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The acquisition of dative alternation by German-English bilingual and English

monolingual children[*]

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Abstract:

The vulnerability of the syntax-semantics interface in simultaneous bilingual first language acquisition is still up for debate; while some scholars have found crosslinguistic transfer at this interface, others found no such influence. To determine which kinds of syntax-semantics interface phenomena may be vulnerable, this study examines the acquisition and use of dative alternation by German-English bilingual children and adults compared with English monolingual children and German and English monolingual adults.

The study shows that bilingual children interpret and comprehend dative constructions in English like their monolingual peers but their production of dative constructions in German is influenced by English. This suggests that syntax-semantics interface phenomena relating to the representation of verbs' objects are vulnerable to influence. However, bilingual adults perform like monolinguals in both languages. These results suggest that any indeterminacy in the use of dative alternation in the adult state is due to L1 attrition rather than incomplete L1 acquisition.

Keywords: simultaneous bilingual first language acquisition, syntax-semantics interface, dative alternation

1. Introduction

For some time it has been thought that aspects of language at the interface between syntax and other linguistic and cognitive domains are particularly likely to be susceptible to crosslinguistic influence in simultaneous bilingual first language acquisition (2L1A) and second language acquisition (Hulk & Müller, 2000; Sorace & Filiaci, 2006, amongst many others). However, it is still debated to what extent different interfaces are vulnerable and which factors constrain potential crosslinguistic influence.

Early proponents of the interface hypotheses[1] suggested that only the syntax-discourse, not the syntax-semantics interface, was vulnerable to crosslinguistic influence; examples include Tsimpli and Sorace (2006) on left-dislocation phenomena in adult L2 learners and Müller and Hulk (2001) on root phenomena in child bilinguals. However, subsequent studies, particularly by Montrul, have suggested that the syntax-semantics interface, or aspects of it, may be vulnerable to crosslinguistic influence in 2L1A. Montrul (2004) found crosslinguistic influence on heritage Spanish speakers' production of differential object marking and clitic doubling, as did Sorace and Serratrice (2009) on English-Italian children's interpretation of definite articles and bare plurals. Furthermore, Pérez-Leroux, Pirvulescu and Roberge (2009) found in their study of the acquisition of verb transitivity that a semantic 'default setting' led to delay in the resolution of object omissions in French by children growing up in a French-English bilingual context. However, Montrul (2006) found no crosslinguistic influence on the word order of sentences containing unaccusative verbs in Spanish-English bilinguals, suggesting that not all syntax-semantics interface phenomena are vulnerable to crosslinguistic influence.

These studies highlight the vulnerability of certain phenomena at the syntax-(lexico)semantics interface, in particular those in which a given verb can appear in more than one subcategorisation frame. The dative alternation (DA) is a syntax-semantics interface phenomenon in the sense of Jackendoff (2002) as it requires knowledge of the syntactic structures available in each language, of the semantic rules that restrict different verb classes, and of the syntactic structures each verb may appear in. The phenomenon therefore provides an interesting and new test case for the simultaneous bilingual acquisition of subcategorisation-related phenomena at the syntax-semantics interface, having been widely studied in a range of theoretical frameworks and in monolingual acquisition, but almost ignored in the context of 2L1A.

The present study examines how simultaneous bilingual English-German children between 4 and 9 years of age produce and understand DA in each language. It aims to examine the vulnerability of the syntax-semantics interface through the acquisition of DA and to investigate the characteristics of crosslinguistic influence at this interface using novel data from a large community of simultaneous bilingual children and adults.

The data collected from bilingual children in English and German will be compared with two other speaker groups. Firstly, their English monolingual peers provide a comparison of monolingual and bilingual development during childhood.[2] Secondly, German-English bilingual adults who were raised in the same environment as the child bilinguals represent the potential ultimate attainment of the bilingual children. This is important because the language of the bilingual child cannot be divorced from the language of the bilingual adult s/he will become (van der Linden, 2000, p. 37) or indeed vice versa. Furthermore, testing groups of bilingual children and adults who share the same linguistic background and upbringing will work towards filling a theoretical gap

identified by Montrul (2008, p. 164) by examining how the acquisition of DA proceeds in childhood, whether it can considered "complete" in childhood, and whether crosslinguistic influence in bilingual child language is overcome by adulthood.

The results of the two experiments show that although bilingual and monolingual learners do not differ in their comprehension of dative constructions, there is influence of English on German in the bilingual children's production. Furthermore, this influence does not last, as bilingual and monolingual adults perform to the same level of accuracy in both English and German.

The paper is structured as follows: section 2 provides theoretical background on the phenomenon of DA while section 3 outlines previous studies on the acquisition of DA. Section 4 details the research questions and hypotheses to be tested. Section 5 contains information about the participants and methodology, results and analyses of each experiment. Section 6 contains a general discussion of the results and their implications for theories of 2L1A. Finally, section 7 summarises the study's findings and identifies areas for further research.

2. Background: Dative Alternation

DA is an instance of syntactic optionality which encodes subtle semantic differences in sentences containing ditransitive verbs. Two structures are available:

(1) The boy gave the ball to the dog   Prepositional Construction (PC)

(2) The boy gave the dog the ball   Double-Object Construction (DOC)

DA is not a common phenomenon; in her 1998 survey, Siewierska reported evidence of DA – use of both PC and DOC forms – in at most 38 of the 270 languages surveyed. She also suggests that PCs, or at least constructions marking recipients/goals with adpositions, are more common crosslinguistically than DOCs or constructions marking recipients/goals with affixes (1998, p. 184). However, Bruyn, Muysken, and Verrips (1999) note that creole languages almost uniformly contain DOCs, whether or not their lexifier languages do. They conclude on the basis of historical and acquisition-based evidence that neither the DOC nor the PC are more marked or difficult to acquire than the other, but that input of both structures is crucial if they are both to be acquired.[3] Typological evidence does not therefore suggest a primacy of the PC over the DOC or vice versa, so syntactic and semantic analyses of DA must be examined to shed light on this question and to determine the learning task faced by children acquiring dative structures.

2.1 Syntax

Early generative theories of DA suggested that the DOC was derived from the PC via passive-like movement of the indirect object above the direct object (cf. Larson, 1988). This view has also been expounded in the 21st century by exemplar-based linguists such as Bresnan and Nikitina (2003).

However, more recent generative analyses suggest the two constructions are syntactically separate structures which reflect differences in the semantic relations between the two objects. Pylkkänen (2008) and Bruening (2010) are proponents of this approach, suggesting that an Applicative head introduces the indirect object DP in DOCs

to express the relation between the indirect and direct objects. This is in contrast to the PC in which the indirect object DP is sister to the prepositional head and therefore structurally further from the direct object. This syntactic distance is reflected in the differing interpretations of the DOC and PC as will be outlined below. Note also that despite the differences in the structure, neither is more complex than the other in terms of the number of nodes postulated.

In sum, while earlier analyses suggest that the PC is the unmarked and the DOC the derived form, more recent syntactic analyses do not necessarily make such claims.

2.2 Semantics

Generally, ditransitive verbs which permit alternation describe some kind of movement or change of possession (Gropen, Pinker, Hollander, Goldberg, & Wilson, 1989; Pinker, 1989, *inter* alia). Pinker referred to this condition as a Broad Range Rule on alternation (BRR), which he assumes to be universal, suggesting that it is part of Universal Grammar (UG). The BRR does not, however, determine which construction will be the 'default' construction in which (most) non-alternating verbs in a given language appear.

In verbs which alternate, the DOC form is considered to be subtly semantically different from the PC form. Firstly, actions framed in DOCs are interpreted as being 'completed' (as in (3)), whereas they are not in the PC (in (4); examples from Krifka 2004, p.6):

(3) Beth taught the students French, #but they did not learn it.
(4) Beth taught French to the students, but they did not learn it.

Along similar lines, the recipient (indirect object) in the DOC must be an unarguably valid possessor. Therefore, metonyms are permitted as indirect objects in PCs (5), but are not readily acceptable in DOCs (6; cf. Krifka, 2004, p.3):

(5) Andy sent a message to New York

(6) ??Andy sent New York a message

Both of these observations also hold true in German DA (Callies & Szczesniak, 2008, pp. 172-3). However, the distribution of each construction differs in English and German. This is shown in Table 1 (Rappaport Hovav & Levin, 2008 for English; Callies & Szczesniak, 2008 and König & Gast, 2007 for German):

Table 1: Distribution of Prepositional Constructions (PCs) and Double Object Constructions (DOCs) in English and German

	English	German
PC	Available with majority of verbs	Restricted, few PC-only verbs
DOC	Restricted, though not uncommon. Few DOC-only verbs	Most widely available form

Each language favours a different construction and the English distribution is less restricted than the German distribution (König & Gast, 2007), in that the minority construction in English (DOC) is still more widely used than the minority construction in German (PC).

It must be noted that, although the BRR is (apparently) crosslinguistic, there are other fine-grained, language-specific constraints on DA which must be observed. Defining these is a task which many scholars have undertaken, mostly in the context of English (Bresnan & Nikitina, 2003; Gropen et al., 1989; Krifka, 2004; Levin, 1993; Pinker, 1989; Rappaport Hovav & Levin, 2008, amongst many others). Pinker (1989) refers to these language-specific constraints as Narrow Range Rules (NRRs), and provided examples for English: verbs of transfer of possession (*give*), verbs of instantaneous imparting of force causing ballistic motion (*throw*), and verbs of communication specifying the instrument of communication (*radio*, *email*) may alternate, but verbs of continuous motion such as *pull* are barred from alternating and are only available in the PC. German verbs, on the other hand, must encode physical spatial movement to alternate and therefore appear in the PC, as in *werfen* ('throw'). Verbs featuring metaphorical movement such as in *erklären* ('explain') cannot appear in the PC (Callies & Szczesniak, 2008, p. 173). On the basis of these examples, the English NRRs apply to subsets within the superset of verbs which conform to the BRR. In contrast, the German NRR restricts membership of the superset itself such that the German BRR permits fewer verbs to alternate in German than do so in English. In other words, while any verb encoding any kind of possession or motion, metaphorical or physical, is a candidate for alternation in English, only those verbs that express physical motion are candidates for alternation in German.

2.3 The learning task

While there is an extent to which the task of acquiring DA could be considered a lexical learning task, the semantic rules governing DA permit few exceptions and evidence has been found that the semantic rules are applied to novel words. Gropen et al. (1989) show that English-speaking children are conservative in that they tend to use verbs in the constructions in which they first heard them, but that they do generalise the semantic rules above to nonce ditransitive verbs and that adults also accept nonce verbs in DOC frames in accordance with semantic rules. They also note that children produce very few ungrammatical dative constructions even from the earliest stage (more details on this in section 3).

Two factors which will play a role in the acquisition of DA therefore arise. Firstly, the learner has the syntactic task of acquiring the two available structures and recognising which is the default, i.e. non-alternate, construction in each language. Secondly, s/he must acquire both the general semantic condition for alternation and the language-specific constraints to know both what is necessary and what is sufficient for DA in his/her language. It is therefore clear that the task of acquiring DA is a syntax-semantics interface task, as the availability of certain syntactic constructions for different types of verbs is conditioned by semantic rules.

3. Monolingual acquisition of dative alternation

3.1 Age of Acquisition of Dative Constructions

In order to examine how crosslinguistic influence applies in bilingual language acquisition, the normal course of monolingual acquisition provides a baseline for

comparison. The CHILDES database (MacWhinney 2000) has proved fruitful for this task: Gropen et al. (1989) and Snyder and Stromswold (1997) used CHILDES data to examine English and I will also present my own small-scale study on German.

Gropen et al. (1989) studied five US English-acquiring children's data on CHILDES to determine when and with which verbs the two dative constructions emerged in the children's speech. Excluding repetitions and learned phrases, they found that the age of first use of dative constructions varied from 1;8 to 3;3 depending on the child. Neither DOCs nor PCs consistently emerge first, with DOCs emerging first in two cases, PCs in the third, and both constructions within a month of each other in the final two children. In terms of individual verbs, the 28 verbs that were used in both forms emerged in the DOC first in 16 cases, PC first in 9 cases, and simultaneously in 3 cases. They also note that 22 potentially alternating verbs were only produced in the DOC and 24 more were only produced in the PC (Gropen et al., 1989, pp. 212-213).

Snyder and Stromswold also used CHILDES to investigate 12 US English-speaking children. They searched for the first (i.e. first novel and clearly spoken) use of DOCs and PCs by each child, finding that DOCs were acquired between ages 1;8 and 2;11 and PCs between ages 2;0 and 3;4, with a gap of between 0 and 12 months between the acquisition of each construction (1997, p. 290). They also noted that DOCs emerged before PCs in 11 out of 12 children. It is not clear from their investigation which verbs were used in these early constructions and whether different verbs favoured different constructions.

As no comparable study has been conducted in German, CHILDES data from two children, Caroline (von Stutterheim, 2004) and Leo (Behrens, 2006), are used to investigate the naturalistic acquisition of DA in German.[4] Caroline was recorded from 0;10-4;3 and Leo from 1;11 to 4;11. All uses of the verbs *zeigen* ('show', DOC-only),

geben ('give', alternates under certain pragmatic conditions[5]) and *bringen* ('bring', alternates freely) in dative constructions were extracted from the children's speech. These verbs were chosen as they were the most frequent ditransitive verbs of each alternation type used by both Leo and Caroline and examples of the data can be found in Appendix 1. The first use of each construction with each of the three verbs is summarised in the table below:

Table 2: First use of PCs and DOCs in the speech of two German-acquiring children

	Geben		Bringen		Zeigen	
	DOC	PC	DOC	PC	DOC	PC
Leo	2;1,3	2;6,15	2;9,10	2;7,2	3;2,16	—
Caroline	2;4,28	—	2;7,12	—	2;7,8	—

The data show that Caroline does not use the PC with any of the three most common ditransitive verbs. In fact, she only produces two PCs in her entire corpus, the first with the verb *sagen* ('say') at 2;10,7. In Leo's speech, the DOC emerges first overall, though marginally after the PC in the case of *bringen.* He uses both constructions with *geben* and *bringen* but the DOC is strongly preferred; he uses DOC with *geben* 86 times and the PC just 6 times.

Both children's general preference for the DOC form, particularly with *geben* and *zeigen,* is also captured in other literature studying the production of ditransitive constructions by monolingual German-speaking children. Eisenbeiss, Bartke, and Clahsen (2006) note that German-speaking children "occasionally" use PCs instead of DOCs; in naturalistic speech, their subjects used PCs in just 20.8% of cases (31 out of

149 ditransitive verbs used).[6] Schmitz (2006) also found very few examples of PCs in her monolingual German subject's production of ditransitive verbs; only 12 over an investigation period of 2 years 8 months. Furthermore, Schönenberger, Sterner, and Ruberg (2011) and Schönenberger, Rothweiler, and Sterner (2012) also found that monolingual German children aged between 2;4 and 5;0 strongly preferred DOCs to PCs with the verbs *geben* 'give' and *schenken* 'gift', producing only 3 PCs in 166 examples (1.8%). These combined findings suggest that DOCs are preferred to PCs in German child speech even from an early age.

Returning to Caroline and Leo, Table 3 shows how their age of acquisition compares with the children in Gropen et al.'s CHILDES study:

Table 3: Age of acquisition of DOCs and PCs in English and in German (age of first use of each construction)

	American English average (Gropen et al., 1989)	Caroline	Leo
DOC	2;7,10	2;4,28	2;1,3
PC	2;8,15	2;10,7	2;6,15

The data show that the ages of acquisition in German and in English are very similar for each construction, suggesting that there is no delay in one language compared with another. Furthermore, the German children seem to respect the semantic restrictions of each verb even in these earliest stages, producing very few ungrammatical constructions.

3.2 The development of DA and the effect of animacy

As noted in section 2.2, the PC and DOC forms are not completely semantically identical; specifically, the indirect object in a DOC is required to be unambiguously animate. However, the animacy of the objects, individually and in combination, can affect monolingual children's interpretation of dative constructions.

Animacy complicates the use and comprehension of the DOC from the earliest stages of ditransitive verb use. Bowerman (1985) reported that her English-speaking daughters confused *put* and *give,* as both "specify an act in which an agent causes something to change location, but they differ in whether the new location is animate or not" (1985, p. 390). Examples such as those given below show that even up to age 4;1, children may not fully be aware of the animacy restriction on the indirect object of *give* as opposed to *put* (examples from Bowerman, 1985, p. 289):

(7) You put the pink one to me   Christy, 3;4

(8) Whenever Eva doesn't need her towel **she gives it on my table** and when I'm done with it **I give it back to her**   Christy, 4;1

Note that though verbs like *put* may be incorrectly used with animate indirect objects, they do not appear in DOC frames. This means that although animacy complicates interpretation of the meaning of certain verbs, the BRR still holds; that is, *put* is not considered to denote a change of *possession* in a sufficient enough sense to become an alternating verb.

Similar conflation of change of possession and change of location also occurs in monolingual German acquisition. Mills (1985, p. 155) notes that the preposition *zu* 'to' is used to indicate possession as well as direction with noun phrases. Whilst *zu* is

grammatical in ditransitive verb contexts (e.g. with *geben*), it is not grammatical to indicate possession using *zu* in other contexts.

However, even once children have acquired the animacy restriction, the presence of two animate objects in the DOC is a hindrance to interpretation. Cook (1976) tested English-speaking children aged between 5;0 and 10;0 using an act-out task to examine their interpretation of PCs and DOCs with different combinations of animate and inanimate objects. He found that children of all ages interpreted PC constructions at near-ceiling level, but that DOC interpretation improved with age; children at 5;0 acted out only 31% of DOCs correctly and even children at 10;0 still acted out only 52.5% of DOCs correctly. He noted that DOCs in which the objects had the same animacy were less well interpreted than DOCs in which the objects differed in animacy.

Finally, in German, Drenhaus (2004) examined monolingual German children's production of DOCs using an elicited imitation task. He found that animacy had an effect on how accurately children (mean age 5;4 years) repeated DOCs with non-canonical (DO>IO) world order. Specifically, the study found that children were less accurate when repeating sentences with an inanimate direct object, as they would mark both objects with accusative case. In contrast, when the sentence contained an animate direct object they would be more likely to mark the indirect object with dative case in an adult-like fashion. This shows that monolingual German children are sensitive to animacy in that dative case assignment is triggered in order to disambiguate sentences which have two animate objects (cf. also Drenhaus & Féry, 2008, p. 229). This may not hold true in the case of bilingual acquisition, however, as the acquisition of dative case has been shown to be delayed in bilingual German-Romance-acquiring children (Schmitz, 2006, p. 258).

4. Dative alternation: a test case for crosslinguistic influence at the syntax-semantics interface

Studies of monolingual acquisition of DA show that children acquire both the DOC and PC around the same time. They make relatively few errors in production and many of those errors can be explained by the children's relatively late acquisition of animacy restrictions on certain lexical items.

Using monolingual acquisition as a baseline for comparison, the current study looks to determine whether bilingual children follow the same course of acquisition as their monolingual peers. A qualitative approach (in the sense of Kupisch, 2012) will be taken to this study of crosslinguistic influence, as the locus and characteristics of the influence, rather than its severity, are of primary interest. The hypothesis that interfaces are vulnerable suggests that DA may be vulnerable to crosslinguistic influence as it is a syntax-semantics interface phenomenon which requires mapping of a given syntactic structure to a given semantic composition. Though some former work (notably Montrul, 2006) suggests that the syntax-semantics interface is not automatically susceptible to crosslinguistic influence, work by Pérez-Leroux et al. (2009) suggests that subcategorisation frames of verbs may present an area of susceptibility. If crosslinguistic influence is found in DA, this finding will be strengthened and knowledge of the syntax-semantics interface advanced.

A feature which should affect the bilingual children's interpretation of dative constructions in both languages, however, is animacy. Both English and German monolingual children perform differently on DOCs with two objects of the same animacy than on those with different animacy. English-speaking children struggle to differentiate

between two DP objects if they are both animate and German-speaking monolingual children rely on dative case marking to differentiate between direct and indirect objects which are both animate. However, previous research shows that German-Romance bilingual children are slow to acquire dative case marking regardless of whether their German or their Romance language is dominant because of the absence of overt dative case marking in Romance (Schmitz, 2006). It is therefore to be expected that the German-English bilinguals in this study will experience a similar delay, given that English does not overtly mark dative case on full lexical NPs, neutralising this advantage. The prediction then is that German-English bilingual children will interpret dative constructions in both languages with the same level of accuracy, finding particular difficulty with DOCs with two animate objects. Furthermore, the bilinguals will interpret English dative constructions with the same level of accuracy as their monolingual peers, as no crosslinguistic influence is expected in comprehension due to the presence of both constructions with the same semantic interpretations being present in both languages. This also entails that their performance will improve with age as it does in monolingual acquirers of English (Cook, 1976).

Returning to the question of crosslinguistic influence in production: if it is to be found, what will it look like? One other study on the acquisition of DA by simultaneous bilinguals has been conducted: Zarqane (2009) focused on French-English bilingual children, whose languages differ in terms of whether they permit alternation or not. Zarqane followed Hulk and Müller (2000) in suggesting that structural overlap at an interface predicts crosslinguistic influence. Though Hulk and Müller focus on the syntax-pragmatics interface, Zarqane shows that structural overlap at the syntax-semantics interface leads to the bilingual children in his study overusing the PC in English relative

to their monolingual counterparts because French only permits the PC where English permits both.

The theory of syntactic overlap is not appropriate in the case of German-English bilingual children, however, as both English and German permit both PCs and DOCs. The difference between the two languages is semantic, therefore recourse to a theory of semantic overlap, like that used by Kupisch (2012), is more appropriate. Given that both languages permit alternation according to the BRR—alternation between verbs which denote movement or a change of possession—but differ in their NRRs, then it might be the case that the 'basic form' of the BRR, i.e. the less restricted English version, will hold across both languages, leading to influence of English on German (or at least, production of dative constructions in German which looks 'more English'). This would manifest itself in overuse of the PC, especially with verbs which are DOC-only in German, such as *zeigen*. Alternatively, if both the BRR and NRRs are learnt around the same time, it is possible that the more restrictive German NRRs may influence the bilingual participants' English, restricting the PC as an option to only those verbs which alternate in both languages and leading to fewer PCs in their English use than their monolingual English peers. It is possible that the difference between these two readings of the semantic overlap hypothesis might be obscured by the question of language dominance, which Kupisch (2012) and others also show determines the directionality of crosslinguistic influence. This is because the children and adults being tested are all resident in the UK, which suggests that English will be the more dominant of their two languages. This issue will be examined in sections 5.1 and 6.

In the event that crosslinguistic influence occurs at the syntax-semantics interface, the question remains as to whether it can be overcome. Montrul and Ionin (2010) found

influence of English on the interpretation of definite articles by adult heritage speakers of Spanish in the US, raising the question whether the influence present in their language was due to L1 attrition of their Spanish or incomplete acquisition of Spanish definite articles in the first place. Kupisch also addressed this issue in her 2012 study of German-Italian bilinguals' interpretation of definite articles and bare plurals. She concluded that her participants did not display a lack of any property necessary for the interpretation of definite articles and bare plurals but applied them differently from their monolingual peers. She therefore suggests that 'divergent' may be a better description for some bilingual adults' grammars than 'incomplete'. In this study, too, it will be of interest to see whether bilingual adults brought up in the same conditions as the bilingual child participants overcome any crosslinguistic influence seen in the children's grammars, whether their grammars remain 'divergent' or 'incomplete', or whether attrition has occurred in the intervening period between childhood and adulthood. Following the first reading of the semantic overlap hypothesis given above, it is hypothesised that, if the adults continue to receive input in both languages, they will have had sufficient input in order to eventually learn the language-specific NRRs restricting alternation in both English and German. If they have continued to receive input in both languages into adulthood, it is predicted that they should not differ from their monolingual adult peers.

5. Methodology and results

5.1 Participants

Twenty-five simultaneous bilingual children aged between 4;9 and 8;8 were recruited through a bilingual English-German kindergarten in the south east of England. This age range was chosen to ensure knowledge of both PC and DOC constructions (cf. Cook, 1976). Each child's language background was determined by a parental questionnaire and investigator observations. All children were exposed to both languages from birth and lived in households with parents who have different native languages and follow the one parent, one language policy at home, following Meisel (1989, p. 22).[7]

Given that English is the dominant language in the national context, it is likely that the children's dominant language, if they have one, will be English, raising the question of whether these children are actually heritage speakers of German.[8] However, they do not fit other defining characteristics of heritage speakers (as outlined in Rothman, 2009) because the children are being educated in both English and German (an important factor in influencing language dominance, also noted by Kupisch, 2012) and the children are exposed to a broader German-speaking community than just the German-speaking parent (Montrul, 2008, p.102).[9] Furthermore, observations of both language-internal and language-external factors (as defined by Silva-Corvalán, 2014, pp. 19-21; see also Montrul, 2008 and Yip & Matthews, 2007) suggest that this dominance is minimal: the children tested received equal or near equal input in each language at home and at kindergarten, were equally happy to use English and German at home and at kindergarten, showed little to no difference in fluency in each language (e.g. showed similar levels of hesitation in each language), and rarely, if ever, mixed the two languages.

Three other children were excluded as, according to investigator observation, they were notably weaker in German than in English. Trilingual children were not considered in order to avoid any influence of the third language. Twenty-nine English monolingual

children aged between 5;2 and 8;8 from the same geographical and socio-economic area were also recruited.

Five simultaneous bilingual German-English adults (mean age 23;11) from mixed-language families were also recruited. These adults were from the same community in south-east England and had attended a monolingual German secondary school. They visit their German-speaking countries of origin[10] regularly and have not taken any formal post-secondary language instruction in German. Six monolingual southern English-speaking students (mean age 24;1) and 7 native German-speaking students at the University of York (mean age 23;3) served as controls. The number of participants in each group is shown in Table 4:

Table 4: Number of participants in each group (by language and age)

	Monolingual English	Monolingual German	Bilingual German-English
Reception[11] (age 4;9-5;8)	7	-	11
Year 1 (5;9-6;8)	7	-	5
Year 2 (6;9-7;8)	8	-	5
Year 3 (7;9 -8;8)	7	-	4
Adult	6	7	5
TOTAL	**35**	**7**	**30**

5.2 Procedure

The children were tested individually and two experimenters were present at all times. An elicitation task was always conducted first, followed by an act-out task. This ensured consistency and avoided priming effects from the act-out stimuli upon the participants' production. In the case of bilinguals, the entire procedure was preceded by a 'Ring' task (cf. Drenhaus & Féry, 2008) to test the participants' comprehension of accusative and dative Case morphology. In this task, the participant was given the following instructions:

(9)   Springe in **den** Ring (accusative) = jump *into* the ring

(10)   Springe in **dem** Ring (dative) = jump up and down *inside* the ring

Participants who could not distinguish between the two instructions were excluded from the study.

As it was necessary to determine the participants' knowledge of Case morphology before commencing due to time constraints, the German test preceded the English test in all cases. This also kept any potential effect of crosslinguistic priming constant. The German test was administered by a native German-speaking experimenter and the English test by a native English-speaking experimenter (the author) to promote a natural language environment and monolingual mode (Grosjean, 2008). Each participant took an interval of at least one hour between tests, during which they returned to their normal daily routine. The routine of the kindergarten promotes a monolingual mode as the kindergarten staff stick to one language per member of staff and divide the day up into 'German' and 'English' sessions. Children are therefore used to switching from monolingual mode in one language to monolingual mode in the other with little gap in between, so the relatively short break between tests should not affect the results on language grounds. The

children's responses, which show a marked lack of codeswitching, also suggest that they were not operating in bilingual mode during testing (cf. Grosjean, 2008, p. 72).

5.3 Act-out Task

5.3.1 Methodology

The act-out task tests the hypothesis that bilingual children will interpret DOCs and PCs in both English and German to the same level of accuracy. The task aims to investigate how children comprehend and interpret both types of dative construction, in particular how they understand the different roles of the two objects. Following Cook's (1976) methodology, the children were presented with stimulus sentences that they were asked to 'act out' using toys provided by the experimenter, namely an orange, an apple, a banana (to represent inanimate objects), a girl, a boy, a cat, and a frog (to represent animate objects). During the pre-test the children were trained to move only one toy at a time to ensure their intentions were clear to the investigators.

    The stimulus sentences were presented as imperatives so that the agent is clearly the child at all times. Each participant received three DOCs and three PCs. Three of the sentences involve one animate and one inanimate object and three involve two animate objects. The sentences were all presented in canonical word order. Examples are shown in (11):[12]

| (11)	Bring the frog the apple – Bring dem Frosch den Apfel	(I/A	DOC)
	Throw the cat to the frog – Wirf die Katze zum Frosch	(A/A	PC)
	Give her the apple – Gib ihr den Apfel	(A/I Pro)

Each participant also received four filler sentences; two transitive and two locative constructions, which were also presented in the imperative and have the same number of words as the PC constructions.

5.3.2 Results

As Figure 1 shows, bilingual participants performed to a high level in this task from the earliest age groups. No participant registered more than three non-target responses (i.e. switching of theme and goal) in English and only one bilingual Reception child registered four non-target responses in German.

However, mixed-measures ANOVA[13] results show that DOCs, in particular those with two animate objects (A/A DOC in figure 1), were the constructions which were most frequently misinterpreted across the child groups. An effect of the construction was found in German ($F(2, 31) = 5.187$, $p < 0.01$) and animacy also had a statistically significant effect on bilinguals' interpretation across languages ($F(1, 25) = 4.203$, $p < 0.05$). Moreover, there is a significant interaction of Age*Construction in the bilingual data ($F(4, 25) = 2.189$, p < 0.05), which post-hoc tests and Figure 1 show is due to adults' significantly higher accuracy when interpreting animate/animate DOCs in both English and German compared with Reception children (Games-Howell $p < 0.05$).

Comparing the bilingual and monolingual data shows a lack of significant differences between the performance of the bilingual and monolingual children on the English tasks (monolingual English children also performed to a very high level from the earliest ages). Animacy also affected interpretation in both groups of children, as Figure 2 shows.
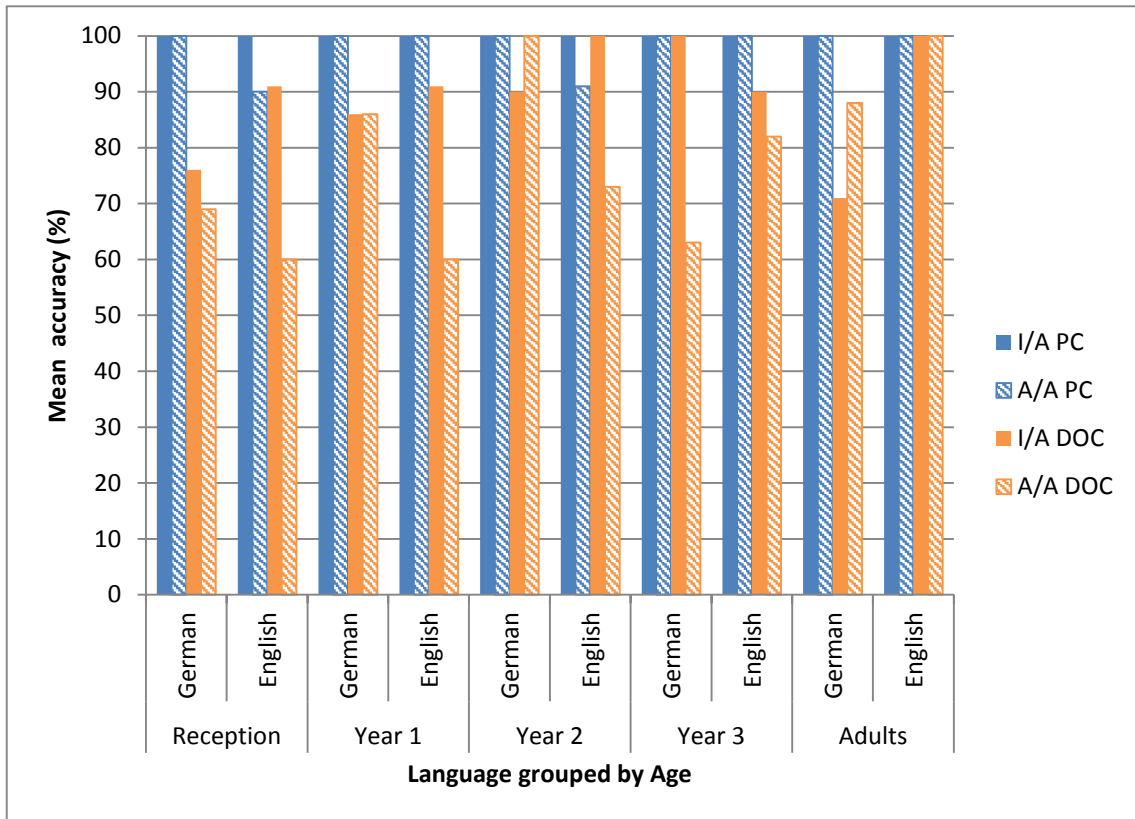
Figure 1: Percentage of correct responses in each language by bilinguals
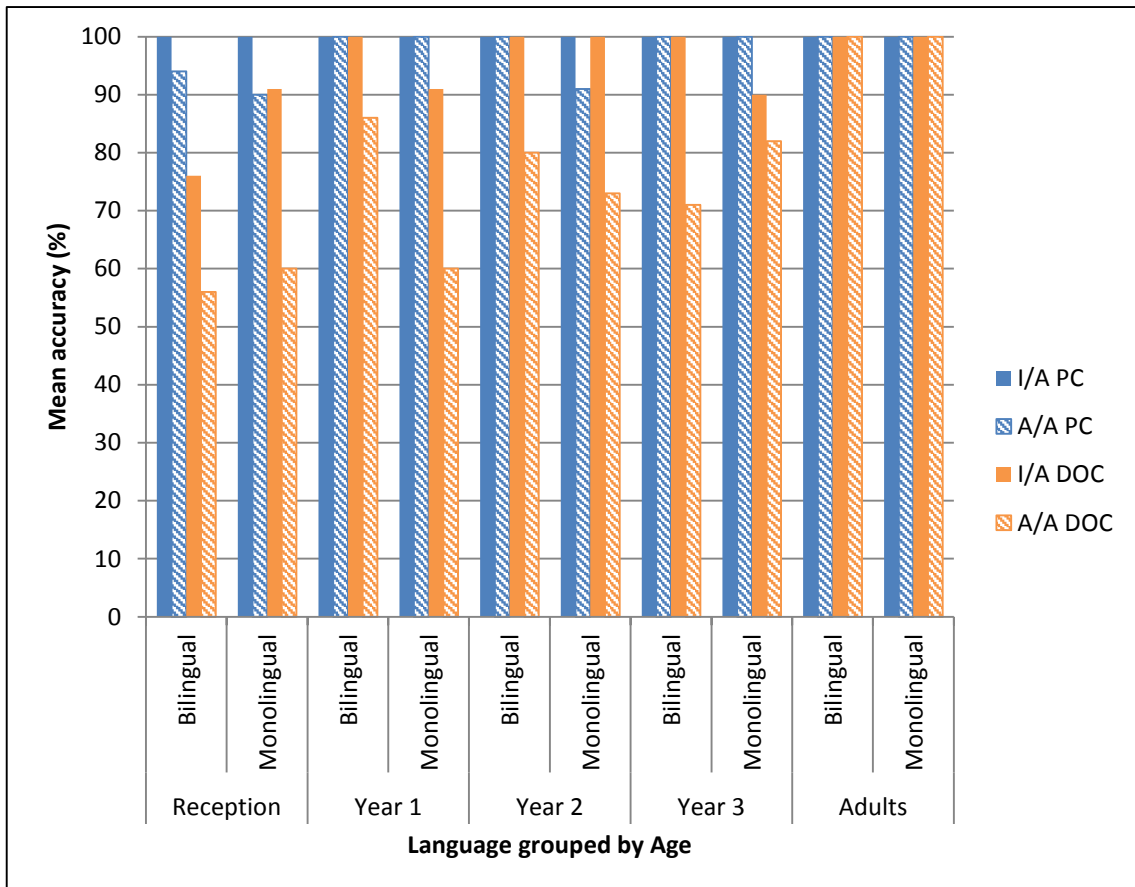
Figure 2: Percentage of correct responses in English by bilinguals and monolinguals

A mixed-measures ANOVA on the bilingual and monolingual data showed a significant interaction of Construction*Animacy ($F(2, 55) = 5.914$, $p < 0.01$), showing along with Figure 2 that children of all ages, whether bilingual or monolingual, struggled most with the interpretation of animate/animate DOCs.

5.3.3 Analysis

The ANOVA results and figures show that the hypothesis that bilinguals and monolinguals would not differ in their interpretation of English PCs and DOCs is supported, as well as the hypothesis that the presence of two animate objects is a hindrance to the interpretation of DOCs by bilinguals in both languages.[14] Cook (1976) reported that children aged 10;0 only interpreted 50% of DOCs correctly whereas the monolingual and bilingual Y3s combined (7;9-8;8) in the present study correctly interpreted 86% of all DOCs, a high, if not adult-like, level of accuracy – bilingual and monolingual adults together correctly interpreted 100% of DOCs. In sum, both bilingual and monolingual children interpret PCs more easily than DOCs in the early stages of acquisition, struggling in particular with DOCs with two animate objects, but they interpret them equally well by the age of 8, with some effects of animacy still present in the DOC with two animate objects.

5.4 Elicitation task

5.4.1 Methodology

In order to test the subjects' use of ditransitive verbs, a video description task was used to elicit structures with ditransitive verbs (Thornton, 1998; Zarqane, 2009). The participant was presented with a compilation of 11 short (3-10 second) clips of Tom and

Jerry cartoons. S/he was then shown each clip again, one at a time. After each clip, s/he was asked a question framing the agent of the action as the subject, for example, "What did Jerry do?"

The aim of this task is to elicit dative constructions without priming one construction over another. Neither object is presented as given information, so the information structure of the utterance is not influenced. The participant is free to choose the verb and corresponding structure s/he feels best describes the given scene. Note that three utterances involving codeswitching as in (12) were not counted:

(12)   Die braune Katze hat etwas   vom   Tom   wegge<u>snatched</u>

            The brown cat   has something from-the:DAT Tom away-PAST-<u>snatch</u>

                                            (Y2, 6;9)

5.4.2 Results

Figure 3 shows the percentage use of PCs and DOCs by bilinguals and monolinguals in English and Table 5 contains the raw figures detailing responses to the task:

Table 5: Responses to elicitation task by group in English

	Total utterances	Target utterances (containing a ditransitive verb)	Target utterances containing a PC
Bilingual children	275	129 (47%)	78 (60%)
Monolingual children	319	169 (53%)	115 (68%)
Bilingual adults	55	33 (60%)	22 (67%)
Monolingual adults	66	55 (83%)	40 (73%)

All bilingual child groups produced more PCs than DOCs in English apart from Y1 (11 PCs to 14 DOCs). Only two verbs of the 22 used by bilingual children were used in the DOC form more frequently than the PC form; *show,* used in the DOC form 64% of the time and *make*, which was used once in the DOC form and never in the PC form.
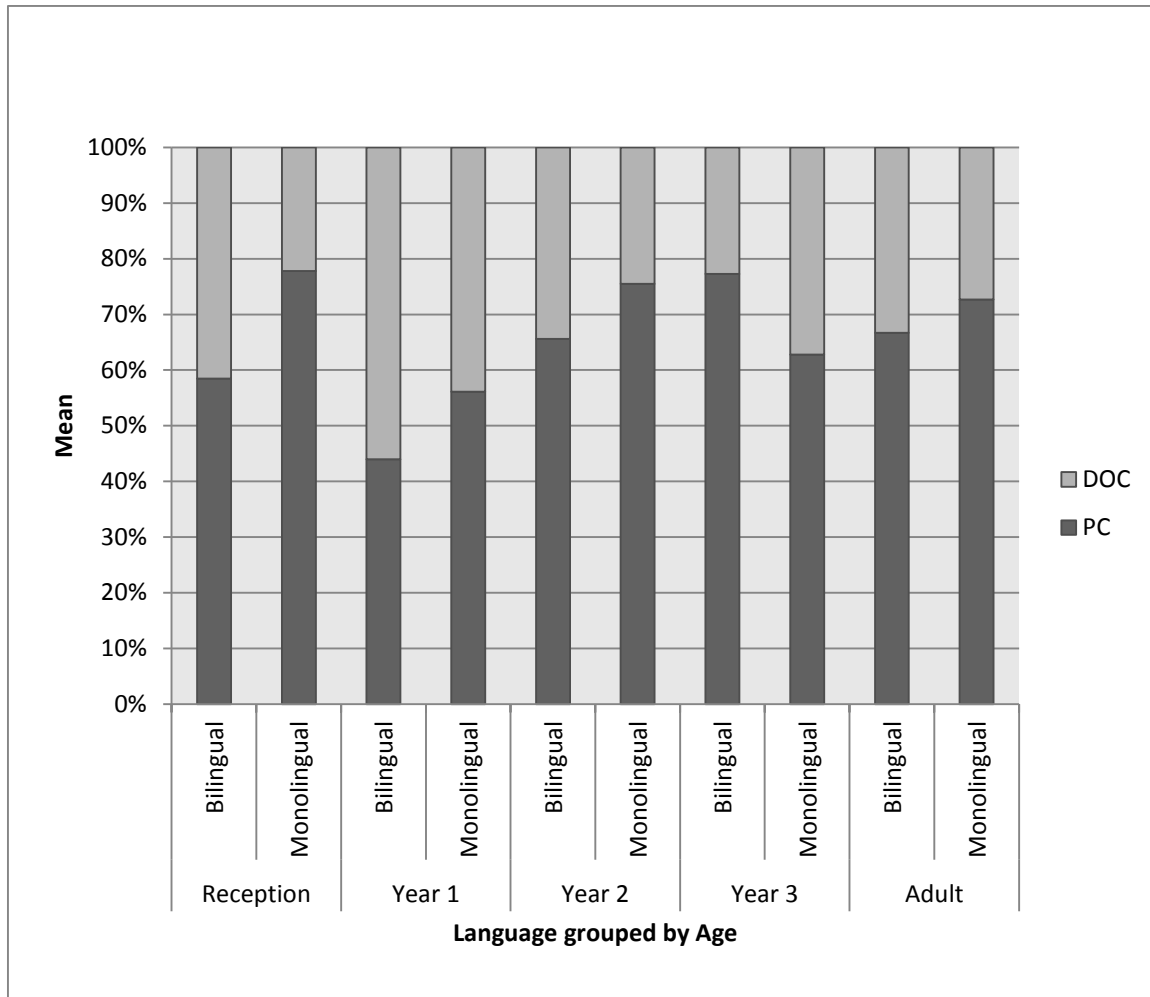
Figure 3: Proportional use of PCs and DOCs in English

There were 8 instances of ungrammatical utterances in the bilinguals' speech, of which seven were DOCs with DO>IO word order, as in (13):

(13)   Tom picked up the hanky and gave it the white cat   (R, 4;11)

DO>IO word order in DOCs with one or more full lexical objects is ungrammatical in southern British English and marked even in northern varieties of English, which commonly accept DOCs with DO>IO word order when both objects are

pronominal (Haddican, 2010, p. 2426). DO>IO DOCs have been analysed as instances of preposition dropping (Biggs, 2013), but the English dialect spoken by the children is not a preposition-dropping one and the monolingual children did not produce any examples with this word order. As such it seems more likely that these examples are cases of German word order incorrectly transferred to English rather than cases of preposition dropping.[15] The other ungrammatical construction is the use of *take* (in the sense of *take from*) in the DOC frame by a Y2 child. Once more, this appears to be direct lexical transfer from German as the DOC form is permitted with the German equivalent *(weg)nehmen*.

In numerical terms, Table 5 shows that there are few differences between the bilingual children and adults' production in English and their monolingual peers' production in terms of the proportions of PCs produced. The monolingual children also used a similar range of ditransitive verbs as the bilingual children (21 in total). All monolingual speaker groups, including adults, used more PCs than DOCs and all words were used in the PC form more frequently than the DOC form, apart from *offer*, which was used once in the DOC form and never in the PC form. There were no ungrammatical constructions in the monolingual children's speech.

Moving onto the German data, Figure 4 shows the percentage use of DOCs and PCs
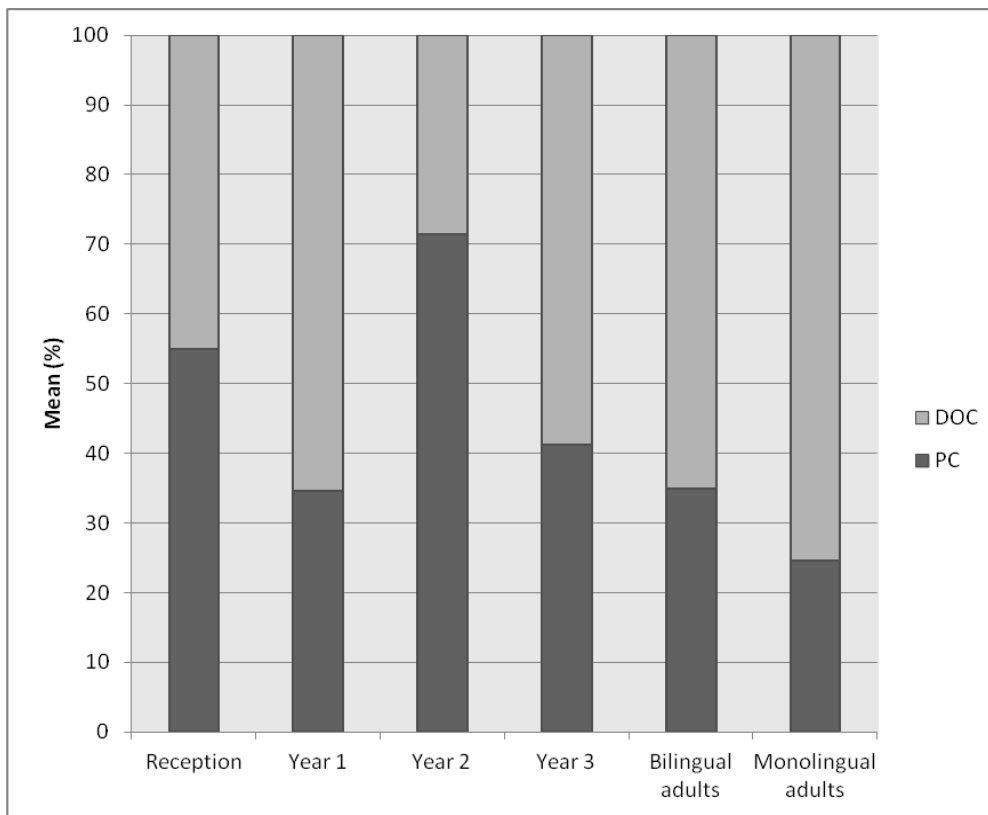
Figure 4: Proportional use of PCs and DOCs in German

in target responses by age group. The raw figures are shown in Table 6.

Table 6: Responses to elicitation task by group in German

|	Total utterances	Target utterances (containing a ditransitive verb)	Target utterances containing a PC
Children	275	123 (45%)	64 (53%)
Bilingual adults	55	39 (71%)	13 (35%)
Monolingual adults	77	60 (78%)	15 (25%)

The bilingual children used 15 different verbs in German, 7 fewer than in English. On average, 53% of their ditransitive constructions took the PC form, though Y1 and Y3 children produced marginally more DOCs than PCs. All verbs were used more frequently in the PC form than the DOC form, apart from *zuwerfen* ('throw'; used once in DOC and never in PC), *machen* ('do'; used twice in DOCs and never in PC) and *wegnehmen* ('take away', used twice in both PCs and DOCs). However, 28% of their target responses, including over half the PCs produced by the children, were ungrammatical or contextually inappropriate. The 10 ungrammatical utterances were overgeneralisations of the PC form to the DOC-only verb *zeigen* ('show'). The other 24 utterances involve contextually inappropriate uses of *geben* ('give') in the PC form. As stated above, whilst native speakers of German do not consider *geben* in the PC form ungrammatical, its usage is highly marked as it is only used pragmatically to emphasise the role of the recipient (Liamkina, 2008, p. 156). Furthermore, the native German-speaking adults only used it in the PC form once (out of 18 instances of *geben* overall) and the bilingual adults twice (out of 8 instances of *geben* overall). The bilingual adults did not produce any other ungrammatical or contextually inappropriate utterances, though they did produce a slightly higher proportion of PCs (35% of their target responses) than the monolingual German-speakers (25%).

The mixed-measures ANOVA results for German show a significant effect of Construction ($F(1, 31) = 6.877$, $p < 0.05$) and a significant interaction of Construction*Age ($F(4, 31) = 2.828$, $p < 0.05$) because the bilingual adults' language use differs from the bilingual children's usage. Post-hoc tests show that Reception and Y2 children differ significantly (Games-Howell $p < 0.05$) from the monolingual adults. This

is clear from Figure 4 as the Reception and Y2 children in particular show different distribution of PCs and DOCs from the adults. In contrast, there were no significant differences in the production of bilingual adults compared to the native German-speaking adults.

A mixed-measures ANOVA was then conducted on the bilinguals' data only and a significant interaction between Construction and Language was found ($F(1,25) = 5.001$, $p < 0.05$), although post-hoc Games-Howell tests did not reveal any significant differences between groups; the observed interaction effect may be due to the Y3s and adults, whose percentage use of PCs and DOCs differs between German and English. Figure 5 shows that the adults and, to a slightly lesser extent, the Y3s use consistently fewer PCs in German compared with English. In contrast, the three younger age groups use consistently similar rates of DOCs and PCs across the two languages; Reception and Y2 children both use more PCs than DOCs in both German and English, whereas Y1s use fewer PCs than DOCs in both languages.
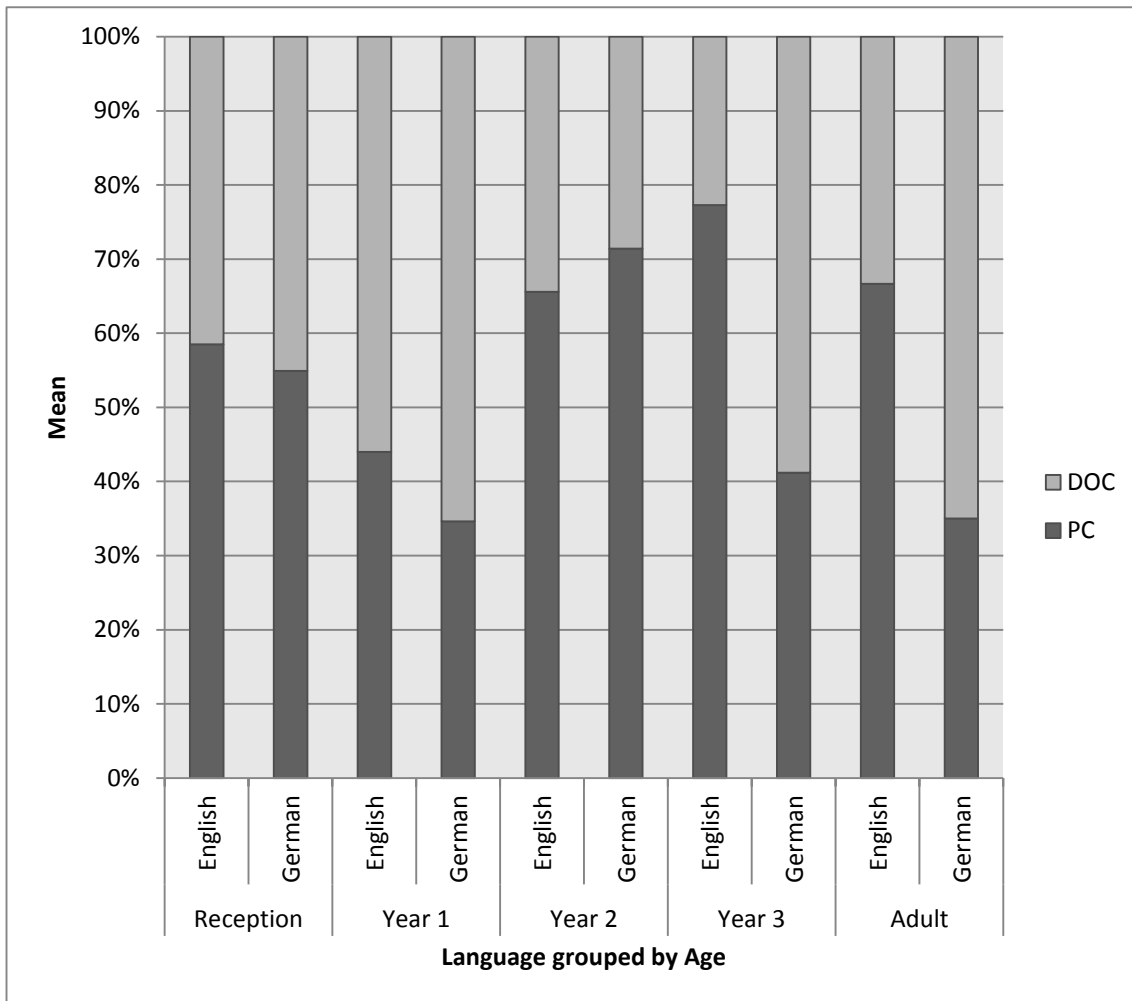
Figure 5: Proportional use of PCs and DOCs by bilinguals in each language

5.4.3 Analysis

The lack of significant differences in the bilingual children's choice of structures between English and German shows that they use alternation similarly in each language, particularly the Reception, Y1 and Y2 children. This leads to non-monolingual-like alternation choices in German as nearly 30% of the bilingual children's German responses included PC forms with verbs that either disallow (*zeigen*) or strongly disprefer (*geben*) the PC form in pragmatically neutral contexts. Notably, the English equivalents *show* and

give alternate freely, suggesting that the children overgeneralise English alternation to German verbs in pragmatically neutral contexts. Furthermore, bilingual adults do not show these same traits. Their performance in German is the same as monolingual adults, as Figure 4 shows; therefore they have reanalysed the overgeneralisation of DA they make as children.

The results in section 5.4.2 suggest that most of the bilingual children have not yet mastered the semantic conditions restricting alternation in German, as only the Y3s perform in a largely adult-like way. They also appear to use the PC as the default construction in both languages as they use the PC with almost all verbs and use it more frequently with individual verbs than the DOC, which is not consistent with the monolingual grammar in German. Note that Weissenborn, Kail, and Friederici (1990) found that prepositional indirect objects were no more easily interpreted by children than nominal indirect objects–a finding commensurate with recent theoretical analyses of the syntax of dative constructions, which resist the idea of a universal default construction across languages–so there does not seem to be a strategy at play here to use an 'easier' or 'more correct' form. As the bilingual children receive around half as much input in English and in German as a monolingual child, this appears to result in protracted indeterminacy in learning the NRRs of each system, resulting in a less restricted, English-like system.

It is possible that there is also an effect of dominance, given that English is the dominant language in the national context. The children's German vocabulary seems to be smaller than their English vocabulary, suggesting dominance of English, but this is countered at least in part by the examples of German influence on English word order as illustrated in (13).

In contrast to the children, the German-English bilingual adults differentiate between DA in English and in German. Furthermore, as Figure 5 shows, the Y3 children seem to differentiate between the two languages to a degree, suggesting that acquisition of the language-specific NRRs is already occurring around age 9. However, the point at which the children have received sufficient input not only to distinguish between DA in German and English but to perform like monolinguals in both languages seems to occur at an age not yet reached by the children studied here, that is, somewhere between 8;8 and adulthood.

6. Discussion

The current study provides a snapshot of the development of DA as acquired by German-English simultaneous bilingual children between the ages of 4;8 and 8;8, as well as a view of their potential ultimate attainment in the performance of five bilingual adults who grew up in the same circumstances. The data provide support for the possibility of crosslinguistic influence at the syntax-semantics interface, specifically with regards to the representation of the internal arguments of verbs.

The hypothesis that bilinguals' interpretation of DA would not show crosslinguistic influence was supported. The bilingual and monolingual children comprehended DOCs and PCs to the same degree and both were affected by animacy when interpreting DOCs.

The hypothesis that bilinguals' production of dative constructions would see unilateral influence from English to German was also supported by the data. The effects of crosslinguistic influence on the bilingual children's production of German dative constructions are both quantitative and qualitative. Quantitative effects of this influence

are evident in the elicitation task; the ratio of PCs to DOCs used in German is English-like until Y3 (around age 8) and there is a very low error rate in the bilingual children's English production (6%) as compared with their German production (28%). Note also that 7 of the 8 errors in English do not concern the choice of construction *per se* but the transfer of German word order to English (IO>DO order in the DOC). Qualitative effects are seen in the type of errors made by the children in German in which they overuse the PC with all verbs and implement it with DOC-only verbs such as *zeigen*. By overextending the PC to non-alternating German verbs, they behave differently from monolingual German speakers by setting the PC as the default dative construction in their German. These results run counter to the reading of the semantic overlap hypothesis which suggests that the more restricted system (German) will influence the less restricted system (English). This is because the more restricted system relies on the acquisition of language-specific NRRs to restrict it which, it would appear, have not yet been acquired by the bilingual children. However, the bilingual adult data in German suggests that bilingual children eventually stop relying on evidence from English, becoming monolingual-like by adulthood, confirming the hypothesis that crosslinguistic influence in DA could be overcome by the adult state.

The results of this study also have wider ramifications for the study of 2L1A. The syntax-semantics interface, as it concerns optionality in subcategorisation frames, is vulnerable to crosslinguistic influence in child bilingual acquisition. However, this protracted indeterminacy, to use Sorace's (2011) term, does not last as long as input from both languages is maintained.

Regarding protracted indeterminacy, it is notable that even the oldest child age group tested in this study has not reached ultimate adult-like attainment. This temporal

benchmark of adult-like attainment is difficult to predict; Gathercole's studies of morphosyntax in Spanish-English bilingual children show that some bilinguals master the mass-count distinction as late as 12;0 (2002a, p. 196) but they still only perform at 50% accuracy regarding grammatical gender at this age (2002b, p. 214). These structures differ from DA as they take place at the syntax-morphology interface, but like DA they are 'internal' interface phenomena (occur at the interface between syntax and another linguistic domain), they are not constrained by UG,[16] and they depend on exposure. It may be that bilingual children would need to be tested well into their teenage years in order to find the point at which they become adult-like in their interpretation of DA, though it is important to note that the attainment of a monolingual-like grammar by the bilingual adults suggest that the children's grammar is a case of protracted indeterminacy and not insurmountable incomplete acquisition.

It is also worth noting that the oldest monolingual children in the present study are non-adult-like in another way in that their interpretation of DOCs is affected by animacy. This difference is not significant, however, unlike the ways in which bilingual children differ from bilingual adults in their production.

In sum, this study begins to address the concerns expressed by Montrul (2008) about non-monolingual behaviour in bilingual adults and successfully charts development of bilingual children after age 5, but too few age groups were tested to ascertain exactly when bilingual English-German children become monolingual-like in their use of DA.

Having established that 2L1A diverges from L1A, it is not straightforwardly clear whether bilinguals' overall linguistic knowledge is the same as monolinguals' knowledge. The present study only permits a comprehensive judgment upon the bilinguals' English and the results suggest that their knowledge should be divided into

syntactic knowledge and semantic knowledge. Both tasks suggest that bilingual children have the same syntactic knowledge as monolinguals in English as they correctly use and interpret both the PC and the DOC structures. The seven word order errors in their production are attributable to influence from German, while the ambiguity created by animacy affects both bilingual and monolingual interpretation of dative constructions. Bilingual children therefore appear to have the same syntactic knowledge as monolingual children.

However, the bilingual children's semantic knowledge, which constrains combinations of verbs and syntactic structures, is clearly not the same as monolingual children's semantic knowledge. In the elicitation task, they show underdetermination of the semantic NRRs in German because 28% of the ditransitive sentences they produced contained ungrammatical or contextually inappropriate alternations. The result that syntactic and semantic knowledge are affected differently supports similar findings by Stöhr, Akpınar, Bianchi, and Kupisch (2012) and Kupisch, Akpınar, and Stöhr (2013). They found that the morphosyntactic processes required for gender marking are acquired by Italian-German (Stöhr et al.) and French-German (Kupisch et al.) simultaneous bilinguals, yet they make errors in assigning gender in the weaker or minority language.[17]

The difference between syntactic and semantic knowledge lies in how they are acquired. The acquisition of syntax is innately guided and constrained by UG, meaning that both bilingual and monolingual children build their competence up from the same base, following the same acquisition patterns. They therefore attain the same level of syntactic knowledge despite variation in the input. Semantic knowledge, however, is largely acquired through experience of language and other cognitive processes such as increased real-world knowledge. Consequently, the monolingual and bilingual children

do not have the same basis on which to build their semantic knowledge because the bilingual children only receive half the amount of input a monolingual child would receive, thereby making it more difficult for them to acquire the language-specific NRRs.

The impact of this study on current theory is as follows: firstly, the syntax-semantics interface, an 'internal' interface, can be susceptible to crosslinguistic influence. Quantity of exposure affects these interface phenomena in 2L1A compared with L1A (cf. Sorace & Serratrice, 2009 for similar results) and the resultant delay can persist well into the child's school years. However, this protracted indeterminacy does not endure and can be overcome in the adult state. This result therefore works towards answering questions posed by Kupisch (2012) about whether crosslinguistic influence in child bilinguals can be overcome in the adult state, and by Montrul (2008) about whether crosslinguistic influence in adult bilinguals is a result of incomplete learning as a child. It would be premature to extend the findings of this study to all instances of crosslinguistic influence at the syntax-semantics interface, but it seems that crosslinguistic influence relating to DA in child bilinguals can be overcome with continued input, rather than remaining a case of incomplete acquisition. This suggests that any German-English adult bilinguals who may still exhibit non-monolingual-like behaviour with DA are cases of L1 attrition rather than incomplete L1 acquisition. The study also provides support for the use of interface hypotheses in non-'endstate' contexts, contexts for which evidence for the interface hypothesis as conceived of by Sorace and Filiaci (2006) has been lacking (cf. Lardiere, 2011 and Pires & Rothman, 2011). 2L1A is by definition a process rather than an endstate, but the application of interface hypotheses has until recently been largely limited to second language learners who attain near-native status or bilinguals already in

the adult stage. This study, with others, shows the validity of applying interface hypotheses to 2L1A in its early stages.

7. Conclusion

The motivation for this study arose from questions about the acquisition of phenomena at the syntax-semantics interface by simultaneous bilinguals acquiring two Germanic languages. The study aimed to investigate this interface by examining the acquisition of DA, choosing two Germanic languages in order to highlight subtle semantic distinctions in two languages which offer the same structural options.

The results of the two tasks showed that the children's performance was affected by unilateral crosslinguistic influence at the syntax-semantics interface, as their choice of German structures is strongly influenced by their English. They take the PC to be the default construction in German as well as in English and are delayed in learning the language-specific restrictions on DA, resulting in the overextension of the universal, English-like BRR to German. Their syntactic knowledge, however, seems to be the same as their monolingual English peers, as they use and interpret the same syntactic structures with the same level of accuracy. Moreover, their performance in both languages is affected to the same degree by factors such as animacy.

Ultimately, however, the bilingual adults' data suggests that the bilingual children will overcome instances of crosslinguistic influence, as the adults' production and judgments of DA are monolingual-like in both languages.

The syntax-semantics interface is, therefore, an interface vulnerable to crosslinguistic influence. However, in order to fully integrate these findings into the wider body of literature on the acquisition at the interfaces, it would be instructive in the future

to conduct similar studies with larger sample groups to ensure statistical significance and with older age groups in order to find the age(s) at which crosslinguistic influence wanes in this domain. Furthermore, it would be interesting to examine influence at other interfaces (syntax-morphology, syntax-pragmatics) in the same group of speakers in order to understand more about how the interfaces differ in the vein of Montrul (2004) and Sorace and Serratrice (2009).

Notes

[1] Of which the Interface Hypothesis (Sorace & Filiaci, 2006) is just one. No particular hypothesis about the interface between syntax and other cognitive and linguistic domains will be espoused in this paper, but a more general view will be taken encompassing a range of literature.

[2] Unfortunately it was not possible within the scope of this project to collect data from German monolingual children. However, data from the CHILDES database (MacWhinney, 2000) and from monolingual German adults has been used to make inferences about the bilinguals' choices in their German production.

[3] Thanks to an anonymous reviewer for bringing this work to my attention.

[4] In terms of the dialect which the children are exposed to, Behrens (2006) notes that Leo's parents speak standard High German and he is growing up in Leipzig. No information about Caroline's dialect is provided by von Stutterheim.

[5] Liamkina (2008) notes that the PC is available in German, but has the pragmatic effect of emphasising the role of the recipient; hence, uses of *geben* in the PC are not pragmatically neutral.

[6] Note that this figure comes from naturalistic speech data and it is not clear whether some of the verbs may have been PC-only verbs in any case.

[7] It is noted that other studies set different dividing lines between simultaneous bilinguals and successive bilinguals; Genesee, Paradis, and Crago (2004) and Montrul (2008) claim that a child can be considered a simultaneous bilingual if first exposure occurs before 3;0 but Yip (2013), for example, suggests the limit is before 1;0.

[8] Thanks to an anonymous reviewer for raising this question. His/her suggestion that a comparable group from a bilingual kindergarten based in Germany should be taken would also indeed be desirable. Though this was not possible on this occasion, it will be borne in mind for future research.

[9] The particular local social context provides many German-speaking contexts outside the home. The area has a number of German-speaking businesses, for example. The children also interact in German with a number of different members of staff at the kindergarten they attend. This provides not only a greater

quantity of input for these children than for most 'heritage' speakers, but also a greater quality of input in the sense of Paradis (2011) because there is a variety of different native German speakers in the children's environment. See Kupisch et al. (2013) for similar arguments that 'heritage' speakers' languages are not always as starkly unbalanced as is sometimes assumed.

[10] Two of the adults have an Austrian mother, the other three have German mothers.

[11] Reception is the name given to the first year of formal schooling in the UK, Year 1 is the second, and so on. I will use these terms to group all the children by age, even though the bilingual children are not in the standard UK school system.

[12] The full materials for this task can be consulted in the IRIS database at http://www.iris-database.org/iris/app/home/detail?id=york:822250.

[13] Mixed-measures ANOVAs were used in order to determine whether there was an interaction in bilinguals between age (here a between-subjects factor) and the language of testing on the dependent variable, accuracy in interpreting the construction in question. That is to say, do bilingual children converge on monolingual-like performance in each of their languages at the same or at different stages in the development of each language? In comparisons between monolinguals and bilinguals, age and language status provided the between-subjects factors and animacy and construction the within-subjects factors. This tested whether the fact of being bilingual (i.e. also German-speaking) interacted at all with noted complicating factors in English such as animacy. The use of a mixed-measures approach also permitted the use of post-hoc tests to determine which of the interactions between factors were truly significant.

[14] It should perhaps be expected that the children should have been more successful in interpreting German DOCs than English DOCs, as differential case marking in German should have eliminated ambiguity in these cases and the children had demonstrated that they understood the difference between accusative and dative case. However, this intuition can only be confirmed with further data from German monolingual children which must be left for further study.

[15] Thanks to an anonymous reviewer for raising this question.

[16] Although part of the semantics of dative alternation is universal (the BRRs), the dative alternation itself cannot be said to be *fully* constrained by UG as the NRRs are language-specific and must be learnt from the input.

[17] Thanks to an anonymous reviewer for drawing my attention to this work.

References

Behrens, H. (2006). The input-output relationship in first language acquisition. *Language and Cognitive Processes*, *21(1-3)*, 2-24. DOI:10.1080/01690960400001721

Biggs, A. (2013, 30th August). Microparametric variation in A-movement in Northwest British English. [Annual Meeting of the Linguistics Association of Great Britain]. School of Oriental and African Studies.

Bowerman, M. (1985). Beyond communicative adequacy: from piecemeal knowledge to an integrated system in the child's acquisition of language. In K. Nelson (Ed.), *Children's Language* (pp. 369-398). Hillsdale, NJ.: Lawrence Erlbaum.

Bresnan, J., & Nikitina, T. (2003). *On the gradience of the dative alternation.* Online manuscript, retrieved February 3, 2014, from http://www.lfg.stanford.edu/bresnan/ download.html.

Bruening, B. (2010). Double object constructions disguised as prepositional datives. *Linguistic Inquiry, 41(2)*, 287-305. DOI: 10.1162/ling.2010.41.2.287

Bruyn, A., Muysken, P., & Verrips, M. (1999). Double-object constructions in the creole languages: development and acquisition. In M. DeGraff (Ed.), *Language creation and language change: creolization, diachrony, and development* (pp. 329-373). Cambridge, MA.: MIT Press.

Callies, M., & Szczesniak, K. (2008). *Argument realisation, information status and syntactic weight – a learner-corpus study of the dative alternation.* Online manuscript, retrieved April 30, 2012, from http://www.staff.unimainz.de/mcallies/papers/callies%26 szczesniak.2008.pdf.

Cook, V. J. (1976). A note on indirect objects. *Journal of Child Language*, *3(3)*, 435-437. DOI: http://dx.doi.org.ezproxy.york.ac.uk/10.1017/S0305000900007315

Drenhaus, H. (2004). *Minimalism, features and parallel grammars: on the acquisition of German ditransitive structures*. Unpublished doctoral dissertation, University of Potsdam.

Drenhaus, H., & Féry, C. (2008). Animacy and child grammar: an OT account. *Lingua, 118(2)*, 222-244. DOI: 10.1016/j.lingua.2007.02.006

Eisenbeiss, S., Bartke, S., & Clahsen, H. (2006). Structural and lexical case in child German: evidence from language-impaired and typically developing children. *Language Acquisition, 13(1)*, 3-32. DOI**:**10.1207/s15327817la1301_2

Gathercole, V. C. M. (2002a). Command of the mass/count distinction in bilingual and monolingual children: an English morphosyntactic distinction. In D. K. Oller & R. E. Eilers (Eds), *Language and literacy in bilingual children* (pp. 175-206). Clevedon: Multilingual Matters.

Gathercole, V. C. M. (2002b). Grammatical gender in bilingual and monolingual children: a Spanish morphosyntactic distinction. In D. K. Oller & R. E. Eilers (Eds.), *Language and literacy in bilingual children* (pp. 207-219). Clevedon: Multilingual Matters.

Genesee, F., Paradis, J., & Crago, M. (2004). *Dual language development and disorders: a handbook on bilingualism and second language learning.* Baltimore, MD.: Brookes.

Gropen, J., Pinker, S., Hollander, M., Goldberg, R., & Wilson, R. (1989). The learnability and acquisition of the dative alternation in English. *Language, 65(2)*, 203-257. DOI: 10.2307/415332

Grosjean, F. (2008). *Studying bilinguals.* Oxford, New York: Oxford University Press.

Haddican, W. (2010). Theme-goal ditransitives and theme passivisation in British English dialects. *Lingua*, *120(10)*, 2424-2443. DOI: 10.1016/j.lingua.2009.11.003

Hulk, A., & Müller, N. (2000). Bilingual first language acquisition at the interface between syntax and pragmatics. *Bilingualism: Language and Cognition, 3*, 227-244.

Jackendoff, R. (2002). *Foundations of language: Brain, meaning, grammar, evolution*. Cambridge, MA: MIT Press.

König, E., & Gast, V. (2007). *Understanding English-German contrasts, 2^{nd}ed.* Berlin: Erich

    Schmidt Verlag.

Krifka, M. (2004). Semantic and Pragmatic Conditions for the Dative Alternation. *Korean*

    Journal of English Language and Linguistics, 4: 1-32.

Kupisch, T. (2012). Specific and generic subjects in the Italian of German-Italian simultaneous

    bilinguals and L2 learners. *Bilingualism: Language and Cognition, 15(4)*, 726-756.

    DOI: http://dx.doi.org/10.1017/S1366728911000691

Kupisch, T., Akpınar, D., & Stöhr, A. (2013). Gender assignment and gender agreement in adult

    bilinguals and second language learners of French. *Linguistic Approaches to*

    Bilingualism, 3(2), 150-179. DOI: 10.1075/lab.3.2.02kup

Lardiere, D. (2011). Who is the Interface Hypothesis about? *Linguistic Approaches to*

    Bilingualism, 1(1), 48-53. DOI: 10.1075/lab.1.1.05lar

Larson, R. K. (1988). On the double object construction. *Linguistic Inquiry, 19(3)*, 335-361.

Levin, B. (1993). *English verb classes and alternations: a preliminary investigation.* Chicago,

    IL.: The University of Chicago Press.

Liamkina, O. (2008). Making dative a case for semantic analysis: differences in use between

    native and non-native speakers of German. In A. Tyler, M. Takada & Y. Kim (Eds),

    Language in the context of use: discourse and cognitive approaches to language

    (pp. 145-166). Berlin: Mouton de Gruyter.

MacWhinney, B. (2000). *The CHILDES Project: Tools for analysing talk, 3rd ed.* Mahwah, NJ.:

    Erlbaum.

Meisel, J. M. (1989). Early differentiation of languages in bilingual children. In K. Hyltenstam

    & L. K. Obler (Eds), *Bilingualism across the lifespan: aspects of acquisition, maturity*

    and loss (pp. 13-40). Cambridge: Cambridge University Press.

Mills, A. E. (1985). The acquisition of German. In D. I. Slobin (Ed.), *The crosslinguistic study*

    of language acquisition. Volume 1: the data (pp. 141-254). Hillsdale, NJ.: Erlbaum.

Montrul, S. (2004). Subject and object expression in Spanish heritage speakers. A case of

morphosyntactic convergence. *Bilingualism: Language and Cognition, 7(2)*, 125-142.

DOI: http://dx.doi.org/10.1017/S1366728904001464

Montrul, S. (2006). On the bilingual competence of Spanish heritage speakers. Syntax, lexical-

semantics and processing. *International Journal of Bilingualism, 10(1)*, 37-69. DOI:

10.1177/13670069060100010301

Montrul, S. A. (2008). *Incomplete Acquisition in Bilingualism: re-examining the age factor.*

Amsterdam: John Benjamins.

Montrul, S., & Ionin, T. (2010). Transfer effects in the interpretation of definite articles by

Spanish heritage speakers. *Bilingualism: Language and Cognition, 13(4)*, 440-473.

DOI: http://dx.doi.org/10.1017/S1366728910000040

Müller, N., & Hulk, A. (2001). Crosslinguistic influence in bilingual language acquisition:

Italian and French as recipient languages. *Bilingualism: Language and Cognition, 4(1)*,

1-21. DOI: http://dx.doi.org/10.1017/S1366728901000116

Paradis, J. (2011). The impact of input on bilingual language development: quantity versus

quality. *Linguistic Approaches to Bilingualism, 1(1)*, 67-70. DOI:

10.1075/lab.1.1.09par

Pérez-Leroux, A. T., Pirvulescu, M., & Roberge, Y. (2009). Bilingualism as a window into the

language faculty: the acquisition of objects in French-speaking children in bilingual and

monolingual contexts. *Bilingualism: Language and Cognition*, *12(1)*, 97-112. DOI:

http://dx.doi.org/10.1017/S136672890800391X

Pinker, S. (1989). *Learnability and Cognition: the Acquisition of Argument Structure.*

Cambridge, MA.: MIT Press.

Pires, A., & Rothman, J. (2011). An integrated perspective on comparative bilingual

differences: beyond the interface problem? *Linguistic Approaches to Bilingualism, 1(1)*,

74-78. DOI: 10.1075/lab.1.1.11pir

Pylkkänen, L. (2008). *Introducing arguments.* Cambridge, MA.: MIT Press.

Rappaport Hovav, M., & Levin, B. (2008). The English dative alternation: the case for verb sensitivity. *Journal of Linguistics, 44(1)*, 129-167. DOI: http://dx.doi.org/10.1017/ S0022226707004975

Rothman, J. (2009). Understanding the nature and outcomes of early bilingualism: Romance languages as heritage languages. *International Journal of Bilingualism, 13(2)*, 155-163. DOI: 10.1177/1367006909339814

Schmitz, K. (2006). Indirect objects and dative case in monolingual German and bilingual German-Romance language acquisition. In D. Hole, A. Meinunger & W. Abraham (Eds), *Datives and other cases: between argument structure and event structure* (pp. 239-268). Amsterdam: John Benjamins.

Schönenberger, M., Sterner, F., & Ruberg, T. (2011). In J. Herschensohn & D. Tanner (Eds.), *Proceedings of the 11th Generative Approaches to Second Language Acquisition Conference (GASLA 2011)* (pp. 143-151). Somerville, MA.: Cascadilla Proceedings Project.

Schönenberger, M., Rothweiler, M., & Sterner, F. (2012). Case marking in child L1 and early child L2 German. In K. Braunmüller & C. Gabriel (Eds.), *Multilingual individuals and multilingual societies* (pp. 3-22). Amsterdam: John Benjamins.

Siewierska, A. (1998). Languages with and without objects: the Functional Grammar approach. *Languages in Contrast*, *1*, 173-190.

Silva-Corvalán, C. (2014). *Bilingual Language Acquisition: Spanish and English in the First Six Years*. Cambridge: Cambridge University Press.

Snyder, W., & Stromswold, K. (1997). The structure and acquisition of English dative constructions. *Linguistic Inquiry, 28(2)*, 281-317.

Sorace, A., & Filiaci, F. (2006). Anaphora resolution in near-native speakers of Italian. *Second Language Research, 22(3)*, 339-368. DOI: 10.1191/0267658306sr271oa

Sorace, A., & Serratrice, L. (2009). Internal and external interfaces in bilingual language

    development: beyond structural overlap. *International Journal of Bilingualism*, *13(2)*,

    195-210. DOI: 10.1177/1367006909339810

Sorace, A. (2011). Pinning down the concept of "interface" in bilingualism. *Linguistic*

    Approaches to Bilingualism, 1(1), 1-33. DOI: 10.1075/lab.1.1.01sor

Stöhr, A., Akpınar, D., Bianchi, G., & Kupisch, T. (2012). Gender marking in Italian-German

    heritage speakers and L2 learners of German. In K. Braunmüller & C. Gabriel (Eds),

    Multilingual individuals and multilingual societies (MIMS) (pp. 153-170). Amsterdam:

    John Benjamins.

Thornton, R. (1998). Elicited Production. In D. McDaniel, C. McKee & H. S. Cairns (Eds),

    Methods for Assessing Children's Syntax (pp. 77-102). Cambridge, MA.: MIT Press.

Tsimpli, I., & Sorace, A. (2006). Differentiating interfaces: L2 performance in syntax-semantics

    and syntax-discourse phenomena. *Proceedings of the 30th Annual Boston University*

    Conference in Language Development, 653-664.

Van der Linden, E. (2000). Non-selective access and activation in child bilingualism: the

    lexicon. In S. Döpke (Ed.), *Cross-linguistic structures in simultaneous bilingualism*

    (pp. 37-56)*.* Amsterdam: John Benjamins.

von Stutterheim, C. (2004). *CHILDES German corpus: Caroline.* Retrieved August 13, 2012,

    from http://childes.psy.cmu.edu/data-xml/Germanic/German/Caroline.zip

Weissenborn, J., Kail, M., & Friederici, A. (1990). Language-particular or language-

    independent factors in acquisition? Children's comprehension of object pronouns in

    Dutch, French and German. *First Language, 10*, 141-166.

Yip, V. (2013). Simultaneous language acquisition. In F. Grosjean & P. Li, (Eds), *The*

    Psycholinguistics of Bilingualism (pp. 119-144). Malden, MA.: Wiley-Blackwell.

Yip, V., & Matthews, S. (2007). *The Bilingual Child: early development and language contact.*

    Cambridge: Cambridge University Press.

Zarqane, S. (2009). *Dative constructions in English-French bilingual and monolingual acquisition*. Unpublished MA dissertation, University of Sheffield.

Appendix 1
German CHILDES data (taken from Behrens (2006) and von Stutterheim (2004))

Geben DOC:

(1) gib mir   ander[e]s   Leo, 2;1,3
    give me.DAT different-one.ACC
    "Give me a different one"

(2) gib mir   meins   Caroline, 2;4,28
    give me.DAT mine-one.ACC
    "Give me mine/my one"

Geben PC:

(3) du   sollst das   zur   Mama geben   Leo, 2;6,15
    you   should that   to-the.DAT   Mama give-INF
    "You should give that to Mama"

Bringen DOC:

(4) vielleicht   auch   bringt dir   was mit   Leo, 2;9,10
    perhaps   also   bring you.DAT something with
    "Perhaps [he] also brings you something with [him]"

(5) ob   der   mir   Lakritz mitgebringt   Caroline, 2;7,17
    Whether he   me.DAT Lakritz with-PAST-bring
    "whether he brought me Lakritz with him"

Bringen PC:

(6) Eichi bringt das zum   Zug   Leo, 2;7,2
    Eichi brings that to-the.DAT train
    "Eichi brings that to the train."

(NB.: At first blush this seems like a locative use of *bringen*, but in the preceding
discourse it is established that *das Gepäck* (the luggage) belongs to the
anthropomorphised train.)

Zeigen DOC:

(7) ich   zeig   dir   mal was   Caroline, 2;7,8
    I   show   you.DAT time something
    "I show you something for a minute"

(8) und   dann zeig   ich ihr   das Bild   Leo, 3;2,16
    and   then show   I   her.DAT   the picture
    "And then I show her the picture"

PCs by Caroline (first at 2;10,7):

(9) Sagen wir 'ne gute Nacht zu dir   und dem   Elefant
    Say   we a   good night to you.DAT   and the.DAT elephant
    "We say a good night to you and to the elephant"

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