

# When Is a Preposition a Linking Element? Bilingual Children's Acquisition of French Compound Nouns\*

Elena Nicoladis

## Abstract

French is traditionally considered a non-compounding language because speakers prefer to use lexical forms such as NPN instead of N-N compounds. However, the preposition in these French NPNs shares similarities with meaningless linking elements in compounds in other languages. It is therefore hypothesized that children will consider the prepositions in NPNs to add no meaning to the construction and will treat N-N compounds as they do NPNs. To test this possibility, French-English bilingual children's ordering of complex lexical items with and without prepositions was compared in French and English. A group of same-age monolingual English children acted as a control group. The results showed that the bilingual children mis-ordered French compounds equally often when they included or did not include a preposition. In contrast, the use of an English preposition in English expressions improved their correct ordering. One possible interpretation of these results is that bilingual children do not consider French prepositions as meaningful elements within NPNs. If so, the prepositions in French NPN are in an intermediate state between prepositions and linking elements.

As a general rule, Romance languages are considered non-compounding languages; in contrast to languages like German or English, compounds are thought to be rarely used in existing lexical items and in the creation of complex lexical items (Clark, 1998a; Liceras & Diaz, 2000). In French, complex lexical items are usually created by using morphological markers as *-ier* in (1a) and *-ette* as in (1b) or using a PP as a modifier as in (1c) or (1d). The most common prepositions that appear between nouns in NPNs are *à* (usually translated 'to', 'at', 'with' or 'of') and *de* ('of', 'about' or 'from'). Less commonly the preposition *en* 'in' appears between nouns in compounds, as in *arc-en-ciel* 'arc in sky' for a rainbow. This paper will focus exclusively on *à* and *de*.

- (1) (a) un pommier  
 ‘an apple-*ier*’ meaning an apple tree  
 (b) une poussette  
 ‘a push-*ette*’ meaning a baby stroller  
 (c) un camion de pompiers  
 ‘a truck of firefighters’, meaning a fire truck  
 (d) une corde à linge  
 ‘a rope with/of laundry’ meaning a clothes-line

While root compounds exist in French, as in the N-N compound in (2a) or the V-O compound in (2b), these are rarer forms than those in (1). While N-N compounding seems to be becoming more popular in advertising (Clark, 1985), it still remains a relatively rare form among French speakers (Clark, 1998a).

- (2) (a) un camion-citerne  
 ‘a truck-tanker’ meaning a tanker truck  
 (b) un ouvre-boîtes  
 ‘an open-cans’ meaning a can opener

According to traditional analysis, N-N compounds as in (2a) and nouns modified by a PP (henceforth NPN) as in (1c) and (1d) are different from a number of perspectives. Most importantly, they differ in grammatical status with NPNs being something more like phrases than compound words (Fabb, 1998). Perhaps less importantly, compound words in French are often written with a hyphen (as in 2a) while the words in NPNs are often separated by spaces (as in 1c or 1d), although this is not universally true<sup>1</sup>. The traditional analysis relies on the assumption that French prepositions within NPNs are as meaningful as the prepositions used in phrases, an assumption that can be questioned, as will be discussed below.

The purpose of this paper is to question whether nonliterate French speakers (in this case, bilingual French-English children) consider N-N compounds to be different from NPN lexical forms. By studying nonliterate speakers of French, we can avoid possible effects from orthographic differences between N-N compounds (i.e., often written with hyphens between the nouns) and NPN forms (i.e., often written with spaces between the words). The hypothesis to be tested in this study is: the prepositions in NPNs are becoming linking elements within compound nouns, therefore children will treat NPNs and N-N compounds similarly. To understand how this hypothesis was formed, I will first discuss the definition of compound words and then consider how compounds differ from phrases with emphasis on linking elements. I will then turn to a more detailed description of the relevant French constructions and finally will review the literature related to children’s acquisition of compounds. Throughout this discussion, French and English, the two languages relevant to the present study are highlighted.

### *What is a compound word?*

While pointing out that a crosslinguistic definition of compounds is problematic, Fabb (1998) concludes that there would be little controversy with defining compounds as “a word that consists of two or more words” (p. 66). Words that can make up compounds can be nouns, verbs, adjectives and prepositions (Selkirk, 1982).

One important aspect of Fabb’s definition is that a compound word serves as a unit of meaning unto itself. For root compound nouns (N-N), this means that one noun will serve as a modifier to another noun. This fact has been described in several ways according to the goals of the person writing. For example, Clark et al. (1985) pointed out that N-N compounds often serve a subcategorization function with regard to meaning. Selkirk (1982) remarked that compounds have heads that “display the syntactic and semantic characteristics that are expected of heads” (p. 13). Similarly, ten Hacken (1994) said that in a compounding structure  $[XY]_Z$  or  $[YX]_Z$ , where Y is the head of the compound and Z is the word as a whole, X does not have independent access to the discourse and the denotation of Z is a subset of the denotation of Y. Finally, Fabb (1998) noticed that “a noun in a compound will have a generic function rather than a referential function” (p. 66), giving the example that not every man who takes out garbage is a garbage man.

There is general agreement that compound words have heads, but there has been some discussion as to whether all words with heads are compounds. Notably, Di Sciullo & Williams (1987) argued that French compounds do not obey the Right-hand Head Rule (RHR) they required of compounds and are therefore not compounds. English N-N compounds are right-headed (e.g., *a police car* is a kind of car) and French N-N compounds are left-headed (as in 2a, *un camion-citerne* is a kind of truck). As a general rule, the RHR has been rejected as a defining feature of compounds (e.g., Fabb, 1998; Selkirk, 1982; ten Hacken, 1994). “It seems rather arbitrary to classify *love story* as a compound and *timbre-poste* as a phrase, just because the head is on the righthand side in one case and on the lefthand side in the other one. Therefore I reject the RHR of DiSciullio & Williams as a defining property for compounds.” (ten Hacken, 1994: 42). Following the majority opinion, for the purposes of this paper, left-headed French compounds will be considered compounds.

### *What’s the difference between a phrase and a compound?*

In defining compound words, one difficulty is differentiating compounds from phrases (Di Sciullo & Williams, 1987). This difficulty probably arises for historical reasons; that is, across languages many complex lexical items were probably once phrases (Mellenius, 1997). With the passage of time, the use of the phrasal form can drop off, leading to a loss of transparency in the lexical

form (this is the process thought to underlie the reinterpretation of the English *-like* as *-ly* over time; Fabb, 1998).

Perhaps because of the historical roots of compound, there has been some disagreement in how to classify compounds relative to phrases for language speakers. For example, it has been argued by some that compounds are actually underlyingly phrases (Gleitman & Gleitman, 1970). A more common approach is to consider compound words as simply kinds of words (Fabb, 1998), although they sometimes retain fossilized markers of their historical antecedents (see Baker, 1998). Finally, Selkirk (1982) has argued that there is no sharp distinction between complex words, including compounds, and syntax, but that they share some properties and not others. In other words, “word structure has the same general formal properties as syntactic structure and, moreover, it is generated by the same sort of rule system” (Selkirk, 1982: 2), although with some critical differences in terms of roles within X-bar hierarchy.

The phrasal roots of compound words have left behind some fossilized forms in many of the world’s languages: (now) meaningless linking elements inside compounds. Thus, while linking elements may have once been meaningful elements in a language, they are most often no longer meaningful within the compounds to today’s speakers of those languages. Linking elements can be seen in some English words; for example, a frozen *-s* has remained part of some compounds as in *beeswax*, *woodsman* or *heartsease*. Between the two nouns in nominal compounds in Afrikaans, two common linking elements are a schwa and *-s* (Botha, 1968). Because linking elements are now meaningless, the conditions under which these linking elements are used are often determined partially or wholly by phonological rules, as in Swedish or Celtic or Afrikaans (Botha, 1968; Fife & King, 1998; Mellenius, 1997).

Linking elements in compounds can usually be traced back to once-active grammatical rules. For example, in the English examples above, the frozen *-s* probably marks a frozen genitive form. In this way, it resembles the linking element found in some Saxon compounds which also have a frozen genitive linking element (ten Hacken, 1994). In Afrikaans, the schwa linking element is homophonous with a plural marker and the *-s* with a genitive marker, but neither is meaningful within a compound (Botha, 1968). In Swedish, the linking element *-s* is homophonous with the modern genitive marker while the linking elements *-u* and *-o* that still appear occasionally in nominal compounds were once genitive markers (Josefsson, 1997). Across languages, linking elements often mark or once marked plurality (as in Afrikaans; see Botha, 1968) or possession (as in the examples given for English above). If it is true that compounds are derived from previously active constructions, then we would expect to see some languages in which both the lexical form and the syntactic form are both currently in use (see Dressler & Barbaresi, 1986, for a similar

story about interfixes). French may be precisely one of these languages. To understand this claim, I next turn to a discussion of how similar French prepositions in NPNs are to linking elements within N-N compounds.

*What's the difference between French N-N compounds and NPNs?*

French N-N compounds and NPNs have some features in common. First, they serve the same function with regard to meaning, namely the leftmost noun in both constructions is modified by the remaining words (Bréal, 1964; Clark, 1998a). For example, *une tasse à café* 'cup with coffee' refers to a coffee cup (i.e., a kind of cup), not any cup filled with coffee. The two forms can appear to have similar meanings; for example *un camion-citerne* 'a truck-tanker' is a truck pulling a tanker and *un camion à plate-forme* 'a truck with platform' is a truck pulling a platform. In fact, in Canada, to refer to a dump truck speakers alternate between a N-N compound *un camion-benne* and a NPN *un camion à benne*. Another feature shared by N-N compounds and NPNs is that they are both left-headed, as can be seen in the examples given above.

The crucial difference between N-N compounds and NPNs is the preposition, because prepositions retain their syntactic roles in French phrases. For this reason, for French speakers NPNs are transparent as phrases. Fabb (1998) describes them as "lexicalized phrases" (p. 76). By emphasizing the link to phrases, the fact that these forms are lexical may sometimes be overlooked. For this reason, some linguists have argued that they are best called compounds, on the grounds that like compounds, their meaning comes from the structure as a whole (Bréal, 1964).

It is possible that the prepositions in French NPNs are in the process of becoming linking elements, thus more like N-N compounds than phrases for French speakers. There is a number of reasons to think this. First, as noted earlier, N-N compounding is becoming more common in French, at least in advertising (Clark, 1985). With an increase in compounding in general, French speakers may start to conceptualize their language as one which allows compounds. Second, French NPNs are currently transparent as having a phrasal interpretation, at least for adults. Recall that it has been argued that the origin of complex lexical items is from phrases at some point in the past. In French, then, both the lexical form and the phrasal form are currently active. Third, both *à* and *de* can be seen in phrases marking possession, such as *la voiture à Henri* 'Henry's car' or *la voiture de maman* 'Mom's car', with the latter being the preferred form. The origin of many linking elements within compounds across the world's languages has been genitive markers (see discussion above). Fourth, the transparency in meaning of *à* and *de* may be in the process of being lost. Linguists' opinions range from thinking that these prepositions have a highly abstract meaning to thinking that that they have no denotation at all (see

Kemmer & Bat-Zeev Shyldkrot, 1995, for discussion). In contrast, English prepositions have fairly concrete and stable canonical meaning (Sally Rice, personal communication). Lakoff & Johnson (1999) argued that many English prepositions assume underlyingly concrete metaphors; for example the word “in” relies on the metaphor of a container. In contrast, as Kemmer & Bat-Zeev Shyldkrot (1995) argue, there is no such concrete metaphors underlying the French prepositions like *à* or *de*. Finally, in contrast with the English prepositions like *in*, *on* and *with* which almost always retain syllabic status when they appear between two nouns, the French prepositions *à* and *de* often do not retain the status of a full syllable when they appear between two nouns. All of these reasons point to the possibility that *à* and *de* may be in the process of becoming meaningless linking elements within French compounds.

To test this possibility this study will focus on children’s use of N-N compounds and NPNs, thereby avoiding possible effects of orthography. We turn next to a discussion of children’s acquisition of compound nouns.

#### *Acquisition of compound nouns in French and English*

English-speaking children acquire compound nouns quite early in development, perhaps due to the high frequency of compound words in the input. Compounds appear around two years of age or earlier in the speech of English-speaking children, as seen in both observational studies (e.g., Clark, 1981) and experimental studies (e.g., Clark et al., 1985). Clark (1981) reported that compounding is one of the most common ways that English-speaking children coin lexical innovations. In contrast, Clark (1998a) reported that French-speaking children rarely use compounds in novel lexical items and are more likely to include prepositions in their novel lexical items.

Both English and French monolingual children seem to have little trouble acquiring the correct order of compound nouns (i.e., right-headed in English and left-headed in French). There are no reports of reversals in the little extant data on French-speaking children’s compounds (Clark, 1998a; see also Nicoladis, 1999). Similarly, in the production task of one study, less than 1% of English-speaking children’s productions were considered order errors (Clark et al., 1985: 89). I am not aware of any reports of ordering NPN constructions by French- or English-speaking children.

In contrast to error-free acquisition by monolingual children, French-English bilingual children have been shown to have difficulty ordering the nouns in their compound nouns. For example, in a case study based on observations of spontaneous speech of a three-year old French-English bilingual child, Nicoladis (1999) reported that that child reversed both French and English compounds. In a larger experimental study of 25 3- and 4-year old bilingual children, Nicoladis (in press) showed that they were twice as likely to reverse

their English compounds as monolingual children and equally likely to reverse their compounds in French and English (about 35% of their compounds were reversed in both languages). The reversals are probably due to the children's uncertainty about how to order compounds in both languages.

One last note about acquisition is in order here, in terms of when French-speaking children acquire prepositions. Naturally we could not expect French-speaking children to use prepositions in NPNs if they could not produce prepositions. Clark (1985) has reported that French-speaking children's acquisition of prepositions, particularly *à* is quite early, appearing around two years of age. It seems quite likely then that the 3- and 4-year old children in this study should be capable of producing prepositions.

### *This study*

The purpose of this study was to ask whether or not French-English bilingual children treat N-N compounds like NPNs in French. Recall that the hypothesis to be tested here is that prepositions in French NPNs are in the process of becoming linking elements within N-N compounds. Two predictions are made on the basis of this hypothesis. The first prediction is that older children will be better than younger children at choosing the same preposition as adults in novel NPN constructions (e.g., *à* where adults say *à* and *de* where adults say *de*). The rationale for this prediction is that if the prepositions are meaningful then it should be as obvious to child speakers as adult speakers which preposition should be used. If the children choose the same preposition as adults from a young age then it is likely that the prepositions have a transparent meaning for the children. The second prediction is that bilingual children will have as much difficulty ordering French NPNs as they do N-N compounds. Recall that French-English bilingual children have been shown to make a lot of ordering errors in their N-N compounds relative to monolingual children. If the French prepositions are meaningful to the children, then they should order their NPNs correctly more often than their N-N compounds. The same argument cannot be applied to English, because most English prepositions are thought to have transparent meaning (e.g., Lakoff & Johnson, 1999). Therefore in English, NPNs should be ordered correctly.

Note that I have made no attempt to define what "transparent meaning", "meaningful" or "meaningless" might mean for children. I have, however, operationalized these terms in making predictions about the children's performance.

## Methods

### *Participants*

The participants consisted of 25 French-English bilingual children and 25 English monolingual children. All children lived in or near Edmonton, Alberta, a predominantly English-speaking part of Canada with a small and vibrant French-speaking community. This study included no French monolingual control group because there are very few monolingual French-speaking children in the Edmonton area.

Several children tested were excluded from the final sample. Ten monolingual children were excluded because their ages did not match those of the bilingual children closely enough. One child who was originally identified as a bilingual child was excluded because she had a great deal of exposure to a third language and three children identified as bilingual by their parents were excluded because they did not score above chance on the French version of the vocabulary test.

To match the children on age, the English-speaking children were chosen to be as close as possible (within a month of age, if possible, and up to three months of age) to the bilingual children. The average age for the monolingual group was 48.2 months (SD = 6.6; Range: 39 - 59), for the bilingual group 47.9 months (SD = 6.4; Range: 39 - 59). As would be expected by having matched the ages, there were no significant differences in age between the two groups,  $t(24) = 1.87, p > .05$ .

As a group, the bilingual children scored well on a French version of a comprehension vocabulary test relative to the English version. The bilingual children scored an average of 50.0 (SD = 19.1) on the French version of the Peabody Picture Vocabulary Test (PPVT; described below) and 47.8 (SD = 21.3) on the English version. The average scores for monolingual children in English was 61.0 (SD = 16.4).

### *Materials*

The compound production task was administered on a portable computer. The children were asked to look at one picture of multiple things, then another picture of multiple things and finally to name the third picture (a combination of the previous two pictures). For example, they were shown a picture of flowers and then a picture of chairs and asked to name a picture of flowers on chairs. Figure 1 shows the pictures shown to the children (the originals were in color). The 10 test items were chosen on the basis of pilot-testing with English-speaking adults; all the adults ordered the nouns within their names for these items in the same way. To encourage the participants to create compounds, three practice items were given; these were named by the testers. The practice items were: *guitar bow* (a bow on a guitar), *present horse* (a present on a horse) and



*clock balloon* (a clock on a balloon). These three practice items were presented in random order but always before the test items. The target test items were all compounds (*mice houses*, *teeth cups*, *feet rings*, *cherry bowls*, *dog stores*, *animal truck*, *eye plants*, *flower chairs*, *butterfly pillows*, and *fish shoes*). The test items, like the practice items, were presented in random order. Within each test item, the two named pictures (for example, in Figure 1, the pictures shown in A and B) were presented in random order so as not to bias the children to either the French and the English construction.

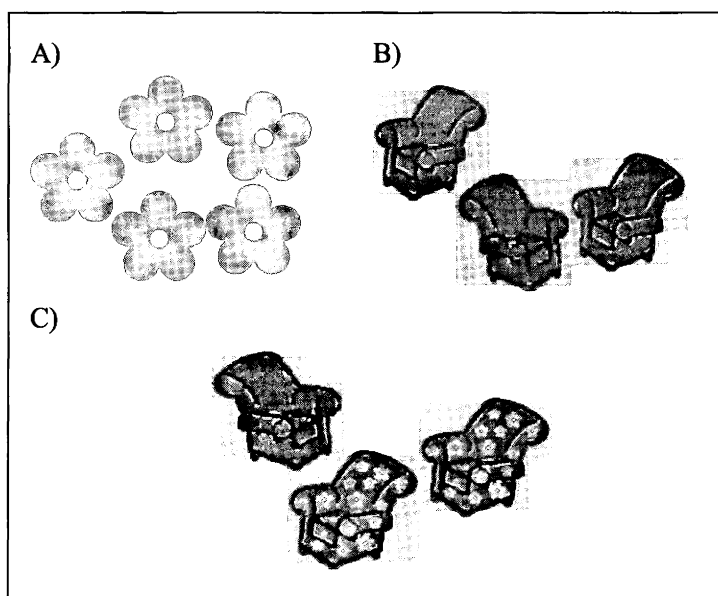


Figure 1: Example of one test item shown to children to elicit production of complex lexical items

The same task was used to test the children's French production, except that the target items were not compounds but nouns connected with prepositions. All target items were NPNs (*un camion à animaux*, *des plantes à yeux*, *des souliers à poissons*, *des bols à cerises*, *des magasins de chiens*, *des maisons de souris*, *des tasses à sourires*, *des bagues à pieds*, *des fauteuils à fleurs* and *des oreillers à papillons*). The target forms are based on what French-speaking adults told us they would call the objects. The same three practice items were given as in English, only with linking prepositions (*un ruban à guitare*, *un cheval à cadeau*, *une baloune à horloge*).

### *Procedure*

Most of the bilingual children and all the monolingual children were tested in daycares in and around Edmonton, Alberta, Canada. Some of the bilingual children did not attend daycare at the time of testing so these children were tested in their homes. The monolingual children and the bilingual children were tested in English by native speakers of English. The bilingual children were tested in French by a native or fluent speaker of Canadian French. The experimenters who tested the bilingual children understood enough French and English so they could recognize and note down any responses in the children's other language. The bilingual children were tested in their two languages on two different days, usually within a week, by two different experimenters.

The production task was then introduced as: "I am going to show you some funny pictures and ask you to think of new names for them. First, there will be a picture of one thing and then a picture of another thing and finally a picture of both things together. I'll ask you what we could call that last thing. I'll give you some examples at first". Then the practice items were given while saying: "Here is a \_\_\_\_\_. Here is a \_\_\_\_\_. We could call this a \_\_\_\_\_." So, for the practice item "guitar bow" for example, the experimenter said "Here is a guitar. Here is a bow. We could call this a guitar bow." The first two pictures (e.g., "guitar" and "bow" in the example) were presented in random order for the practice items. For each test item, the experimenter named the two pictures and then asked what to call the resulting combination, as in: "Here are some \_\_\_\_\_. Here are some \_\_\_\_\_. What could we call these?" So for the test item "flower chairs", for example, the experimenter said "Here are some chairs. Here are some flowers. What could we call these?" If the child did not provide an answer with the names of both parts of the picture (so, for the example above, a name with both "flower" and "chair" in it), the experimenter asked "Can you think of another name for these?" Regardless of the child's answer to the second question, the experimenter then proceeded with the task. If the child gave two answers, then only the answer deemed closer to the target was counted for analysis. Note that no explicit instructions to form compounds were provided.

### **Results**

To verify that the children were in fact producing the target forms in each language as we hoped, we examined the extent to which they produced compounds and NPNs in each language. Recall that we expected them to produce mostly compounds in English and mostly NPNs in French. The children's average number of compounds and NPNs for the compound production task by language is shown in Figure 2. As reported in Nicoladis (in press), there were no significant differences between the monolingual and bilin-

gual groups on rate of compound or NPN production on the English version of this task. The bilingual children used significantly more NPNs in French than in English and significantly more compounds in English than in French. These results show that the children were generally producing the target forms in each language.

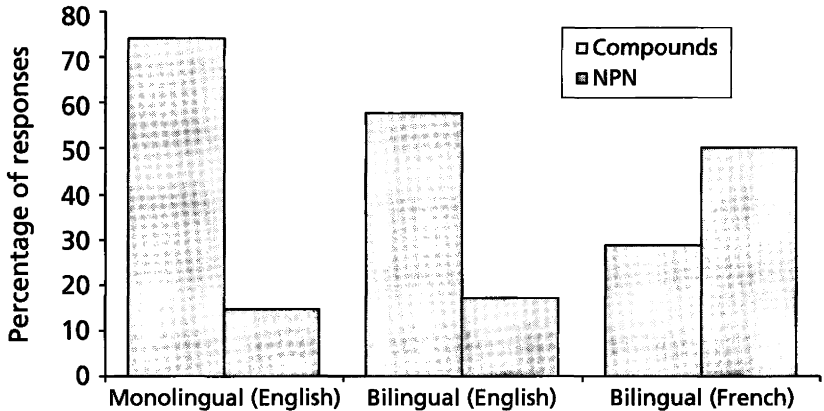


Figure 2: Average percentage of responses to compound production task, by group

Table 1 summarizes the number of times the bilingual children produced the preposition *à* or *de* in French, depending on the target form (based on native French-speaking adults' reports of the target form). In this table, the numbers are broken down by age to see if there is any progress with age. By adding the numbers, however, we can see that *à* was used on target 16/41 times and *de* 6/8 times. Note that there were very few responses for *de* targets so the results here cannot be taken as conclusive. As for the target forms with *à*, the 4-year

		Target	
		<i>à</i>	<i>de</i>
3-year olds (N=12)	<i>à</i>	2	0
	<i>de</i>	15	3
4-year olds (N=13)	<i>à</i>	14	2
	<i>de</i>	10	3

Table 1: Bilingual children's use of prepositions in French NPNs compared to target form

olds were more likely than the 3-year olds to use the target form. There was a significant difference by age and preposition,  $\chi^2(1) = 9.07$   $p < .01$ , suggesting that the older children used more of the target preposition.

Table 2 summarizes the percentage and number of target-ordered responses by whether or not the children included a preposition. This table contains children's responses that contained only a preposition (i.e., no determiner) between nouns. For example, in describing a chair decorated with flowers, *flower chair* or *chair with flowers* in English and *fauteuil-fleur* or *fauteuil à fleurs* were considered to be ordered according to the target form. Note that the English prepositions *in* and *on* would have required the reverse ordering with respect to the two nouns (e.g., *flowers on chairs*). As can be seen in Table 2, the monolingual children were highly accurate in ordering their names for the objects, regardless of whether they used a N-N compound or a NPN. The bilingual children were only as accurate in English when they used NPNs. In contrast, their accuracy in ordering English and French N-N compounds and French NPNs was much lower. There was no significant difference in French between the children's correct ordering of NPNs and N-N compounds,  $\chi^2(1) = 1.82$ ,  $p > .05$ .<sup>2</sup>

	Monolinguals		Bilinguals	
	English	English	English	French
Prepositions (e.g., chairs with flowers or <i>fauteuils à fleurs</i> )	89% (17/19)	85% (11/13)	59%	(30/51)
Compounds (e.g., flower chairs or <i>fauteuils-fleurs</i> )	80% (148/186)	60% (81/136)	46%	(32/69)

Prepositions in English: *with*, *on*, *in*; prepositions in French: *à* and *de*.

Table 2: Percentage (and number) of target-ordered responses

To see if there was a developmental trend in ordering the elements of the compounds in French, I again divided the children into 3-year olds and 4-year olds, as presented in Table 1. The 3-year olds used target-ordered constructions with prepositions 55% (11/20) of the time and without prepositions 43% (13/30) of the time. Comparing the 3-year olds' use of constructions with and without prepositions both in target order and reversed revealed no significant difference,  $\chi^2(1) = 0.65$ ,  $p > .05$ . The 4-year olds used target-ordered constructions with prepositions 61% (19/31) of the time and without prepositions 49% (19/39) of the time. Here again, there was no significant difference between these constructions,  $\chi^2(1) = 1.10$ ,  $p > .05$ . In sum, there is no evidence here that children became better at ordering their constructions with prepositions between the age of three and four.

*Are the children in fact producing lexical items?*

One possible criticism of the chosen methodology for this study is that children could simply repeat back the input items and get credit for producing a compound. We gave them the names of the objects in our pictures to reduce the memory load for the children when devising a new name for an object. For example, for the item shown in Figure 1, the children simply could say “flowers ... chairs” and be counted as having produced a compound. In this section, I will briefly discuss two possible ways to see whether or not children were actually producing novel names (i.e., single words) for these objects.

In English, regular plurals should be avoided in non-head position of compounds (Gordon, 1985). For example, even though there are multiple flowers on the chairs in Figure 1, the non-head should be singular; that is, we should say “flower chairs” and not “flowers chairs”. The children in this study changed the first component in their compounds from a regular plural (the form we gave them) to the singular 90% of the time (Nicoladis, under review). This result suggests that the children were generally producing compounds in English and not merely mimicking back the testers’ words.

In French, the plural marker on nouns is not pronounced (e.g., the word *docteur* is pronounced exactly the same in the singular *un docteur* and the plural *des docteurs*; the plural is marked by the determiner). We cannot therefore merely look at whether or not the children used plural markers on the nouns. It is, however, possible to see if the children used determiners in front of their compounds and NPNs in French. For example, if children said *des fauteuils à fleurs* or *des fauteuils fleurs*, this would suggest that they were treating all of the nouns in their constructions as a single lexical item. Table 3 summarizes the children’s use of determiners before their French compounds and NPNs.

	DET	No DET
Compounds	25	44
NPNs	34	17

*Table 3: Bilingual children’s use of determiners before French compounds and NPNs*

As can be seen in Table 3, the children generally used determiners before NPNs and generally did not before compounds. On the basis of this analysis, it seems fairly clear that the children were producing French NPNs as lexical items. It is not so clear that they were producing French compounds as lexical items, using this measure. However, it should be noted that none of the children used determiners with the English compounds, so the relative lack of determiners in front of French compounds could be due to transfer from English.

## Discussion

The present results suggest that the prepositions within NPNs are in the process of becoming linking elements for French-speaking children. There are three pieces of evidence to support this interpretation: 1) developmental progression in the correct preposition to be used, 2) frequent misorderings of French NPNs, and 3) frequency of use of prepositions within NPNs. I will briefly elaborate on each piece of evidence in turn.

One piece of evidence supporting the interpretation that prepositions are becoming linking items in French comes from the children's choice of preposition. In total, 55% (N=49) of the children's choice of French prepositions did *not* match the adult target form. Moreover, there was progression by age, with the 4-year olds using more target forms than the 3-year olds, particularly with *à*. Recall that I argued that if children found these prepositions meaningful, they would choose the correct ones from a young age. This was generally not the case. If the prepositions in NPNs were completely meaningless, we could simply reclassify them as linking elements. However, there was some evidence that the prepositions still retain some (perhaps abstract or multiple; see Kemmer & Bat-Zeev Shyldkrot, 1995) meaning. That is, the older children were more likely to choose the same preposition as adults than the younger children. This finding suggests that as children get older, they learn something about the abstract meaning of the prepositions. Taken together, these findings point to the possibility that the prepositions in French NPNs are in an intermediate state between linking elements and prepositions.

A second piece of evidence supporting the idea that prepositions are in the process of change is children's ordering of the two nouns with NPNs and N-N compounds. The bilingual children were no more accurate at ordering French NPNs than they were with N-N compounds. Recall that I argued that if children found the prepositions meaningful, then they should order NPNs correctly more often than N-N compounds. This was not the case.

In contrast to the French results, in English, the bilingual children were more accurate in ordering NPN constructions than N-N compounds, unlike the monolingual children who were equally accurate in ordering both. This latter finding suggests that the bilingual children do find English prepositions to have transparent meaning, a conclusion further supported by their similar rate of correct ordering of NPN constructions in English as monolingual children.

Finally, in terms of frequency, the French-English bilingual children in the present study know that prepositions are required in producing novel names for kinds of objects in French (see Figure 2 above). This result corresponds quite nicely with the only study with which I am familiar on the acquisition of linking elements within compounds. Mellenius (1997) reported that Swedish children are reasonably accurate in their use and understanding of the meaningless

linking element *-s*, which is homophonous with a still-active genitive marker. In an elicitation task given to 10 children between 3;5 and 6;8, the children produced the *-s* correctly in 27 out of 35 (= 77%) instances in which it should have appeared. The children in the present study, who were younger as a group than those in Mellenius' study, produced the French preposition just over 50% of the time in instances when it should have appeared.<sup>3</sup> This result suggests that while children may find the preposition relatively meaningless within NPNs, they do know that they are structurally required.

Taken together, these results suggest that children find N-N compounds and NPNs to be similar structures in French (see also Bréal, 1964, who arrived at a similar conclusion). The traditional analysis, i.e., that they are fundamentally different forms, may have relied on one of the following assumptions: 1) an anglo-centered view of prepositions as having concrete meaning, 2) influence from the orthographic system (i.e., N-N compounds are often written with a hyphen while NPNs are often written with spaces between the words) and/or 3) structural analysis alone without reference to how native speakers process these forms. However, I have no way to distinguish which (if any) of these possible assumptions may have influenced the traditional analysis.

These results point to the possibility that the prepositions in NPNs in French are in an intermediate state between prepositions and linking elements. While they are still transparent as prepositions to French-speaking adults, it is possible that over time the lexical form could change, so that the prepositions become entirely meaningless within compounds; in other words, true linking elements. This conclusion could be further strengthened by comparing French speakers' use of phrases (i.e., including both preposition and determiner) with their use of compounds with prepositions. If the present conclusion is correct, French speakers should find prepositions in phrases more transparent than prepositions in NPNs.

One implication of the present results is they suggest that a form marked by morphology does not always help in the acquisition process. Clark (1998b) points out that morphology is salient to children in the acquisition process and cites examples of children learning to use morphology early in highly inflected languages. The present study suggests that sometimes when meaning is marked in morphology, children do not take advantage of that fact, perhaps because the meaning is so abstract (compare English-speaking children's acquisition of the agentive and instrumental *-er*, also a late acquisition; Clark, Hecht, & Mulford, 1986) or because *à* and *de* occur internally to the NPN construction and may not be as obvious to children as morphology occurring at the ends of forms (cf. Clark, 1998b).

Before closing, two caveats about the present study should be reiterated. First, all of the conclusions are based on the assumption that I have correctly

operationalized “meaningfulness”. That is, I have assumed that children’s conception of meaningfulness of their lexical forms could be measured by their ordering of compounds and their choice of preposition. If this operationalization is incorrect or misleading, then the present conclusions fall apart. Second, all conclusions in the present study are based on bilingual children’s use of French and English. No monolingual French group was included in this study because of the lack of French monolingual children in the part of Canada in which this study was carried out. While bilingual children have been instrumental in reasoning about how languages compare in acquisition (e.g., Nicoladis, 1999; Paradis & Genesee, 1996), the present conclusions would be further strengthened if similar effects are seen in French monolingual children’s acquisition of compounds.

## Notes

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- 1 As a reviewer pointed out, some NPNs are written with hyphens, as in *pied-de-poule* (hound’s-tooth cloth) or *bec-de-lièvre* (harelip), while some N-N compounds are also written with spaces between the two constituents, as in *maison mère* (mother house / head company) or *terre glaise* (clay). The hyphen cannot therefore reliably distinguish the two forms.
- 2 On the basis of the bilingual children’s reversals of compound nouns on this production task, it is possible that they might misunderstand the referents of compound nouns. For example, they might think that a *tasse à café* is a kind of coffee, when it is actually a kind of cup. However, Nicoladis (in press) has shown that while bilingual children show these reversals in production, they do not show them in comprehension in either French or English. It is not clear at this point why there should be a dissociation between bilingual children’s reversals in comprehension and production.
- 3 One reviewer pointed out that we may have taught the children to include a preposition by giving them practice items. In my experience, three practice items is not enough to teach children a form they do not already know.



## Address of the Author:

Elena Nicoladis  
 University of Alberta, Department of Psychology  
 P-217 Biological Sciences Building  
 Edmonton, AB T6G 2E9  
 CANADA  
 elenan@ualberta.ca

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