Greek 'strong' pronouns and the delay of principle B effect

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Abstract. This paper examines the Delay of Principle B Effect (DPBE) in child language. It is argued here that Greek 'strong' pronouns *aftos, afti,* are in fact demonstratives obeying Principle B, and this is the reason why they resist accidental coreference and exhibit no DPBE. An experiment on Greek-English bilingual acquisition of pronominal reference is described. Our results show a pattern identical to that of monolingual acquisition of the two languages. It is suggested here that, if Greek 'strong' pronouns are really demonstratives, then the findings of the experiment falsify a theory of bilingual acquisition that allows interference among different elements of the two languages, but not a more constrained theory that would predict interference only in the case of identical elements.

1. Introduction

The term Delay of Principle B Effect (DPBE) is used to describe the case in which children allow a personal pronoun to corefer with an interclausal c-commanding antecedent, violating, thus, Principle B (or so it seems).

(1) Mary_i covered her_i (=Mary covered Mary)

The literature on this issue is quite extended, and the phenomenon has been studied in several languages (Chien & Wexler 1990, Grimshaw & Rosen 1990, English; Avrutin & Wexler 1992, Russian; Sigurjonsdottir 1992, Icelandic; Philip & Coopmans 1996, Dutch etc). However, the DPBE exists in certain languages only (or rather, as we shall see later, with

* Most of the work in this paper is part of my MA Dissertation in the University of Reading. I would like to thank my supervisor Spyridoula Varlokosta and the course director Irene Philippaki-Warburton for their guidance and support. I would also like to express my gratitude to the children who participated in this experiment, to the children's mothers in Reading, as well as to the teachers of the nursery schools 'Tasis' in Kefalari (Athens) and 'Ta zouzounakia' in Hersonissos (Heraklion). I am particularly grateful to Sophia Delidaki and Rodanthi Athanasiadi for their help with the experiments. Many thanks to Marco Tamburelli for a short but interesting discussion on interference and to an anonymous reviewer for useful comments.

Reading Working Papers in Linguistics 7. 103-124.

certain types of pronouns only). The question we set out to answer is what happens in cases of first language acquisition of two languages (English and Greek), of which only one (English) exhibits a DPBE. Is the development autonomous, or can we find any signs of interference, as some theories on bilingualism would predict? (Paradis & Genesee 1996).

Our paper proceeds as follows: in 2, we present the phenomenon of the DPBE. In 2.1, some approaches on the issue are mentioned. In 2.2, a new typology of Greek pronouns is proposed, namely, it is argued that Greek 'strong' pronouns are demonstratives and some implications of this analysis are given in 2.3. In 3.1, there is an outline of theories on bilingualism and in 3.2 the results of an experiment on Greek-Dutch bilingual acquisition of pronominal reference are given (Varlokosta & Dullaart 2001). In 4, there is a detailed description of our experiment (4.1 subjects, 4.2 methodology, 4.3 results and discussion). A brief conclusion follows.

2. The DPBE

2.1 Binding and coreference

There is a consensus among researchers that there are good theoretical and empirical reasons to believe that the DPBE is due to some other reason, not a violation of Principle B, which is innate (Chien & Wexler 1990). The explanation given by several researchers is that the DPBE is a consequence of children's problems with *coreference.* Grodzinsky & Reinhart (1993) have proposed a pragmatic rule that governs coreference:

> Rule I: Intrasentential coreference
> NP A cannot corefer with NP B if replacing A with C, C a variable A-bound by B, yields an indistinguishable interpretation.

In order to apply Rule I, children need to maintain two representations in their memory at the same time: the bound variable reading and the coreference one, in order to be able to compare them, see if they are distinguishable or not and then decide accordingly on the matter of coreference. The problem, according to Grodzinsky & Reinhart (1993), is that this task is "beyond children's computational capacity". Due to limitations in their working memory, children cannot complete the task

successfully and they are therefore forced to adopt a guessing strategy: in the relevant experiments, they answer randomly.[1]

Howerer, there are two cases where the DPBE does not appear:[2]

i) In contexts with clitics (McKee 1992, Italian; Baauw, Escobar & Philip 1997, Spanish; Hamann, Kowalski & Philip 1997, French; Varlokosta 2002, Greek). For example, Varlokosta (2002) examined Greek speaking children using the Truth Value Judgment task, and in contexts with clitics, such as (4), she had correct responses (non reflexive interpretation) in 95% of the cases.

(2) O Goofy ton skepase
the Goofy him-clitic covered
'Goofy covered him'

Avrutin & Wexler (1992) suggest that clitics are subject to binding only, never to coreference. Similarly, Baauw, Escobar & Philip (1997) claim that clitics must be bound, because they are underspecified for the feature [human] (Delfitto & Corver 1993), they are [+/- human]:

(3) Gianni lo vede (lo=Bill/the tree)
Gianni him-clitic sees
'Gianni sees him/ it'

But specification of the feature [human] is necessary for pronouns (strong pronouns and clitics) so that their φ-features (person, number, gender) can be interpretable at LF. The only way for clitics to achieve specification of the feature [human] is to establish a binding relation with a coindexed antecedent; this way, the clitic inherits the binder's value for this feature. So clitics must be bound, either in syntax or in discourse (d-linking).

ii) There is no DPBE in contexts with Greek strong pronouns. Varlokosta (2002), using the same method as for clitics, found an adult-like performance for sentences with strong pronouns, such as (4):

[1] Chien and Wexler (1990) propose a similar pragmatic rule, which they call Principle P. A major difference of the two proposals is that Chien & Wexler claim that children do not know the pragmatic rule.

[2] For the sake of completeness, we would like to add that there is no DPBE in contexts with quantified NPs (Chien & Wexler 1990).

(4) O Goofy skepase afton
the Goofy covered him-strong pronoun
'Goofy covered him'

Varlokosta (2002) suggests that the reason is parallel to that of the case of clitics; while most strong pronouns, cross-linguistically are always [+human], Greek strong pronouns are underspecified for the feature [human], so they need to be bound.

(5) O Yianis vlepi afton (afton= Bill/ the computer)
the Yianis sees him-strong pronoun
'Yianis sees him/ it'

According to Varlokosta, the question why Greek strong pronouns have this property of being [+/- human] can be answered by the observation that they have demonstrative morphology (Holton, Mackridge, Philippaki-Warburton 1997): demonstratives, cross-linguistically, may refer to non-human entities (Cardinaletti & Starke 1999a).

2.2 Aftos is a demonstrative

In Greek, as already mentioned, there are two types of personal pronouns; clitics *ton, tin,* and a second type, *afton, aftin*[3], which is generally assumed to be a strong pronoun. However, this second type does not follow the criteria for strong pronouns as set by Cardinaletti & Starke (1999a). Rather, it respects the criteria for demonstratives (Cardinaletti & Starke 1999b):

i) Demonstratives always have a special morphological marker, never found on personal pronouns - we have already mentioned that *aftos, afti,* have 'demonstrative morphology'.

ii) Demonstratives may refer to non-human entities in contexts requiring strong forms (personal pronouns cannot) - remember that *aftos, afti,* are underspecified for the feature [human].

[3] Greek pronouns are inflected for number and case. *afton, aftin,* is accusative, while *aftos, afti,* which we are using elsewhere, is nominative.

iii) Demonstratives, contrary to personal pronouns, cannot overrule their disjointness requirement through accidental coreference- Greek speakers in general reject the reflexive reading of (6), with the meaning 'John loves only himself', even in adequate pragmatic context.

(6) *O Yianis agapa mono afton*
the Yianis loves only ?-3sg,masc,acc
'Yianis loves only him'

iv) Demonstratives typically make spatial distinctions of the far/near type, while pronouns seem never to do that- such a distinction in Greek is probably the *aftos- ekinos* one (where *ekinos* is the 'far' type).

Our brief test has shown that *aftos* belongs to the class of demonstratives. But one might argue that there is one respect in which *aftos* behaves differently from demonstratives with respect to binding. Demonstratives must be disjoint from any c-commanding antecedent (Principle C), while our element must be disjoint only from local antecedents, just like personal pronouns (Principle B). This is also the case with the English *them*, which Cardinaletti & Starke (1999b) argue that it is demonstrative:

(7) a)√ I didn't buy the motorbikes, because I liked neither **them** nor their owners
b)* I didn't buy the motorbikes, because I liked neither **those** nor their owners

Similarly, in the Greek translation of (7a), our element is not sensitive in principle C:

(8) Den agorasa tis mihanes, giati de simbathisa ute **aftes** ute tus idioktites tus

However, Cardinaletti & Starke solved this problem, by claiming that sensitivity to Principle C is not an inherent property of demonstratives; Principle B is assigned to the first available pro-form, where personal pronouns are preferred to demonstrative pronouns, and C to the rest.

Repartition of Pro-Form Binding (Cardinaletti & Starke 1995)
a) B>C (i.e. Assign Principle B to the first pro-form, C to the rest)
b) Personal Pronouns> Demonstrative Pronouns

So, if English *them* is a demonstrative, there is no English third person plural pronoun. Similarly in Greek, we would add, if *aftos* is really a demonstrative, there is simply no personal pronoun corresponding to the same set of φ-features. So principle B is looking for an element to be assigned to, and the first one that it comes across, since there is no personal pronoun with the φ-features of *aftos*, is the demonstrative pronoun *aftos*.

The conclusion of the above is clear: Greek *aftos* behaves exactly like demonstratives: it refers to non-human entities in contexts requiring strong forms, it makes a spatial distinction of the far/near type and it strongly resists accidental coreference. This last property, one of the inherent properties of *aftos* as a demonstrative, explains the absence of DPBE in child language.[4]

2.3 "B problems" and strong pronouns

The typology proposed in the previous section allows us to claim that the following statement-generalization, given by Cardinaletti & Starke (1995), is supported by the case of Greek:

Children exhibit "B problems" only when they use strong pronouns.
(Cardinaletti & Starke 1995)

In Greek there are no strong pronouns, only clitics and Principle B-demonstratives. Therefore, no DPBE is to be expected.

In Romance languages, the DPBE appears with strong pronouns only, as predicted by the theory. As far as English is concerned, Cardinaletti & Starke (1995) claim that English pronouns *him* and *her* are in fact ambiguous between a deficient and a strong form, but children use them as strong, following a general rule: 'Unless the pronoun of the target language is unambiguously deficient, children only use it as a strong form'. As a result, they have "B problems" with English pronouns, they accept local coreference.[5]

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[4] The case of *aftos* seems to be parallel with third person pro-forms (demonstratives) in languages such as Japanese, Korean and Tamil (Cardinaletti & Starke 1995). I am not aware of any experiments on DPBE with these elements.

[5] The Dutch pronoun *'m* appears to be problematic: both approaches would predict no DPBE, since a) it is not always interpreted as [+human] and b) it is a weak pronoun. However, Baauw (1999) showed that Dutch children exhibit a DPBE in contexts with this pronoun.

An important advantage of Cardinaletti & Starke's approach is that it provides us with a complete and unified explanation for the categorization of personal pronouns (and demonstratives), the assignment of Principle B and the DPBE.

As we shall see later (in 4.4), the new typology also has important consequences on the interpretation of data from bilingual acquisition.

3. Bilingual acquisition of pronominal reference

The initiative for this theoretical investigation was an experiment on the acquisition of pronominal reference by Greek-English bilingual children. The question I was trying to answer was whether there is interdependence of the two systems or completely autonomous development.

3.1 Theories of bilingual acquisition

Within the area of Bilingual Acquisition, there are two main theories: the Single System Hypothesis or Unitary Language System Hypothesis, supported mainly by Volterra & Taeschner (1978) and Vihman (1985), among others, according to which children start with one system- grammar for both languages The second hypothesis claims that there two different systems from the beginning and has been called Grammar Differentiation approach (Genesee 1989, Meisel 1989, 1990 and others).

Still, within the Grammar Differentiation Approach, there is space for disagreement; the debate is whether the two systems develop autonomously or not. Autonomous development would predict for the bilingual child an acquisition pattern identical to that of monolingual children acquiring each language. Interdependence (or interference, or intrusion) has been defined as "the systemic influence of the grammar of one language on the grammar of the other language during acquisition, causing differences in a bilingual's patterns and rates of development in comparison with a monolingual's" (Paradis & Genesee 1996).

Paradis & Genesee (1996) mention three potential manifestations of interdependence: transfer, acceleration and delay:

i) Transfer is "the incorporation of a grammatical property into one language from the other." It is more likely to happen in cases where the child has reached a more advanced level of syntactic complexity into one language from the other. This might happen for two reasons: a) either because this is the typical pattern of monolingual acquisition of the two

languages or b) because the child is more dominant in one of the two languages he/she is acquiring.

ii) Acceleration means that a certain property appears in the grammar of one of the two languages earlier than would be the norm in monolingual acquisition. Again, this is more likely to happen if the child is at a more advanced syntactic level in one of the two languages. Then, the fact that the child has conquered a certain structure or property of the grammar in one language makes it easier for him/her to acquire the corresponding structure in the other language, earlier than monolingual children normally do.

iii) Delay is the third potential manifestation of interdependence. It means that the overall rate of acquisition of a bilingual child decreases. There is a possibility that it is more difficult to acquire two languages than one, and the extra burden causes the bilingual children to be behind monolinguals. Evidence for this would be cases in which certain grammatical properties of one of the two languages (or both) in bilingual acquisition emerge later than they would in monolingual acquisition**.**

3.2 DPBE in (Greek-Dutch) bilingualism

The aim of our study is, as we have already mentioned, to see what happens in Bilingual First Language Acquisition in respect with DPBE. This issue is studied in Varlokosta & Dullaart (2001), who considered Greek- Dutch bilingual acquisition. Greek does not exhibit a DPBE, neither in strong pronoun nor in clitic contexts (Varlokosta 2002). On the other hand, there is a DPBE in Dutch, in both strong and weak pronoun contexts (Philip & Coopmans 1996, Baauw 1999). Varlokosta & Dullaart examined 10 Greek-Dutch bilingual children, using the Truth Value Judgment Task, in order to find out whether the pattern that a monolingual child follows in the acquisition of pronouns is the one that the bilingual child follows in each of the two languages, or there is any evidence of interdependence. Their conclusion was that the two languages develop autonomously; bilingual children follow exactly the same patterns as monolinguals in acquisition. There was no evidence for transfer, acceleration or delay in their subjects. The following tables present their results, compared to the results of the monolingual studies (percentage of correct responses for the test sentences):

(9)

Greek pronoun type	Bilingual Greek-Dutch	Monolingual Greek
clitic	95%	95%
Strong pronoun	95%	87%

(10)

Dutch pronoun type	Bilingual Greek-Dutch	Monolingual Dutch
Weak pronoun	45%	about 50%
Strong pronoun	55%	about 45%

In the next section we present our experiment, which set out to replicate this finding with Greek-English bilingual children.

4. The experiment

4.1 Subjects

Ten bilingual Greek-English children were tested. Three of them have been brought up in England - and their mother is Greek-, and the rest of them live in Greece - British or American mother. The children in Greece were tested in nurseries, one in Athens and one in Crete, and the children in England were tested in their home.

The age range was from 4;1 to 6;7 (average 5;2). Two more children were excluded, since they refused to cooperate or they did not understand the task- they answered "yes" to all the questions, test and control, as well as to the filler questions.

In addition, as control groups, two monolingual English children were tested, aged 4;5 and 5;2 and two monolingual Greek children, aged 4;9 and 5;6.

4.2 Methodology

The Truth Value Judgment Task (TVJ Task) was used (Crain & Thornton 1998, Gordon 1996). This task is used to investigate which meanings children can - or cannot - assign to sentences, it is a comprehension test. According to Crain &Thornton (1998) this task is useful in three cases:

a. To check whether children analyze certain constructions differently than adults
b. To know whether they assign fewer interpretations to certain constructions, and
c. To find out if they assign interpretations in addition to those that adults do.

Our experiment falls under the third case: we have meaning-utterance pairs and we are trying to find out if the child assigns to a certain type of utterances an additional meaning, one that is ruled out by a grammatical constraint and is therefore not assigned by adults. The procedure is to test whether both interpretations - the one that adults have and the additional one - are available to the children, that is, if this specific construction is ambiguous for the children. The TVJ task makes both meanings available for each test sentence, in the context of an acted-out story. One of them is an accurate description of what happened in the story (it is True), but it is ruled out by the constraint. The other meaning is not ruled out by the constraint, but it is not an accurate description of what happened in the story (it is False). In our case:
Meaning1 <*Grandma$_i$ covered her$_i$> True
Meaning2 < Grandma$_i$ covered her$_k$ > False
The null hypothesis is that children lack the constraint→
Expected results: Children permit both Meaning1 and Meaning2
The experimental hypothesis is that children know the constraint→
Expected results: Children permit Meaning2 but not Meaning1.

In the TVJ task, the experimenter, using some toys, acts out stories in order to create the appropriate context and then a puppet (manipulated by a second experimenter) utters the sentence. The subject then has to say whether the sentence is True or False - if the puppet said "the right thing" or "the wrong thing". This has the advantage that the subject does not feel that s/he is being tested; it is the puppet that makes mistakes, the child always knows the right answer. Then, the child rewards the puppet accordingly, so that the procedure will be more fun for him/her; for a right answer the puppet gets a biscuit, for a wrong one he gets a stone to eat.

In constructing the stories, special care was taken in order to follow the conditions of the TVJ task as mentioned in Crain &Thornton (1998). In specific:

Condition of falsification: the negation of the test sentence is a true description of the story.

Order of events: the event corresponding to Meaning1 comes last in the context.

Condition of Plausible Dissent: Meaning2 is under consideration at some point at the story. This means that somewhere, in the middle of the story, Grandma is just about to cover someone else (another female). This is important, because otherwise Meaning2 would not be false, it would be irrelevant.

Failure to follow these conditions could cause confusion to the child and produce false results (for details see Crain & Thornton 1998). We will now illustrate the above conditions with the aid of one of the stories used in our experiment:
Experimenter: In this story, Mary, Grandma and Grandpa decided to sleep outside one night, so they would see the stars. It was a cold night, and after a while, Mary and Grandma began to shiver. Mary said: "Grandma, could you cover me with that blanket?" But Grandma said: "Sorry, Mary, but this blanket is not big enough for you too. I am so cold, I will need the whole thing to keep warm. You will have to get another blanket". Grandpa: "Here, Mary, you can have my blanket. I don't need it, because I have long sleeves and I am not cold. Lie down, and I will cover you". <Grandpa covers Mary> Grandma said: " Are you ok Mary? Good. I will lie down under my blanket, then". < Grandma covers herself with her own blanket>.
Kermit: Ok, this was a story about Grandpa, Grandma and Mary, and I know what happened. Grandma covered her.

Meaning1 <* Grandma$_i$ covered her$_i$> True
Meaning2 < Grandma$_i$ covered her$_k$ > False

Background
Context, Part 1: Mary, Grandma, Grandpa go out to sleep. Mary and Grandma are cold and they need blankets (Grandma covers *someone*).

Condition of plausible dissent: *Meaning2 is under consideration*.
Context Part 2: Grandma could end up covering Mary.
(possible outcome)

Condition of Falsification: *Meaning2, false or negation of Meaning2, true.*
Context, Part 3: Grandma does not cover Mary.

Final event: *Meaning1, true*

Context, part 4: Grandma covers herself.
(actual outcome).
The actual outcome makes it clear to the child why the puppet's answer is wrong.

4.3 Procedure

The experiment involved two sessions, one for English and one for Greek. Half of the children had the Greek session first and the other half the English one, so that a sequence effect would be avoided. There was an interval of approximately one hour between the two sessions for each child.

For English, there was one test condition, for strong pronouns, and for Greek there were two test conditions, one for clitics and one for strong pronouns.[6]

(11) Test condition for English:
Grandma$_i$ covered her$_k$/*$_i$ (strong pronoun object)
(adult response "No")

(12) Test conditions for Greek:
a. O babas$_i$ ton$_k$/*$_i$ edise (clitic context)
the daddy him-clitic dressed (adult response "No")
'Daddy dressed him'

b. O Giorgos$_i$ zografise afton$_k$/*$_i$ (strong pronoun object)
the George painted him-strong pronoun (adult response "No")
'George painted him'

For each test condition there was a control condition, in which Meaning2, the grammatical one, was True, and Meaning1, the ungrammatical one, is False. There were two different trials for each experimental condition, so there were four trials in English and eight trials in Greek. In addition to the experimental conditions, a number of filler questions were included in the experiment. There was one filler after each experimental condition, for which the correct answer was the opposite to the answer of the experimental condition.

[6] For convenience, we shall be calling *aftos, afti* 'strong pronouns', always bearing in mind, though, our previous discussion on the classification of these elements.

During the experiment, each set of toys was placed in a resealable plastic bag, and the child was asked to choose which bag s/he wanted for the next story. This was done in order to achieve a random order (and therefore avoid a sequence effect), but also so that the child would feel that s/he has an active part in the whole process, and would not get bored.

An additional problem was that, for the experiments that were conducted in England, the experimenters were native Greek speakers. And although they were both fluent in English, there was a fear that the child, aware of the fact that they are not native English speakers, would behave differently in the English session; s/he might want to continue speaking Greek, or s/he might think that 'since they don't know English very well', s/he should not correct them. In order to avoid such problems, that might produce false results, the following method was used: in the Greek session, the child was told that 'Kermit is a bit sleepy, and he doesn't understand exactly what is going on. Please tell him when he is wrong'. While in the English session s/he was told that 'Kermit wants to learn English. Could you help him?'. In the experiments conducted in Greece, the experimenter that was holding the puppet was bilingual (Greek-English).

4.4 Results – discussion

Test conditions

Table 1 Correct responses to test condition for English

English pronoun type	Correct Responses
Strong pronoun	12/20 (60%)

Table 2 Correct responses to test conditions for Greek

Greek pronoun type	Correct responses
Clitic	18/20 (90%)
Strong pronoun	16/20 (80%)

Control conditions

Table 3 Correct responses to control condition for English

English pronoun type	Correct responses
Strong pronoun	19/20 (95%)

Table 4 Correct responses to control conditions for Greek

Greek pronoun type	Correct responses
Clitic	19/20 (95%)
Strong pronoun	15/20 (75%)

Correct responses to fillers: 100%.

The results show that the acquisition of English is not affected by the simultaneous acquisition of Greek: children make coreference mistakes in the interpretation of pronouns, just like monolingual English-speaking children (Chien & Wexler 1990). The percentage (60%) is about chance level, supporting the hypothesis that, being unable to complete the process concerning the relevant pragmatic principle (Grodzinsky & Reinhart 1993), children answer randomly.

This conclusion (that children answer randomly) is further supported by Figure 1. If we check the percentage only, we cannot exclude the possibility that there are two groups of children: one group consisting of children that know the pragmatic principle P and answer correctly almost always, and a second group with children that do not know it and always give the wrong answer. But in this case, in a histogram showing how many children gave 0, 1 or 2 correct responses, we would find a bimodal distribution with one mode at 2 and another one at 0. On the other hand, if children in general have a problem in processing principle P and answer randomly, we expect to see a binomial distribution of correct responses with a single mode at 1, showing, in simple words, that the majority of the children answered correctly in one of the two questions and wrongly in the other→ randomly. And this is exactly the case in Figure 1:

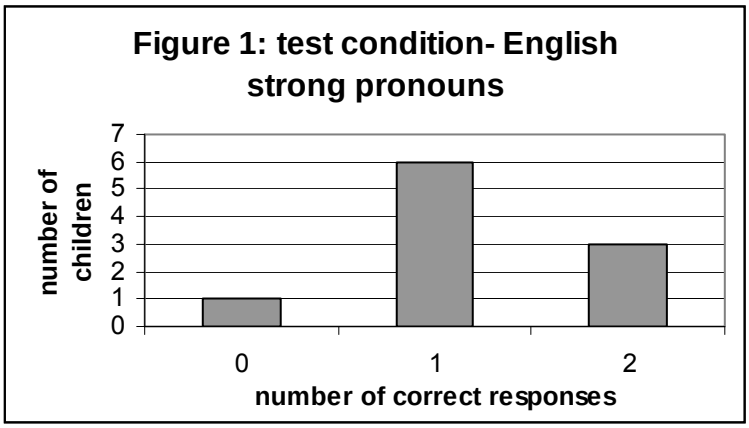

Figure 1, the histogram of correct responses to test condition in English has a single mode at 1 and slopes down appropriately on both sides; it looks like a binomial distribution. The conclusion is that children respond in some roughly equal chance manner, exactly as Grodzinsky and Reinhart's theory predicts,[7] and exactly as monolingual English-speaking children behave.

[7] See footnote 1 for Chien & Wexler's approach.

Note that the extra 10% that brings us to 60% (if we agree that 'chance level' is 50%) comes from the two children that are above 6 years old (see Appendix I, the detailed chart with the responses each subject gave). Both of these children answered correctly for both test sentences. The sample is not big enough, but it follows the results of experiments with monolingual children, which show that DPBE problems decrease at about that age.

For the control sentences in English, the result was as high as 95%. Also, the two monolingual English children we tested answered correctly in all control sentences, but each of them gave an incorrect answer in one of the two test sentences (table 5). Thus, they gave us a 50% correct, as expected, confirming once again that English-speaking children answer randomly.

Table 5 Correct answers for the monolingual English children

Age	Test condition	Control condition
4;5	1	2
5;2	1	2

In the case of Greek clitics, things are equally clear: the percentage for the test sentences, was 90% , very close to that of monolingual Greek children (Varlokosta (2002) gives 95% for monolingual children). The same goes for the control sentences (95%- Varlokosta also gives 95% for monolinguals). And the two monolingual Greek children we tested gave us 100% correct.

Finally, for Greek strong pronouns, too, children's performance was adult like (80%). For the control sentences, the percentage was 75%, and we had one wrong answer by the monolingual Greek children.

The fact that the percentage for Greek strong pronouns is relatively lower than for clitics is not surprising. The same effect - in different degree- can be observed in experiments with monolingual Greek children (Varlokosta 2002). On top of that, even adults, who informally took part in our experiment, seemed not to be completely happy with the strong pronoun sentences: very often, they would ask for clarification. The reason for this, we believe, is that "the most deficient form must be chosen if it can be chosen" - or "minimize up to crash" (Cardinaletti & Starke 1999a). Recall that the stories used had the same structure, both for clitics and for strong pronouns. Moreover, the context was exactly the same, which means that a clitic could be used instead of a strong pronoun in all cases. Instead of (12b), for example, we could have (13):

(13) O Giorgos$_i$ ton$_i$/*$_k$ zografise
the George him-clitic painted
'George painted him'

Thus, a clitic (the most deficient form, Cardinaletti & Starke (1999a)) is acceptable in (13), and this renders (12b) unacceptable, since it violates the *Minimize a* Principle. The subjects were forced to decide on the Truth value of an utterance that was unacceptable, and this created lower percentage of correct responses in both test and control sentences.

This conclusion is supported by the fact that, in contexts such as (14), (strong pronoun as object of preposition), where the use of a clitic is impossible (15), percentages go high again (95% for test and control condition, Varlokosta 2002).

(14) O Goofy agorase se afton ena vivlio
the Goofy bought to him-strong pronoun a book
'Goofy bought him a book'

(15) *O Goofy agorase se ton (ston) ena vivlio
The Goofy bought to him-clitic a book

Consequently, a relatively lower percentage for strong pronouns was expected, and, as a result, the conclusion of our study in the case of strong pronouns as well as in general, is that the two systems develop autonomously: there was no sign of transfer, acceleration or delay.

Let us now see these results under the light of our new analysis, namely that Greek 'strong' pronouns are demonstratives.

This requires a few additional words on what exactly interdependence is. Acceleration involves earlier emergence of a certain property in the grammar of one language. This could happen if the same property exists in the other language, too, and is normally acquired in an earlier stage (see discussion on functional elements in child French and English, Paradis & Genesee 1996). Transfer would involve the incorporation of a grammatical property of a language into the other, for example in two languages with different word order (Meisel 1989).

In both cases (transfer and acceleration) the discussion is about a certain parameter or element, the *same* for both languages. In the case of acceleration the parameter is set (or the element appears) earlier because the same parameter exists - and is set already - in the other language. In the case of transfer, the parameter gets the wrong value because the setting is different in the other language. The above describe what happens with

functional elements and word order, and it is possible that this is the only kind of syntactic interdependence possible: an interaction of elements of the same type or of the settings of a certain parameter.

The problem is that until now there is no complete theory that would predict exactly what type of interdependence we should expect. And we have no ambition of formulating a theory on bilingualism in this paper. But in a constrained theory that would predict interference only when we deal with elements or parameters that are the same in the two languages, the environment tested in our experiment would not produce interference effects. This is so because we have different elements in each language:[8] strong (weak) pronouns in English, clitics and demonstratives in Greek. There is no reason why the behaviour of one of them (presence or absence of DPBE) should have any influence on the behaviour of another.[9] What we should look for and test is what happens in bilingual acquisition of two languages that have the same elements with a difference in behaviour, (or in chronological appearance) or examine the setting of a specific parameter in the two languages.

However, at the current state of the theory of bilingual acquisition, the possibility of finding interference with elements that are different but follow the same Principle remained open. And that is what our experiment tests; although English and Greek pronouns belong to different classes (strong pronouns the former, clitics and demonstratives the latter), they all follow Principle B. And the simultaneous acquisition of these elements might create interference. Our study has shown that it does not.

5. Conclusion

I have argued that Greek strong pronouns are demonstratives following Principle B. And this, according to Cardinaletti & Starke (1995) is the reason why there is no DPBE in contexts with these pronouns.

Moreover, our experiment has shown that bilingual Greek-English acquisition of pronominal reference follows a pattern identical to monolingual acquisition of the two languages, thus falsifying a general theory of interference, but not a more constrained one, that would predict interference only in the case of identical elements or parameters.

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[8] This idea originates from the view of Marco Tamburelli, but the argumentation is different; I take responsibility for the 'constrained theory' mentioned here.

[9] The same applies to Greek- Dutch bilingual acquisition.

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Appendix I: The full tables

Number of correct responses of each child for the experimental conditions

Table i Test Group: bilingual Greek-English children

Age	English test	English control	Greek Clitics test	Greek strong test	Greek Clitics control	Greek Strong control
4;1	1	2	1	1	2	1
4;2	1	2	2	2	2	1
4;5	1	2	2	1	2	1
4;9	1	1	2	2	1	2
5;2	1	2	2	1	2	1
5;4	1	2	2	1	2	2
5;6	2	2	1	2	2	1
5;7	0	2	2	2	2	2
6;0	2	2	2	2	2	2
6;7	2	2	2	2	2	2
	12/20	**19**/20	**18**/20	**16**/20	**19**/20	**15**/20

The ages given in bold correspond to children who were brought up in England. The rest of the children were brought up in Greece.

Table ii Control Group 1. Monolingual English children

Age	English test	English control
4;5	1	2
5;2	1	2
	2/4	**4**/4

Table iii Control Group 2. Monolingual Greek children

Age	Greek Clitics test	Greek Strong test	Greek Clitics control	Greek Strong control
4;9	2	1	2	2
5;6	2	2	2	2
	4/4	**3**/4	**4**/4	**4**/4

Appendix II: Answer sheets

English session

TVJ Task-Answer sheet

Child's name: Age:
Test Date: Birth Date:

Target	**Response**
Test	
1. Grandma covered her	Yes **No**
2. The policeman washed him	Yes **No**
Control	
3. The boy splashed him	**Yes** No
4. John hit him	**Yes** No

Comments:

Greek session

TVJ Task-Answer sheet

Child's name: Age:
Test Date: Birth Date:

Target	**Response**
Test	
1. I zevra tin xtenise the zebra her-cl combed 'The zebra combed her'	Yes **No**
2. O babas ton edise the daddy him-cl dressed 'Daddy dressed him'	Yes **No**
3. I tigris skoupise aftin the tiger dried her-strong pronoun 'The tiger dried her'	Yes **No**
4. I domata tiganise aftin the tomato fried her- strong pronoun 'The tomato fried her'	Yes **No**
Control	
5. I maimu tin dzibise the monkey her-cl pinched 'The monkey pinched her'	**Yes** No
6. O Giorgos ton zografise the Giorgos him-cl painted 'Giorgos painted him'	**Yes** No
7. O elefandas fotografise afton the elephant photographed him- strong pronoun 'The elephant photographed him'	**Yes** No
8. I agelada epiase aftin the cow caught her- strong pronoun 'The cow caught her'	**Yes** No

Comments: