Are function words non-language-specific in early bilingual two-word utterances?*

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This paper investigates "mixed" early two-word utterances by bilinguals, in order to determine whether function words match the language context less frequently than content words. Data collected in two language contexts from a child acquiring English and Spanish from birth were used to identify those two-word utterances occurring in the first two months of two-word utterances, between the ages of 1;7 and 1;9. Those utterances containing one word from each language, where one word was a function and the other a content word, were analysed quantitatively to determine whether the function word was more or less likely to match the context than the content word. The results showed that function words matched the context considerably less than content words. This finding is interpreted as suggesting that function words may not be treated as language-specific by early bilinguals, whereas content words are. It reinforces the significance of the well-established function/content distinction in language acquisition theory in a way which would not be possible with monolingual data.

Many investigators of developing bilinguals have noted that some early multiword utterances contain words from both languages being acquired by the child. Furthermore, some investigators have noted that these "mixed" multiword utterances often contain function words juxtaposed with content words. In this paper I review the findings that have been reported in relation to such utterances, and propose that they can be analysed in terms of predicate-argument structures, with function words typically acting as predicates, and content words as arguments. I report on findings which show that function words match the language context less frequently than content words. I interpret this as suggesting that function words are treated as non-language-specific by the child, while content words are seen as language-specific.

Early multiword utterances

By "early multiword utterances" I mean in this paper two-word utterances produced when the child has an MLU just above 1, and is usually aged somewhere around 1;6–1;10. In my data the utterances will be those recorded in the two months following the appearance of the first two-word utterance at the ages of 1;6.25, when the child had an MLU of about 1.06 in both languages (see Quay, 1995, p. 377).

Language context

In this paper the language context will be identified according to the language being used to address the child. As will be described, the data to be reported on were collected in two contexts, English and Spanish. In the Spanish context the child was being addressed in Spanish, primarily in the home, while in the English context the child was being addressed in English, primarily outside the home.

"Mixed" utterances

In this paper I use the term "mixed utterances" to refer to two-word utterances which consist of a word from one of the languages being acquired by the child, juxtaposed with a word from the other language. I use the term *mixed* as a convenient shorthand without wishing to suggest that the child actually has two linguistic systems to mix. The following examples from my own English-Spanish data should help to illustrate how the term is being used:

* The data referred to in this paper were collected with financial support from the ESRC (ref. no. C00232393) and the British Academy. I am grateful to Jürgen Meisel, Rosemarie Tracy, Marilyn Vihman and two anonymous reviewers for comments on an earlier version of this paper.

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https://doi.org/10.1017/S1366728999000127 Published online by Cambridge University Press

(1) *more* ***pasa*** (“more raisin”) (Spanish context)
(2) ***más*** *paper* (“more paper”) (English context)
(3) *more banana* (Spanish context)
(4) ***uno dos*** (“one two”) (English context)
(5) ***más pasa*** (“more raisins”) (Spanish context)
(6) *shut door* (English context)

In the above examples, (1) and (2) are mixed utterances because they each consist of one word in English (indicated in italics) and the other in Spanish (indicated in bold italics). In this paper we shall be concerned only with utterances like (1) and (2) and not, for example, with utterances like (3) and (4), which are not themselves mixed although they do not match the context. Some investigators (e.g. Genesee, 1989, Köppe, 1996) would consider utterances like (3) and (4) to involve “mixing” also, but such “mixing” is arguably above the level of the utterance, and belongs to the realm of language choice or pragmatics rather than syntax. (For an analysis of language choice in relation to both one-word and two-word utterances, see Deuchar and Quay (1999).) Utterances (5) and (6) both consist of utterances containing words from the same language (English in (5), Spanish in (6)), which match the language context. Such utterances would not be labelled by any investigator as “mixed”, as far as I know.

Function words

The term “function word” is widely used in the child language literature. In the 1960s Braine (1963) drew attention to what he called “pivot” words in early two-word utterances like the following (where the “pivots” are underlined), produced by children acquiring English:

more car
more cereal
no water
no bed
Calico allgone
allgone juice

Brown (1973) suggested that these “pivots” might be needed to express the semantic operations of nomination, recurrence and nonexistence, which seem to be cognitively important notions for 1–2-year-olds. *More* is widely reported in early child utterances, and seems to represent recurrence (whether as a one or a two-word utterance), and *no* often seems to represent nonexistence or rejections. Bloom called these words “function words” (Bloom, 1973, p. 84) or “relational words” (Bloom & Lahey, 1978, p. 17). McCune-Nicolich (1981) investigated the meaning of relational words including *more*, *allgone*, *up*, *down*, *no* and *uh-oh*. She argued that *more* and *allgone* were related to the understanding of presence and absence, *up* and *down* to the understanding of spatial relations, and *no* and *uh-oh* to “disequilibrium” arising from conditions in the environment conflicting with the child’s expectations, desires, or effort. McCune-Nicolich argues that the meanings of these words are all interrelated and that they reflect the cognitive organisation of the late sensorimotor period. A similar Piagetian line is pursued by Gopnik and Meltzoff (1987), who link “disappearance” words such as *gone* to the understanding of object permanence, and “success and failure” words such as *uh-oh* to the ability to solve means–ends problems. Slobin (1997, p. 266) draws attention to two important characteristics of function words, one being that they “express a limited and universal set of meanings (‘grammaticizable notions’)” and the other that the class of function words is small and closed. This point will be taken up in the next section.

Function vs. content words

The term “function word” as used in the child language literature is contrasted with the term “content word”, a term used typically to refer to words denoting objects or things.

The contrast between content and function words is also recognized in general linguistic theory, although it may be expressed in various ways, for example as a distinction between “lexical” and “grammatical” meaning (cf. Lyons 1968, p. 273). Lyons traces this distinction back to the Aristotelian one between form and matter, and points out that it is also reflected in the distinction made by some grammarians between major and minor “parts of speech”. As Lyons (1968, p. 273) says: “Only the major ‘parts of speech’ (nouns, verbs, adjectives and adverbs) were meaningful in the proper sense of the term: they ‘signified’ the objects of thought which constituted the ‘matter’ of discourse. The other ‘parts of speech’ (prepositions, conjunctions, etc.) did not ‘signify’ anything of themselves, but merely contributed to the total meaning of sentences by imposing upon them a certain ‘form’, or ‘organization’.” (Note that Bloom’s (1973) description of function forms as having “inherently relational meaning,” mentioned earlier, seems to echo this.) The distinction between content and function (or lexical/grammatical, major/minor parts of speech) is similar to that commonly drawn between open and closed classes. The open class is that which can be continually added to, while the closed class is a limited set of items to which new

https://doi.org/10.1017/S1366728999000127 Published online by Cambridge University Press

items are rarely added. As Muysken (1995, p. 183) points out, nouns and verbs are good examples of open class items, whereas pronouns and prepositions would normally be closed class. (See Leech, Deuchar & Hoogenraad, 1982, pp. 41–42 for lists of open class and closed class types.) In this paper I shall use the term "content word'' to mean the same as "open class", though in my data it will in practice refer only to nouns. The term "function word'' will be used in a way similar to "closed class", except that it will include not only words which are closed class in the adult language, such as prepositions, but also words commonly found in child language which have been classed as "relational" as discussed above. In my corpus of two-word utterances this will include words like *gone*, *more* (and its Spanish equivalent *más*), and *oh-dear*.

Function words as predicates

When function words appear in multiword utterances with content words, I would argue that they act as predicates. This is supported by Bloom's contention that the meaning of word combinations containing them is "derived from the inherently relational meaning of the function forms" (Bloom, 1973, p. 23). I use the term "predicate" in the sense employed in predicate calculus, defined by Crystal (1980, p. 280) as: "that term in a proposition which provides information about the individual or entity" which is "its argument". The following English examples from my data will serve to illustrate how two-word utterances consisting of one function word (underlined in each example) and one content word can be analysed as combinations of predicates (PRED) and arguments (ARG):

oh-dear book (after dropping a book on the floor) (age 1;7.2)
PRED ARG
Analysis: *oh-dear* gives information about an unexpected event affecting the entity book

more juice (requesting more juice) (age 1;7.5)
PRED ARG
Analysis: *more* provides information relating to the juice

juice gone (a cup was empty of juice) (age 1;7.6)
ARG PRED
Analysis: *gone* provides information relating to the juice

no spoon (wanting to prevent mother from putting a spoon in an egg) (age 1;7.13)
PRED ARG
Analysis: *no* expresses mother's potential reaction in relation to the entity spoon

juice no (rejecting juice) (age 1;7.13)
ARG PRED
Analysis: *no* expresses rejection of the entity juice

Review of the literature on the bilingual acquisition of function vs. content words

Redlinger and Park (1980) studied the mixed utterances of two-year-old children acquiring German and Spanish, German and English and German and French in a German-speaking community. They reported that overall, function words were "mixed" more than content words. However, their notion of "mixing" of an item did not refer to the language context, but was reported to "involve the insertion of a single element or of a partial or entire phrase from one language into an utterance of the other language" (Redlinger & Park, 1980, p. 340). This meant identifying the "main" or base language of an utterance, which may have been possible in their data, where the children's age and the range of MLU values (1.39 to 4.87) suggests that the authors were mostly not dealing with early two-word utterances. In the case of such early utterances, it would not have been possible to identify a base language, and this is also true of the early utterances analysed in my own study.

Vihman (1985) is more similar to my own study in that she studied multiword utterances of her son when aged between 1;8 and 2;0. Her data, like mine, include the earliest two-word utterances. She reported that a high proportion of mixed utterances produced by her son between the ages of 1;8 and 2;0 included English function words such as *no*, *more*, and *up*. In fact, of those mixed utterances recorded in an Estonian language context, 42 per cent of types (61 per cent of tokens) consisted of an English function word juxtaposed with an Estonian word, 30 per cent of types (16 per cent of tokens) consisted of an English noun with an Estonian word, and 28 per cent of types (23 per cent of tokens) consisted of an English verb with an Estonian word. (See Vihman, 1985, Table 4, p. 307.) These figures suggest to me that function words may match the language context (in this case Estonian) to a lesser extent than other classes of words. Vihman considers the possibility that English "functors" (a term which she uses interchangeably with "function word") may have been used in some of the utterances because of the lack of Estonian equivalents, but says that by the age of 1;11, her child had Estonian equivalents for 61 per cent of his English function words. This means that

https://doi.org/10.1017/S1366728999000127 Published online by Cambridge University Press

61 per cent of the mixed utterances (types only) involving function words cannot be accounted for by lexical gaps.

Lanza (1992, p. 641) makes a similar claim for her data from Siri, one of the two two-year-old Norwegian-English bilingual children reported on in detail in Lanza (1997a). In the mixed two-word utterances produced by Siri, Lanza found Norwegian function words combined with English content words, but generally not the reverse. Examples are ***nei*** *money* (no money) and ***mer*** *grapes* (more grapes). She interpreted this "directionality of mixing", as she called it, as indicating Siri's language dominance in Norwegian. However, her data are not restricted to two-word utterances, and most of her evidence for directionality of mixing is based on Siri's use of Norwegian bound morphemes with English stems in longer utterances. Nevertheless it is interesting to note that two exceptions to her generalization about the directionality of Siri's mixing come from utterances containing the English function word *no* in combination with Norwegian lexical material. This raises the question of whether the "directionality of mixing generalization" applies more accurately to a later stage of language development, when the child is using inflectional morphology, than to the early two-word utterance stage.

Although the data collection in Lanza's study began when one of the children was just under two years old, the data analysed ranged from when the children were aged between 1;11 and 2;7 (Siri) and 2;0 and 2;3 (Tomas). Apart from Vihman's study, there are unfortunately not many which analyse two-word utterances by bilingual children who are *under* two years old, but relevant data has been collected by the DUFDE (Deutsch und Französisch Doppelter Erstspracherwerb) Project on the simultaneous acquisition of German and French (see Köppe, 1994, for a general introduction). The subjects studied include three (Ivar, Annika and Pascal) whose mixed utterances have been reported on by Meisel (1994a, 1994b) and Köppe (1996, 1997). In these studies the term "mixed utterance" is used to refer not only to two-word utterances consisting of a word from each language (Köppe, 1996, p. 928, uses the term "intrasentential mixing" in relation to this kind of utterance), but also to one-word and multiword utterances in the language which would not be appropriate for the context. In their analyses, which I shall report on below, they do not distinguish between these two kinds of "mixed utterances", so that their studies cannot be compared directly with this one, which deals only with what they call intrasentential mixing.

Meisel (1994a) and Köppe (1996) both report on analyses of the early mixed utterances of Ivar and Annika, and Köppe (1996) additionally reports on Pascal. Both Meisel and Köppe report that after an initial period when there is a high rate of mixing, the proportion of mixed utterances tends to decline (Meisel, 1994a, pp. 426–427; Köppe, 1996, p. 936). According to Köppe's analysis of mixing rates, the decline appears to happen in all children around the age of two. Both Meisel and Köppe distinguish two stages of mixing: one before the decline in the rate of mixing, and the other afterwards. In the first stage, they argue that the mixed utterances are qualitatively different from those in the second stage. Köppe (1996) finds that in the second stage, many mixed items can be explained by what she calls "lexical need", meaning that "the child does not know the appropriate word in the expected language, or it is momentarily not available" (Köppe, 1996, p. 944). However, in the first stage, she argues that "mixing ... cannot be exclusively explained by lexical need", since many of the "mixes" involved words known in both languages by all three children. She lists these words (Köppe 1996, p. 944) and notes that they are comparable to the "function words" identified by Vihman (1985). Meisel (1994a) also provides a list of lexical items which he says "account for the majority of instances of mixing" (p. 427) in the first stage. His list is similar to Köppe's, and so the two are conflated in the list below.

German item	Meaning	French item
ja	yes	*oui*
nein/nee	no	*non*
da	there	*là*
das/dies	that/this	*ça*
weg	gone	*parti*
noch	more	*encore*
darein/drin	inside	*dedans*
runter/unten	down	*tombé*
auf/zu/ab	on(open)/closed/off	
doch	yes (contradictory)	
so/fertig	done/finished	
alle	all gone	

Meisel (1994a) says that the production of these words in the inappropriate language context "cannot be explained by lack of knowledge of the respective lexical item in the other language" (p. 427). As support for this assertion he notes that the French word *un autre/encore* ("another one, more") may be found in the German context while the German equivalent *noch* may be found in the French context in their data. Thus he argues that, for the child, these items "are apparently not tied to the domain of one of the two languages" (Meisel 1994a, p. 428).

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Previous work on early two-word utterances in English-Spanish data

I shall now review previous work of my own relating to early two-word utterances. My own data were collected from my daughter M, a firstborn child who was exposed to Spanish and English from birth. M's father is a native speaker of Latin American Spanish and her mother, of British English. The family was living in southern England at the time of the study. Each parent speaks the other's language fluently, and did so at the time M was born. Spanish was the language used at home by both parents, whether addressing one another or the child. Although a study of parental input has not been conducted, my impression is that code-switching was rare when addressing the child, except in quoting the child's own utterances. However, this can be verified with reference to transcripts of the data in the public domain (see below). Although Spanish was used in the home, English was used when monolingual English-speaking visitors were present, such as the child's maternal grandmother. The child was also addressed in English outside the home, particularly on the university campus where she attended a creche and also spent some time with her mother, who worked there. Thus the child's input was differentiated mainly according to location. It was estimated that about half of her total language input was in Spanish, the other half in English. Diary records were kept from birth, and videoaudiorecordings made twice weekly from the ages of 1;3–3;3. One recording per week was made with an English-speaking interlocutor (often the grandmother), and another with a Spanish-speaking interlocutor, usually the father. The mother was present at some of the recordings with both the grandmother and the father. When with the grandmother she spoke English, and when with the father, Spanish. As explained earlier, the language context was defined by the language being used by the adult interlocutor to address the child. Data were collected as part of a funded project (ESRC ref. no. C00232393) (Deuchar, 1989). Some of the data have been deposited with CHILDES, the international child language archive which can be accessed at http://childes.psy.cmu.edu (see MacWhinney, 1995). For some further details on the data, see Deuchar and Quay (1998).

In Deuchar (1992) I considered the usefulness of Radford's (1988) small clause analysis of early two-word utterances in English as applied to my own data. Radford (1988, 1990) argued within a broadly GB (government and binding) framework that children's early two-word utterances consist of "small clauses" of the following types:

[NP VP] (e.g. *lady do*)
[NP AP] (e.g. *Claudette cold*)
[NP PP] (e.g. *car away*)
[NP NP] (e.g. *bee window*).

Radford considered small clauses of this kind to be subject + predicate structures, although I prefer to think of them as argument + predicate structures because of the difficulty of identifying grammatical subjects at this early stage (cf. Meisel, 1994b, p. 93).

For Radford, small clauses were special in that the words making them up belonged only to lexical categories, not to functional categories. (See Chomsky, 1986, p. 1 for a definition of these categories.) In my data, some early two-word utterances certainly seemed to fit in with Radford's schema, the following examples being given in Deuchar (1992, p. 274).

M(child's name) *hat* [NP NP]
zapato gone [NP VP]
babero off [NP PP]

But other examples are listed which contain words which do not in the adult language belong to lexical categories. The following are included in the list (Deuchar 1992, p. 274).

más juice [? NP]
juice más [NP ?]
no cama [? NP]
juice no [NP ?]
oh-dear panda [? NP]
fruta sí [NP ?]

The question marks indicate that the corresponding items cannot be assigned to lexical categories. Although some of the utterances in the above list are mixed, I did not give special consideration to mixed utterances in my data until Deuchar (1995), where I used them to refute the idea that they might be early examples of code-switching.

Deuchar (1995) argued that mixed two-word utterances cannot be considered to be potential examples of code-switching (defined as a "change of language choice in the utterance" (Deuchar, 1995, p. 39) without consideration of whether or not the child had a choice in his or her vocabulary between two translation equivalents from the two languages. The potential importance of lexical resources tends to be underplayed in many studies of mixing, probably because investigators often do not have available detailed records of the child's vocabulary as it emerges in the two languages. (See, however, Quay, 1995, who reports on the detailed development of my daughter's vocabulary in English and Spanish.) Deuchar (1995) also reports on the extent to which

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words used in a small sample of early two-word utterances matched the English or Spanish context in which they were used. Whether or not the words used had a translation equivalent in the child's vocabulary was also taken into account. A word was a "translation equivalent" of another if the two words came from different languages but were used by the child with the same meaning in similar situations. The results showed that English words with Spanish equivalents tended to be selected in the English context, and Spanish words with English equivalents in the Spanish context, so that overall, words were being chosen in a way appropriate to the context. However, this tendency did not apply to function words, particularly *more* and *más* ("more" in Spanish). The term "acategorial" was used to refer to these items as they cannot be considered lexical categories within Radford's framework outlined above. These words, although existing as a pair of equivalent terms in the two languages, seemed to be used interchangeably in the English and Spanish contexts. This conclusion was reached on the basis of only a small sample of 32 utterances, of which 9 were mixed. However, below I shall analyse a larger sample of utterances.

Deuchar (1996) included further discussion of the nature of acategorial words. These were distinguished from "precategorial" words (Deuchar, 1996, p. 58) in that, whereas precategorial words can develop into lexical categories with the appearance of morphological marking[1] appropriate to nouns, verbs, and so on, the acategorial words will never develop into lexical categories with their associated morphology: they will drop out of the language as predicates (their function in early two-word utterances) and either disappear or be used for another purpose. For example, the acategorial items *more* and *oh-dear* will not develop verb or noun morphology, but will be used as a quantifier and as an interjection respectively. (Quantifiers are usually analysed as determiners, which in the (GB) theoretical framework being used here would mean they are assigned to functional rather than lexical categories.) *More* will thus take up another role in syntax, whereas *oh dear* will be outside it.

The term "acategorial" as used in Deuchar (1996) has a similar meaning to "function word, in that the acategorial words which we have already discussed (*más*, *more*, *oh-dear*, *no*, *sí)* would count as function words. However, there are some function words which would not count as acategorial items within a GB framework, in particular prepositions such as *off*, *up,* and *down*. However, as Vihman (personal communication) has pointed out, the adult language source of such "prepositions" in child data is probably particles of verbs such as *take off*, *get up* and *get down*, and Quirk, Greenbaum, Leech and Svartvik (1980, p. 1151) in fact call them "prepositional adverbs" in adult speech. In the early two-word utterances in our data, it is clear that they are function words even though they would not be classified as acategorial in a GB framework. Another example is *gone*, a well-known function word in early child language. This might be classified as a verb in a Radford-style analysis and as such, as belonging to a lexical category. As a verb it could not be acategorial. However, it does not satisfy my definition of a precategorial item in that it does not go on to develop verb-specific morphology. This would be expected of the verb in its bare form *go*, but *gone* seems to be a "frozen form" and as such is arguably acategorial. A similar point of view has been expressed by Meisel (1985) in relation to French and German past participles. In order to include those words whose acategorial status is in doubt, but which clearly qualify as function words, I shall continue to use the term "function word" rather than "acategorial word" in this paper.

Analysis of two-word utterances containing function words

In the analysis which follows, I shall examine the extent to which function words in two-word utterances match the language context, as compared with content words. The aim is to explore the hypothesis that function words will be less likely to match the context than content words. If supported, this finding will be interpreted to suggest that whereas function words are treated as language-specific, content words are not.

An analysis was performed on mixed two-word utterances recorded in my diary and in audiovideo recordings between the ages of 1;7 and 1;9. During this period, the child had an MLU of about 1.06, as reported earlier. Her vocabulary at this time was as reported in Deuchar and Quay (1998): it consisted of 126 words, of which 53 were unambiguously Spanish and 53 were unambiguously English. On the basis of her vocabulary, and also her input as described above, she could not have been said to be dominant in either English or Spanish. The set of utterances to be analysed here includes only those which consisted of two words, one English and one Spanish, both of which had an unambiguous English or Spanish

[1] Of course, distributional as well as morphological criteria can be used to identify lexical categories, as discussed by e.g. Radford (1990, p. 23–26), but in the English–Spanish data it is possible to apply the morphological criteria earlier.

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source. So, for example, utterances containing the word *no* had to be excluded because this word is phonetically similar in the two languages, and could not always be unambiguously identified at this stage. From these mixed utterances (see Deuchar & Quay, 1998, pp. 235–236) a subset was taken, consisting of all recorded utterances made up of a function word juxtaposed with a content word. These utterances, which total 48, are listed in Table 1.

The table shows the language context in which the utterance occurred (S for Spanish, E for English), the age (in years, months and days) of the child when producing the utterance, the utterance itself, a gloss in English, and whether or not the utterance had equivalents in the child's lexicon. (The full lexicon can be found in Deuchar and Quay (forthcoming), and an earlier version is available as Appendix 2 of Quay (1993).) So for the first utterance listed in Table 1, ***pasa*** *gone*, for example, the final column shows that the child had no English equivalent in her vocabulary for the Spanish word ***pasa***, and no Spanish equivalent for the English word *gone.* For the third utterance, however, produced at age 1;7.1, ***más*** *juice*, we can see in the final column that the child did have an English equivalent for the Spanish word, ***más****, more*, but that she did not have a Spanish equivalent for the English word *juice*. As a final example, the final column of Table 1 shows that child had equivalents in her vocabulary for both the words in the utterance *more* ***agua***, produced at age 1;7.15: *más* was her Spanish equivalent for the English word *more*, and *water* was her English equivalent for the Spanish word ***agua***.

A glance at the first column of Table 1 indicates that most of the utterances occurred in the Spanish context. This is not because the child barely spoke in the English context, but because the first two-word utterances were relatively infrequent, and were recorded more in the diary than in the audiovideo recordings. This is due to the fact that whereas the audiovideo recordings represented one hour of the child's speech per week, the diary sampled between 30 and 40 hours per week, but *mainly* in the Spanish context at home. Hence, the Spanish context is more strongly represented in the data under consideration.

A quantitative analysis was performed on the 48 utterances in Table 1, in order to determine to what extent the function words matched the language context in which they were produced. One may question whether it is appropriate to conduct a quantitative analysis of diary data, since one cannot be sure that all two-word utterance types produced in front of the mother were actually noted down, or whether some types were noted more than others. However, as the diarist I feel confident that the utterances sampled are as full and representative as possible, and though I would prefer to use utterances from audiovideo recordings only, this would not allow an analysis of context-matching by content and function words in the earliest two-word utterances. That being said, the results of this analysis must be taken as merely suggestive, and compared with those of similar studies before strong conclusions can be drawn.

For each mixed utterance in Table 1, one word matches the language context and the other does not. For example, in the first utterance, ***pasa*** *gone*, the (content) word ***pasa*** matches the Spanish context, whereas the (function) word *gone* does not. The number of utterances where the function word matches the context was calculated, and compared with the number where the content word matches. A note was also made of whether the item not matching the context had an equivalent in the child's vocabulary. To return to the utterance ***pasa*** *gone* as an example, the non-matching item, *gone*, did not have an equivalent in the child's vocabulary, as we can see from the final column of the table. Noting equivalents was important in order to determine, especially in the case of an item not matching the context, whether the child could have produced a matching item on the basis of the words in her vocabulary. So in relation to ***pasa*** *gone*, we have established that she did not have an alternative Spanish word which would have matched the Spanish context of this utterance.

Results of analysis

The results of the analysis outlined above are presented in Tables 2 and 3. Table 2 shows the extent to which it was the function word of each utterance which matched the language context. As we can see, there was a total of 7 utterances (out of 48, 15 per cent) in which the language of the function word matched the language of the context, compared with 41 utterances (85 per cent of the total) in which the function word did not match the context. This can be directly compared with the totals in Table 3, which shows the converse, the extent to which the content word of each utterance matched the language context. As we can see, the totals complement those in Table 2, in that the content words matched the context in 41 utterances, and did not match it in 7. So overall, we can see that there is a much greater tendency of the content words to match the context than for the function words to do so. Tables 2 and 3 also show us the extent to which the matching and non-matching content and function words had equivalents in the child's vocabulary. Table 2 shows

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Table 1. *Mixed two-word utterances (types) consisting of a function and a content word and occurring in the Spanish or English language context (S = Spanish, E = English) between the ages of 1;7 and 1;9. Spanish words are indicated in bold italics, English words in italics, and the function word in each utterance is underlined. The column headed "Equivalents?" shows whether the words in each utterance had equivalents in the child's cumulative lexicon. * indicates that the utterance came from audiovideo recordings rather than diary records.*

Language context	Age	Utterance	Gloss	Equivalents?
S	1;7.0	***pasa*** *gone*	raisin gone	---, ---
S	1;7.0	*gone* ***pasa***	gone raisin	---, ---
S	1;7.1	***más*** *juice*	more juice	*more*, ---
S	1;7.1	*juice* ***más***	juice more	---, *more*
S	1;7.3	***más*** *juice*	more juice	*more*, ---
S	1;7.4	*gone* ***taza***	gone cup	---, *cup*
S	1;7.4	***mamá*** *down*	mummy down	*mummy*, *silla*
S	1;7.5	**zapato** *gone*	shoe gone	*shoe*, ---
S	1;7.5	***tapa*** *gone*	lid gone	---, ---
S	1;7.5	*gone* ***tapa***	gone lid	---, ---
S	1;7.6	*more* ***agua***	more water	*más*, *water*
S	1;7.7	***pasa*** *gone*	raisin gone	---, ---
S	1;7.7	*more* ***pasa***	more raisin	*más*, ---
S	1;7.10	***mamá*** *gone*	mummy gone	*mummy*, ---
S	1;7.15	*more* ***agua***	more water	*más*, *water*
S	1;7.15	***babero*** *off*	bib off	---, ---
S	1;7.15	*off* ***babero***	off bib	---, ---
S	1;7.16	*more* ***manzana***	more apple	*más*, *apple*
S	1;7.16	*banana* ***sí***	banana yes	---, *yes*
S	1;7.16	***media*** *off*	sock off	---, ---
S	1;7.16	*off* ***media***	off sock	---, ---
S	1;7.19	***mamá*** *down*	mummy down	*mummy*, *silla*
S	1;7.22	*more* ***pasas***	more raisins	*más*, ---
S	1;7.22	*more* ***pasa***	more raisin	*más*, ---
S	1;7.23	*more* ***crema***	more cream	*más*, ---
S	1;7.23	***ropa*** *off*	clothes off	---, ---
S	1;7.24	*banana* ***más***	banana more	---, *more*
S	1;7.25	*more* ***crema***	more cream	*más*, ---
S	1;7.25	***crema*** *more*	cream more	---, *más*
E	1;7.26	***más*** *banana*	more banana	*more*, ---
E	1;7.26	*more* ***galleta***	more biscuit	*más*, ---
S	1;7.27	*more* ***fruta****	more fruit	*más*, ---
S	1;7.28	*more* ***leche***	more milk	*más*, ---
S	1;7.28	***leche*** *more*	milk more	---, *más*
S	1;7.28	*oh-dear* ***mamá***	oh-dear mummy	---, *mummy*
S	1;7.29	***sí*** *woof*	yes dog	*yes*, ---
S	1;7.29	*oh-dear* ***cama****	oh-dear bed	---, ---
S	1;7.30	*gone* ***pan***	gone bread	---, ---
S	1;7.30	*more* ***pan***	more bread	*más*, ---
S	1;8.2	*more* ***manzana***	more apple	*más*, *apple*
S	1;8.2	*off* ***ropa***	off clothes	---, ---
S	1;8.2	*more* ***pasa***	more raisin	*más*, ---
S	1;8.2	***pasa*** *more*	raisin more	---, *más*
S	1;8.6	*more* ***crema***	more cream	*más*, *cream*
S	1;8.6	***galleta*** *more*	biscuit more	---, *más*
S	1;8.11	***pan*** *more*	bread more	---, *más*
E	1;8.16	***más*** *paper*	more paper	*more*, ---
E	1;8.23	*table* ***sí***	table yes	*mesa, yes*

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Table 2. *Matching of language context by function words (tokens) in mixed two-word utterances*

	Number of utterances	
Translation equivalent found in lexicon?	Function word matching context	Function word not matching context
Yes	7	24
No	0	17
Total	7	41

Table 3. *Matching of language context by content words (tokens) in mixed two-word utterances*

	Number of utterances	
Translation equivalent found in lexicon?	Content word matching context	Content word not matching context
Yes	13	0
No	28	7
Total	41	7

us that, of the 7 function words which did match the context, all had translation equivalents: that is, the child could have produced a word in the other language but did not do so. However, in the case of the 41 function words not matching the context of the utterance, 24 (58 per cent) had equivalents in the child's vocabulary, and only 17 (42 per cent) did not. This means that fewer than half of the cases of a mismatch between the function words and the context could be explained by the child not having an equivalent word available. Conversely, more than half the cases of mismatches were of words which *did* have an equivalent in the child's vocabulary, so that although she could have chosen a word to match the context in those cases, she did not do so. The picture for the content words is very different. As shown in Table 3, in the 41 cases (85 per cent of the total of 48 utterances) where the content words matched the context, 12 of them had translation equivalents. In these cases, we could say that the child appeared to be choosing the word to match the context despite the fact that she could have chosen equivalent words from the non-matching context. In 28 cases, however, there was no equivalent, so the child may have been obliged to choose a word to match the language of the context. In the eight cases where the child's content words did not match the context, she did not have equivalents in her vocabulary which might have matched the context. So one might argue that she could not avoid failing to match the context in these cases.

Discussion

Overall, it seems clear that not only do content words match the context to a much greater extent than function words (85 per cent vs. 15 per cent of mixed utterances), but that they also differ in the extent to which the existence of equivalents in the child's vocabulary affects their selection by the child. In the case of content words, the child seemed to choose to match the context where her vocabulary allowed her to do so. So she selected ***taza*** rather than the word *cup* (also in her vocabulary) in the utterance *gone* ***taza*** at age 1;7.4, since the language context was Spanish. This interpretation could be applied to all the content words in Table 1 which had an equivalent in the child's vocabulary. It can also be illustrated in the English context by utterance *table* ***sí*** at age 1;8.23, where *table* was selected to match the English context rather than its Spanish equivalent ***mesa***. However, in the case of the function words, the availability of equivalents did not prevent the child from failing to match the language context. As can be seen in Table 2, 30 of the function words in Table 1 had equivalents, but only 7 of these (23 per cent) matched the context. As outlined in the introduction to this paper, I interpret this finding as suggesting that function words are treated as non-language-specific by the child, while content words are treated as language-specific.

In reviewing previous studies by Vihman (1985), Meisel (1994a) and Köppe (1996), I described results which turn out to be similar to those reported here. The main finding that all studies have in common is that function words are reported to match the language context to a lesser extent than content words. Furthermore, this mismatch between function words cannot be entirely explained by lexical gaps in the child's vocabulary. Meisel's explanation is that such words are not "tied" to a particular language for the child. My own explanation, that function words are non-language-specific, is similar, although arrived at independently.

As outlined in the review of the literature, Lanza (1992, 1997a) has a different explanation for certain kinds of "mixing" of function words, in particular, that directionality of mixing indicates language dominance. In Lanza (1997b, p. 138) she argues that there is directionality of mixing in Vihman's data because of the high percentage of English function words in the mixed utterances. However, because the data

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were collected in the Estonian context, we do not know what kind of mixed utterances may have been produced by her son in an English language context. In particular, we do not have specific information to indicate that he did not use Estonian function words with English words in an English context, which would be necessary to support the "directionality of mixing" idea.

In my data we do not find evidence of directionality of mixing since the child produced both English function words in mixed utterances in the Spanish context (e.g. *more* ***agua*** at age 1;7.6) and Spanish function words in the English context (e.g. ***más*** *banana* at age 1;7.26). There is therefore no reason to discuss dominance in relation to my data. In any case, evidence from other studies suggests that dominance may not necessarily be reflected in directionality of mixing as Lanza found. As stated earlier, Köppe (1996, p. 944) found many function words in mixed utterances in the DUFDE French–German data. However, only the data from one child, Annika, appeared to be "in accordance with Lanza's explanation of mixing of function words in terms of dominance" (Köppe, 1996, p. 946), in that Annika was found to "mix" "significantly more function words into French than into German". However, we may note that this does not seem to parallel Lanza's finding of almost no exceptions to directionality of mixing, and also that, as in Lanza's study, notable exceptions include the words for "no", *nein* in German and *non* in French. In the data from the two other children, Ivar and Pascal, "German function words are inserted into French utterances as well as vice versa", which indicates no directionality of mixing. Köppe found that same pattern even during a period in Ivar's development "where German clearly dominates" (Köppe, 1996, p. 946). Klausen, Subritzky and Hayashi (1993) find individual differences between two Danish–English bilinguals they studied, Gitte and Natasha. They considered to what extent the dominant language of each child, as determined by exposure as well as the child's productive vocabulary, was matched by what they call "transfer on the morphological level from the dominant language to the non-dominant" (Klausen et al., 1993, p. 76), which is equivalent to Lanza's "directionality of mixing". For both Gitte and Natasha, Danish was the dominant language. Natasha's mixed utterances showed the expected pattern in that she used Danish inflections on English words but not vice versa. However, Gitte used both Danish and English inflections on words from both languages. Thus taken together, the evidence suggests that language dominance is not always reflected by directionality of mixing.

Returning to my own case, I have argued that function words may be treated as non-language specific by the child. If this is so, one might wonder why she nevertheless had pairs of equivalents of function words in her vocabulary. Although in the data considered 31 function words had equivalents, we should remember that these were tokens rather than types. The data in Table 1 include just seven function word types: *more*, *gone*, *down*, *off, oh-dear*, ***más***, and ***sí***. Of these, *more* and ***más*** are an equivalent pair in the child's vocabulary, *down* and ***sí*** have equivalents which are not produced in these data, and *gone*, *off*, and *oh-dear* do not have equivalents. Given that children's function words often have slightly different meanings from the adult words which are their source, it is perhaps not surprising if words which are equivalents in the adult language are not necessarily acquired as such by the child. Furthermore, some function words may not have an equivalent in the other adult language: a Spanish equivalent for *off*, for example, would be difficult to find. In my data, *more* and ***más*** make up the most productive pair of equivalent function words, in fact accounting for 26 tokens of function words in the data altogether, including 22 cases where they do not match the language context. It may be that *more* and ***más*** were both acquired by the child because of their very similar uses in adult child-directed speech, for example when offering food etc. In such situations, *more* and ***más*** would often appear at the end of the utterance as in *Do you want some more?* and ***Quieres más***?

Earlier in this paper I argued that when function words appear in combinations with content words in two-word utterances, the function word acts as a predicate and the content word as an argument. However, not all predicates in two-word utterances are function words. Predicates are defined semantically, as indicated earlier, whereas function words are defined in terms of their membership of a limited closed class of items. It is true that function words typically have the semantic characteristics of predicates, in that they often provide information about an individual or entity (see Crystal, 1980, p. 280). However, words belonging to other classes can also fulfil this function. For example, an utterance produced by M at age 1;7.29 was **leche** *floor* ("milk floor"). This utterance was produced in a (Spanish language) context where a cup used for milk was on the floor. Hence, the word *floor* is interpreted on semantic grounds as being a predicate in that it indicates the location of the cup of milk. (This analysis is of course in line with a Radford-style analysis of the kind presented earlier, where this utterance would count as a small clause consisting of two NPs.)

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A question I have not been able to deal with in this paper is whether predicates other than function words are treated by the child as non-language-specific. At the time of the utterance ***leche*** *floor*, the child did actually have the Spanish word *piso* in her vocabulary, but did not use it, despite the fact that it would have matched the Spanish context, whereas *floor* did not. However, there are not enough examples of non-function word predicates in the early data to pursue this question. For the moment it seems likely that non-language-specificity applies to word classes, rather than being determined by semantic factors. Semantic factors would have to be invoked if the noun *floor*, for example, were treated as language-specific as an argument, but non-language-specific as a predicate.

It is important to realize in relation to the data that not all combinations of predicates and arguments, or of function and content words were mixed utterances. We focused on mixed utterances in this paper in order to compare the extent to which function vs. content words matched the context. However, the corpus also included non-mixed utterances such as the following:

más pasa (''more raisin'') (requesting more raisins) (age 1;7.9) (Spanish context)
hat off (wanting to take hat off) (age 1;7.17) (English context)
tapa leche (''top milk'') (mother had put top on milk bottle) (age 1;8.10)

Both ***más pasa*** and *hat off* can be analysed as consisting of a predicate (***más***, *off*) and an argument. ***Más*** and *off* are also function words as we have defined them. In the utterance ***tapa leche***, ***leche*** is interpreted as being the predicate, ***tapa*** as the argument. In some of our utterances we did not find a predicate-argument structure, but a combination of nouns apparently making up an NP, and functioning in a similar way to one-word utterances consisting of a noun. Examples are the following:

mamá *book* (''Mummy book'') (age 1;7.14) (pointing to mother's diary) (Spanish context)
fruta lata (''fruit tin'') (age 1;7.10) (waiting for tinned fruit) (Spanish context)

Conclusion

The aim of this paper was to determine whether function words matched the language context less frequently than content words in the early two-word utterances of a Spanish–English bilingual. The result of the analysis showed that this was the case, and this finding was interpreted as suggesting that function words may not be treated as language-specific by early bilinguals, whereas content words are. Some support for this interpretation was found in other studies. Overall, the significance of the function/content distinction in language acquisition theory is reinforced in a way which would not be possible with monolingual data.

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Received May 18, 1998 Revision accepted November 16, 1998

https://doi.org/10.1017/S1366728999000127 Published online by Cambridge University Press