is dancing. She is wearing a white dress.

If a subject, however, would not know the incorporation principle, then the reference of 'she' would not be controlled by a linguistic principle, and the second sentence would also be judged as a correct description, because the second sentence in that sequence would refer (deictically) to the woman. All adults who were tested responded as expected: They performed 100% in accordance with the incorporation principle (3a).

In an experiment using the truth value judgement task, 16 English children ranging from 2 years and 8 months to 4 years old (average age 3 years and 7 months) were tested on their knowledge of the incorporation principle. The truth value judgement task had the following structure. One experimenter introduced a picture by telling a short story presenting the characters. The test sentence was uttered by a hand puppet which was controlled by a second experimenter. The experimenter had to make clear in a warm-up session that the hand puppet was eager to guess and most importantly that it could not see the picture because it was blindfolded, and that therefore the hand puppet could be right or wrong. The child was asked to help the puppet because it could not see and to tell the puppet whether it was right or wrong. This would then result in the test structure

being judged by the child as being a correct or incorrect description of the picture.

The test items all consisted of a multiple sentence sequence; it was essential to prevent the rejection of the sequence because of a (possible visual) error in the first sentence, so the first sentence was first uttered separately, after which the child was presented with the whole sequence. One example of a test condition requiring an expected no-answer (no-condition) from the experiment is given in (11) to show the procedure of the actual test.

(11a) Context setting:

Experimenter 1: *There is a lady in this picture and she is cooking, look! And there is little girl over here, and she is waiting at the table for dinner. And look, they are both wearing dresses, but one is blue, and one is red, right? Now, Tiger, can you tell us something about this picture?*

Experimenter 2 (Tiger): *I cannot guess everything, but I can guess ONE thing.<sup>2</sup> There is a lady cooking. Is that right?*

The child judges this first sentence as correct. If not, because the child for example thought that the lady was not a lady but a mother, then the first sentence was modified so that it became correct for the child. Obviously, this was only done when the changes did not affect the outcome of the experiment.

(11b) Test sequence:

Experimenter 1: *Yes, that is right, but Tiger, can you perhaps tell us something more about this picture?*

Experimenter 2 (Tiger): *There is a lady cooking. She has a blue dress.*

Since this is a no-condition, the picture would show a lady with a red dress, and a girl with a blue dress. If children know the principle, they will reject the hand puppet's utterance by telling Tiger, the hand puppet, that the answer was wrong. However, if children do not know the principle yet, then they might interpret 'she' as referring to the girl in the picture and therefore accept the hand puppet's utterance.

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<sup>2</sup> This sentence was inserted to prevent that the children would reject Tiger's statement because it was not exhaustive and did not described everything that happened in the story or that was visible in the picture.

The experimental material consisted of ten test structures, five matching the picture, and five non-matching. That is to say, of the ten test structures, five required an expected yes-answer, and five a no-answer. All conditions were put in random order and mixed with five fillers, which all required no-answers. This was done to see whether a child was not too intimidated to say 'no', or too young to perform the task, which usually results in yes-answers throughout the whole session. If children did accept all the conditions, including the fillers, they were excluded from the experiment. The test sequences were as in (12).

(12a) Yes-conditions:

There is a boy running. He is wearing a red sweater.  
 There is a girl dancing. She is wearing a red dress.  
 There is a boy eating. He is wearing black trousers.  
 There is a girl dancing. She is wearing a black hat.  
 There is a dog smiling. He is wearing a collar.

(12b) No-conditions:

There is a boy walking. He is tall.  
 There is a woman reading. She has black hair.  
 There is a boy eating. He is wearing a hat.  
 There is a dog gnawing. He is black.  
 There is a cat sleeping. He is black.

(12c) Fillers:

There is a dog in this picture. And a cat is sitting in the tree.  
 There is a house in this picture. And a car is standing on the roof.  
 There is a boy sitting on the bench. He is eating an apple.  
 There is an elephant in this picture. He is sitting in a bucket.  
 There is a monkey in this picture. And a mouse is in the water.

Since 16 children were tested on every yes-, no- and filler- condition, the total number of trials per condition added up to 80.

*Table 1 Results*

	# of children	# of trials	# of errors	Error percentage
Yes	16	5	0	0/80 = 0
No	16	5	12	12/80 = 15.0%
Filler	16	5	5	5/80 = 6.3%

Children did not make any mistakes with any of the 80 yes-conditions. With the no-conditions, some yes-answers were given, but only in 12 items, which is 15%. This means that the percentage for correct no-answers was 85%. Out of the 80 filler trials, children gave 5 yes-answers, which is 6.3%.

As can be seen from these percentages, there is a contrast between the yes- and no- conditions. This is because children have a tendency to say 'yes' to a question because they like to agree with Tiger, the hand puppet. When they are faced with any condition and they are not sure about the answer, they tend to say 'yes', but this only becomes visible in the no-condition results.

In experiments like this, a 10% noise factor is usually allowed for (Crain and Thornton, 1998). This means that if children perform at 90% or higher as expected, the conclusion is drawn that they know the principle. In this experiment, 85% of correct responses were generated and therefore it is likely that the children know the principle. However, the level of noise is slightly high and it would be interesting to look at the reasons for that. Perhaps methodological improvements could reduce the level of noise. The question is therefore, what influenced the results, so that the children did not perform at 90% (at least) as expected. It could be that the experiment was influenced by a carry-over effect. That is to say, because ten similar questions were asked and only five fillers used, children might have been influenced by an external factor like repetition, and this might have confused or bored them, so that the expected answer sometimes was not given. Moreover, some fillers also contained pronouns. Even though the fillers were different in their structure and the falsifying element not dependent on the incorporation principle, this factor could have influenced the behaviour of the children because of repetition.

A third factor that may have influenced the experiment is that the subjects were presented with pictures. This is quite normal in an experimental setting but has the disadvantage that it may not be similar enough to any real world situation. Another version of the truth value judgement task which is better than the picture version exists. This is the act out version, where subjects are not presented with pictures, but with small props, like animals and dolls. This act out version presents the world in a better way and therefore it is expected that results should become stronger.

A new set of experimental conditions was designed, with many more fillers (conditions used in a different study, that were dissimilar to the discourse structures used for this incorporation study), to prevent any carry-over effect. There was only 1 yes- and 1 no-incorporation-condition,

and 7 other yes-, and 7 other no-conditions functioning as fillers. Since the aim was to prevent a carry-over effect, the number of test sequences was reduced to one. This is usually not advisable but in this study acceptable since large numbers of trials had already been tested. The task was the same, but instead of pictures, the act-out version of the truth value judgement task was used. For example, the child was presented with two dolls, one with blond hair, and one with brown hair. Then one of the experimenters introduced these dolls with a short story, like (13).

(13) Example of a test condition

*A blond girl and a girl with brown hair were playing in the playground. The girl with brown hair sat on the seesaw. But, of course, you can't really play on your own on the seesaw, you need someone else. So the girl with the brown hair calls the blond girl: "Blond Girl, Blond Girl, come over here and play with me on the seesaw!" The blond girl walks over to the seesaw but when she sees it she says: "No, I don't feel like sitting down on the seesaw, I have a new dress, and it will get dirty if I sit down. You know what I'll do, I can push you up and down, then you can sit on the seesaw and play, and I don't have to sit down". So that's what she does, and the girl with brown hair is really happy, because she's going up and down, and the blond girl is happy because she doesn't have to sit down. Now, Fluffy (the hand puppet), can you tell us something about what has happened here?*

The conditions were:

*I think a girl is sitting here. She has brown hair.* (No- condition, where the girl with brown hair was not the one sitting.)

*I think a girl is very scared here. She has brown hair.* (Yes- condition, in a different story, where a blond girl is scared of dogs and the other one, who is not, has brown hair.)

This study was conducted with 20 English-speaking children, ranging in age from 3 years and 3 months to 4 year and 11 months, average 4 years and 1 month.

The expectations were obviously the same, and this time the results were even stronger. Again, all yes-conditions were consistently answered with a yes-answer.

*Table 2 Results*

	# of children	# of trials	# of errors	Error percentage
Yes	20	20	0	0/20 = 0
No	20	20	2	2/20 = 10%

Out of the 20 no-conditions, only 2 were answered with a yes-answer, resulting in 90% expected no-responses. The noise level had been reduced to 10% now, since 90% of the responses from all the children conformed to the incorporation principle. The conclusion is therefore that they know the principle at an early age and that the clause (2c) of the innateness hypothesis is satisfied.

### *5.3 Universality and the inter-sentential level*

Now there is only one requirement left to decide on the possible innateness of this principle, as stated in clause (2b). According to Crain and Thornton (1998), the property has to be universal, which requires cross-linguistic evidence. That is to say, if the incorporation principle is part of the genetic predisposition of humans, it is likely to exist in more than one language. Perhaps in a different form or maybe even as a property that is subject to parameterisation. Even though the thought of testing other languages for inter-sentential principles is inviting, it is practically impossible to test all languages for the incorporation principle. Still, any cross-linguistic information about inter-sentential principles is interesting from a theoretical point of view because it could support the innateness hypothesis at the inter-sentential level. Thus, although evidence from one or more languages cannot be conclusive on the issue of universality, any evidence analogous to the English results would support the argument.

In an experiment using the picture version of the truth value judgement task, 16 Dutch children, ranging in age from 2 years and 11 months to 3 years and 11 months (average age 3 years and 6 months) were tested using the same material, reported in (14), as in the first English experiments.

(14a) Yes-conditions:

Er is een jongetje aan het rennen. Hij heeft een rode trui aan.

Er is een meisje aan het dansen. Ze heeft een rode jurk aan.

Er is een jongen aan het eten. Hij heeft een zwarte broek aan.

Er is een meisje aan het dansen. Ze heeft een zwarte hoed.

Er is een hond aan het lachen. Hij heeft een halsband om.

(14b) No-conditions:

Er is een jongetje aan het lopen. Hij is lang.

Er is een vrouw aan het lezen. Ze heeft zwart haar.

Er is een jongen aan het eten. Hij heeft een hoed op.

Er is een hond aan het bijten. Hij is zwart.

Er is een poes aan het slapen. Hij is zwart.

(14c) Fillers:

Er is een hond op dit plaatje. En een poes zit in de boom.

Er staat een huis op dit plaatje. En een auto staat op het huis.

Er zit een jongen op een bank. En een man eet een appel.

Er is een olifant op dit plaatje. En een giraf zit in een emmer.

Er is een aap op dit plaatje. En een muis zit in het water.

The performance on the interpretation of the above sentences was worse for the Dutch children than for the English. In table 3, the results are reported.

*Table 3 Results*

	# of children	# of trials	# of errors	Error percentage
Yes	14	5	3	3/70 = 4.3%
No	14	5	17	17/70 = 24.3%
Filler	14	5	5	3/70 = 4.3%

It is interesting that the Dutch children performed at a correct rate of only 75.7% in the no-condition. This is not a low percentage, and cannot be interpreted as the children not knowing the incorporation principle at all, but it is lower than 90%. There must be reasons for the low performance. It could be the case that the experiments were not conducted as well as with the English children, but there is no evidence for that. In addition, the fact that pictures were used may have influenced the Dutch children more than the English, but, again, there is no evidence for this. Moreover, there may be a linguistic reason for the differences between the Dutch and English children. The difficulties that Dutch children face in interpreting sentences like those in (14) may be based on a difference between the case systems of the two languages. Basically, the default case, in the sense of a last-resort mechanism, not as an instance of 'structurally inherent' case, is different for English and Dutch children (Philip and Coopmans, 1996). According to Philip and Coopmans, accusative is the default case in

English while in Dutch it is nominative, as can be seen from the examples in (15).

(15a) Coordinate Subjects:

John and I / me went to the store.

Jan en ik / \*mij gingen naar de winkel.

(15b) Exception Phrases:

Everyone got an ice cream, except \*I / me.

Iedereen heeft een ijsje gekregen behalve ik / \*mij.

(15c) Infinitival Phrases:

\*I / Me do the dishes? No way!

Ik / \*Mij de afwas doen? Geen denken aan!

The default case defines the type of pronoun children learn first. In addition, children rely highly on pointing to learn any referring NP. Since the default case is therefore closely related to deixis, which is 'referentiality' par excellence, and the case in the experiment was nominative case, this is linked to pointing for the Dutch children. I propose that therefore the discourse approach is *as available as* the deictic approach. Based on this equal availability, there is a 50% chance that the Dutch children will opt for the deictic option. When they then have chosen the deictic approach, there is another 50% chance that they will choose the 'wrong' person of the two persons available in the picture. This will then lead to the 25% of errors on the no- condition in the incorporation experiment. The errors in the Dutch experiment thus are accounted for by language specific properties and are assumed not to affect the possibly innate knowledge of the principle but only the *performance* by the language user. Even though the cross-linguistic evidence is not convincing at this point, it must be noted that the percentage of correct answers is high enough to conclude that there is a principle that is controlling some part of the interpretation. It is likely that further developed new experiments will show that Dutch children do have knowledge of the incorporation principle, just as the English children. At this point, all that can be concluded is that no universality evidence supports the argument. Obviously, this does not mean that there is no cross-linguistic evidence that supports the hypothesis; it only means that this evidence has not been shown yet.

## 6. Conclusion

Extending arguments from other levels of interpretation and structures in language, such as the syntactic one, it has been argued that principles operating at the level of sentence sequences can be part of the innate language faculty. When interpreting sentence sequences which hold reference across sentence boundaries, children have to use knowledge that is not available in their linguistic environment. This makes a poverty of stimulus at the inter-sentential level available. Moreover, experimental evidence demonstrates that the inter-sentential incorporation principle of Heim's File Change Semantics emerges early in English children. This is further support for the possible innateness of inter-sentential principles. In addition, Dutch children seem to have an inclination to the Incorporation Principle as well, even though the evidence is not completely convincing. The conclusion has to be made that following the innateness hypothesis (Crain and Thornton, 1998), it has been shown that some inter-sentential principles could be part of the genetic predisposition for language and evidence shows that the incorporation principle, which controls referentiality across sentences and thus operates at the inter-sentential level, could be genetically determined.

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