The Acquisition of the Personal Preposition *a* by Catalan-Spanish and English-Spanish Bilinguals

Pedro Guijarro-Fuentes and Theodoros Marinis
University of Plymouth and University of Reading

1. Introduction

The study of linguistic interfaces, namely, the study of the interaction between different levels/domains of linguistic knowledge (syntax, semantics, pragmatics and so on), is crucial to the understanding of the way language works, how it is acquired, and how the system of language is organized in the mind/brain (Bos, Hollebrandese and Sleeman, 2004). Contemporary generative acquisition theory and empirical research are motivated by the hypothesis that acquisition delays in adult L2 acquisition and bilingualism (as well as L1 attrition and first language acquisition) are often related to the complexity of acquiring interface-conditioned properties that involve the integration of information from multiple cognitive modules (e.g. Belleti, Bennati & Sorace, 2007; Müller & Hulk, 2001; Paradis & Navarro, 2003; Rothman, 2007; Serratrice et al., 2004; Sorace, 2000, 2004, 2005; Tsimpli et. al., 2004; to name just a few). These studies have focused on the acquisition of a relatively wide range of structures, some related to the syntax-semantic interface, others to the syntax-pragmatic interface: e.g., the acquisition of overt vs. null pronominal subjects, word order to object expression in different languages and by different learners acquiring a wider range of languages (e.g., French, Italian, Spanish). On the other hand, other studies have revealed that despite this difficulty, adult L2 learners are able to acquire structures involving the interfaces (e.g., Borgonovo & Prévost, 2003; Borgonovo, Bruhn de Garavito & Prévost, 2005; and Borgonovo, Bruhn de Garavito, Guijarro-Fuentes, Prévost & Valenzuela, 2006; Dekydtspotter, Sprouse & Thyre, 2000; among others). These studies have investigated different linguistic phenomena related to the syntax-semantic interface: e.g., from the acquisition of mood, object drop, topicalization to quantification at a distance in a variety of language acquisitional scenarios with different populations of learners.

A second interrelated area of research focuses on the level of interaction between the L1 and L2 language systems. Previous research on language transfer in SLA has assumed that the initial stage of L2 acquisition is the first language (L1) (Schwartz and Sprouse, 1994; 1996). Such hypotheses have long pointed to L1 transfer as a possible cause of L1/L2 divergences, claiming that L1 transfer alters significantly (and variably depending on the L1/L2 pairing) the L2 learning task for adult L2 learners (but see Epstein et al., 1996, 1998 for a different view on the matter). Other researchers looking at bilingualism and language attrition, however, have suggested that language transfer from one language to the other needs to meet certain conditions, and interface areas are particularly vulnerable (Hulk and Müller, 2000; Müller and Hulk, 2001). According to Hulk and Müller (2000) and Müller and Hulk (2001), language interference must be due to language internal conditions provided that the following two requirements are complied: (a) cross-linguistic influence occurs at the interface between two modules of grammar, and more particularly at the interface between pragmatics and syntax in the so-called C-domain, since this is an area which has been claimed to create problems also in L1 acquisition (Grinstead, 2004; Marinis, 2003; Platzack, 2001); and (b) syntactic cross-linguistic influence occurs only if language A has a syntactic construction that may seem to allow more than one syntactic analysis and, at the same time, language B contains evidence for one of these two possible analyses. That is to say, there has to be a certain overlap of the two systems at the surface level. Besides these two conditions put forward by Hulk and Müller (2000) and Müller and Hulk (2001) which explain the directionally of cross-linguistic effects between two language systems, there are other external factors which may also influence the directionality of cross-linguistic effects, such as language contact and/or richness of input.

Our study addresses two questions concerning the two areas of research mentioned above:

1) Do adult bilinguals show residual optionality[1] in the acquisition of the personal preposition *a*?

2) Does language contact/exposure/acquisition setting (i.e., language environment) impact on the acquisition of the personal preposition *a*?

Based on the findings from our previous research (Guijarro-Fuentes and Marinis, 2007), we predicted that the difficulty in acquiring some of the conditions is due to the difficulty of the learners to make use of the input and the difficulty in acquiring interface phenomena. We also predicted that the language with the most 'economical' option would affect the bilingual grammar. Directionality can be affected by internal factors (language typology > language transfer) and by external factors (language contact, exposure, and acquisition setting). We predicted that difficulty in acquiring the preposition *a* should be the same across the L2 populations because unlike Spanish both Catalan and English do not possess inherent case (internal factors). However, we also predicted that Catalan-Spanish bilinguals may perform better than the English-Spanish bilinguals due to the typological similarity of the two languages (internal factor) and language contact, the amount of exposure and the acquisition setting (external factors).

2. The personal preposition *a* at the syntax-semantics interface

This study targets the acquisition of the syntax-semantics interface by investigating the acquisition of the personal preposition *a* in adult late bilinguals. Following Chomsky (1986, 1995), some languages (e.g., English and Catalan) posses only structural case, whereas others (e.g., Spanish and Romanian) posses inherent case to mark the object of transitive verbs. In Spanish, the distribution of *a* is determined by the definiteness/specificity of the NP, animacy/agentivity of the subject, and verb semantics (Torrego, 1998; Zagona, 2002)[2].

There is a set of properties that determine the conditions under which Spanish accusative objects have to be marked with the dative preposition *a* (or in the case of Romanian *pe*). The first property, which connects with Chomsky's (1995) proposal of a (perhaps optional) D-feature in v, relates to specificity and definiteness. Chomsky regards D to be the locus of specificity. Objects marked by *a* in Spanish are necessarily interpreted as specific and definite as shown in (1a) and (1b) below. Following Diesing (1992), it is precisely the specificity of *a*-marked objects which leads Torrego (1998) to claim that these objects raise outside vP to an outer specifier of v:

(1a) Busco   *a* la mujer de la limpieza.
       I-am-looking-for   the (specific) cleaner.
(1b) Busco   una mujer de la limpieza.
       I-am-looking-for any   cleaner.

The second property relates to the animacy of the object. In Spanish, *a* is restricted to animate accusative objects, as illustrated in (2a) and (2b) below, and this is irrespective of the specificity and definiteness of the object. That is, inanimate objects such as *el parque*, as in (2b), do not bear the preposition *a*. Torrego also relates this second semantic restriction (namely, contrast between animate vs. inanimate objects) to the D-feature of *v* which would be responsible for the animacy of objects that raise overtly.

(2a) Ayer   visité   *a* mis abuelos.
       Yesterday   I-visited   my grandparents.
(2b) Ayer   visité   el   parque.
       Yesterday   I-visited   the   park

The third property is associated to the θ-role of the subject (Torrego, 1998), which necessarily relates to the head v, as the head responsible for theta assignment to the subject. More particularly, Torrego claims that the sensitivity of objects marked with *a* to the thematic nature of the subject can be

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[1] Following Sorace (2000: 93), syntactic optionality can be described as 'the coexistence of two or more variants within an individual grammar of a given construction'.

[2] A similar linguistic analysis has been proposed in the literature following a variationist approach, that is, the Differential Object Marking (Leonetti, 2004).

attributed to the *v*-VP structure. The v in the *v*-VP structure that triggers overt object raising will have two different specifiers: on the one hand, a (inner) specifier of the agentive subject and, on the other, a (outer) specifier of the raised object. Hence, the preposition *a* is required with verbs that take an agent or cause as subject as in (3a), but not in (3b).

(3a)   El paciente reclamaba a una enfermera.
       The patient demanded a nurse
(3b)   *La situación reclamaba a una enfermera.
       The situation demanded a nurse

As illustrated in (3a), the object of the transitive verb is overly marked by the preposition *a* since the subject of 'reclamar' *demand* is agentive. By contrast, (3b) is ungrammatical because the subject of 'reclamar' *demand* is not agentive.

The fourth property relates to the aspectual class of the predicate. Based on the linguistic analysis proposed by Travis (1992), Torrego claims that object raising seems to affect the aspectual behaviour of predicates. That is, marking of accusative objects either morphologically or structurally relates to (inherent/lexical) aspect (Comrie, 1976). Aspect is relevant for verbs, predicates, and sentences. Verbs are classified depending on whether or not they have an endpoint (that is, whether they are telic or atelic) together with the contrast between stative vs. dynamic and durative vs. punctual. Moreover, one of the features that determine the use of the preposition *a* with accusative objects is the aspectual class of the verb. Following Vendler's (1967) and Dowty's (1979) classification of verbs, there are four basic categories: activities (e.g., walk 'caminar'), states (e.g., know 'conocer'), accomplishments (e.g., build 'construir'), and achievements (e.g., find 'encontrar'). Accomplishments and achievements designate an end in time (telic), whereas states and activities do not (atelic). Objects of verbs categorized as accomplishments and achievements are therefore telic (for instance, make-drunk 'emborrachar') and compel the object of the sentence to be marked with the preposition *a* irrespective of whether or not the subject of the predicated is animate (4a)-(4b)[3].

(4a)   Juan emborachó *a* sus invitados
       Juan made-drunk   his guests
(4b)   El   vino   emborrachó *a* varios invitados
       The   wine   made-drunk   several guests

In contrast, *a* is mandatory with stative and activity verbs only when the subject is animate, as illustrated in (5a) and (5b) below. Here, the marked accusative on the object carries an intentional reading of the subject, a reading which is lacking in the corresponding sentence with structural case (Torrego, 1998).

(5a)   Inés conoce *a*   varios artistas
       Ines knows   various artists
(5b)   El   cine   conoce   varios artistas
       The   cinema   knows   various artists

Summarising, the essential interplay of syntactical-semantics factors that rule personal *a* is listed in the following:

   The object is [+specific], [+animate] and
   (i)   The subject is animate (which covers the cases with statives and activity verbs);
   (ii)   The subject is CAUSE (which only happens when the predicate is an accomplishment/achievement).

Thus, overt marking of accusative objects in Spanish involves the syntax-semantics interface because it is constrained by both the structure (i.e, syntax) and it is tied to specific semantic classes of

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[3] Telic predicates require the object to be marked with *a* regardless of the animacy of the subject but not regardless of the animacy of the object: Dios creo el (*al) unicornio vs. Dios creo a Eva ('God created the unicorn' vs. 'God created Eva').

verbs (i.e, semantics). Namely, structural accusative case for direct objects is assigned by the functional category of AgrOP, which is regulated by formal uninterpretable features. In contrast, inherent accusative case is a lexical case regulated by interpretable, semantic factors (i.e., animacy, specificity and verbal aspect). Comparing the three languages under investigation, all three languages possess structural accusative case. However, NP direct objects in Catalan and in English (both other languages of our bilingual speakers) are not preceded or marked by a preposition[4]. Having described the linguistic aspect relevant to the present study, in the next section we outline the main findings from some recent acquisitional studies on the personal preposition *a*.

2.1. Previous studies on the acquisition of the preposition a

To date very few studies have investigated the acquisition of the personal preposition *a* in Spanish either in L1 (Rodriguez-Mondoñedo, 2006) or L2 acquisition (Guijarro-Fuentes and Marinis, 2007; Montrul, 2004). Rodriguez-Mondoñedo (2006) investigated some of the properties responsible for the Differential Object Marking (DOM) considering longitudinal spontaneous production data from six Spanish-speaking children between the age of 0;9 and 2;11 from different CHILDES databases (MacWhinney, 2000 - López Ornat, Linaza, Montes and Vila corpus). According to his findings, Spanish children made a very small number of errors in the distribution of *a*, i.e., 17 errors in total (9 errors of *a* omission in obligatory contexts with animate and specific objects and 8 errors of *a* in contexts that did not require it). This amounts to a 98.38% accuracy rate with DOM before the age of 3, demonstrating that there are no significant errors in the children's performance. Rodriguez-Mondoñedo also analysed the recordings from two further children from two additional databases (Romero and Serra/Sole). Unlike the analysis of the other databases, these two databases showed no errors. Although the number of participants in this study was very low, Rodriguez-Mondoñedo's results demonstrate that Spanish L1 children master some of the features (i.e., specificity and animacy) which constrain the distribution of personal *a* with direct objects almost error free and from a very young age.

Looking at the acquisition of Spanish in a different acquisition scenario and with a different population, Montrul (2004) explored the acquisition of subject and object expressions by Mexican-English heritage speakers of English/Spanish. Two groups of heritage speakers at two different proficiency levels (Intermediate and Advanced speakers) and one control group of Spanish monolingual were asked to perform an oral production task. The overall results revealed that language loss affects the interface areas, but not the purely syntactic domains. More crucial for the aims of our study, Montrul found that there were almost no differences between heritage speakers and monolinguals in the production of direct objects, except for animate direct objects (Montrul, 2004, pp. 135). Heritage and monolingual speakers showed a different rate of omission of the personal *a*: monolinguals 0%, advanced heritage speakers 21.3%, and intermediate heritage speakers 6%. However, no obvious semantic patterns emerged from these omissions: the omission of the personal *a* tended to occur with both stative and activity verbs with accomplishments and achievements and regardless of the theta role of the subject. One possible shortcoming of the study is the elicitation instrument employed to collect the data, as Montrul herself recognizes that the effect of subject animacy cannot be evaluated with these data (pp.136).

More recently, Guijarro-Fuentes and Marinis (2007) examined the acquisition of the personal preposition *a* with a group of 33 English L2 learners of Spanish of different proficiency levels, and 14 Spanish controls. All participants took an acceptability judgement task made of 42 items. The results showed (a) significant differences between native speakers and L2 learners of all proficiency levels, (b) more errors of omission than commission, and (c) differences in the L2 learners' performance in the different conditions: more difficulty to acquire the most complex conditions. These results let them to conclude that L2 Spanish learners have difficulties acquiring structures involving the syntax/semantics interface indicating that the acquisition of interface phenomena is developmentally unstable, difficult to acquire completely in L2, and prone to fossilisation. However, some of the advanced learners showed sensitivity to the least complex condition providing evidence that interface phenomena may be acquirable.

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[4] Additionally and crucially for the English-Spanish bilingual experimental group, the personal *a* is not taught explicitly in the classroom, or at least not to the extent it is described in the aforementioned Section 2. We thank to one of the reviewers for this observation.

3. The present study

The main purpose of the present study was to examine how internal and external factors affect interface vulnerability. Recall that recent proposals concerning interfaces claim that areas such the syntax/semantics and syntax/pragmatics interfaces are vulnerable in L2 acquisition due to the complexity of two modules. Evidence that supports this claim comes from monolingual/bilingual first language acquisition, L2 acquisition and L1 attrition studies. On the other hand, language contact creates a perfect scenario to address language transfer (depending on similarities of the language pairing) and universal processes, both of which can be affected by internal (typological similarity) and external factors (e.g., language contact and properties of input). Thus, the present study goes one step further from previous studies on the acquisition of personal *a* (Guijarro-Fuentes and Marinis, 2007) by comparing the performance of English/Spanish bilinguals who have acquired Spanish in a classroom context, and have limited input from Spanish which is a minority language, to a group of Catalan-Spanish bilinguals, who have acquired Spanish in a naturalistic setting, are using Spanish in everyday life, and thus, have a lot of exposure to Spanish.

3.1. Participants

18 Catalan-Spanish bilinguals, 16 English-Spanish bilinguals, and 16 monolingual Spanish adults participated in this study. The Catalan-Spanish participants had a mean age of 26.2 (range: 20-48, SD = 7.0) and were living in Barcelona. The English-Spanish bilinguals had a mean age of 26.7 (range: 20-48, SD = 7.5) and were living in the UK at the time of the data collection. The native speakers of Spanish had a mean age of 24.5 (range: 20-33, SD = 3.4) and were living in Spain. The three groups did not differ on their chronological age ($F (2, 49) = .537, p > .1$).

The Catalan speakers of Spanish spoke Catalan at home when they were children, and can be characterised as sequential bilinguals. They acquired Spanish in a naturalistic environment and had frequent exposure to Spanish because they were living in Barcelona. The English speakers of Spanish learnt Spanish is a classroom setting in the UK, and were exposed to Spanish during class. The monolingual speakers were Spanish-speakers living in regions that have only Spanish as their official language.

All participants completed a placement test in Spanish, which consisted of the vocabulary and cloze sections of a Spanish proficiency test standardized for adults (*Diploma Español de Lengua Extranjera* - DELE). This was to determine the participants' level of proficiency and to ensure that all bilinguals are at an advanced level of proficiency. The monolingual group had the highest accuracy (mean accuracy: 49.5 out of 50, range: 48-50, SD: 0.8) followed by the Catalan-Spanish bilinguals (mean accuracy: 46.4 out of 50, range: 40-50, SD: 3.3) and the English-Spanish group (mean accuracy: 43.8, range: 40-49, SD: 2.9). There was a significant difference in the accuracy of the three groups ($F (2, 49) = 18.628, p < .001$). Monolinguals performed significantly better than the other two groups (monolinguals vs. Catalan-Spanish bilinguals: $p < .01$; monolinguals vs. English-Spanish bilinguals: $p < .001$), and Catalan-Spanish bilinguals performed significantly better than English-Spanish bilinguals ($p < .05$).

3.2. Materials

To test the participants' knowledge of the usage of the personal preposition *a* we used a Completion task. The Completion task consisted of 48 sentences ranging over 6 conditions (all aforementioned properties from Section 2) as shown in Table 1 below.

Table 1: Experimental conditions of the Completion task

	Semantic linguistic factors	Presence/absence of personal *a*
Condition 1	+animate, +specific	+a
Condition 2	-animate, +/-specific	-a
Condition 3	+animate, -specific	-a
Condition 4	stative/activity verb, +human subject	+a
Condition 5	stative/activity verb, -human subject	-a
Condition 6	accomplishment/achievement verb, +/-human subject	+a

There were 6 items for conditions 1-5 and 12 for condition 6 (6 with +human subject and 6 with – human subject). In addition, we included a control condition that did not involve the preposition *a*. For conditions 4, 5 and 6 the inherent aspectual class of the verb was determined taking into consideration the distinctions [+/-] telic, [+/-] stative and [+/-punctual]. In each of the sentences there was a gap, and participants were asked to fill in the gaps with one word or leave the gaps empty. Examples (6) and (7) are sample items for this task.

(6) Juan persigue ___ los presos que se han fugado de la cárcel. (*a* is obligatory)
    Juan chases ___ the prisoners that have run away from the prison.

(7) La universidad necesita ___ estudiantes extranjeros para cubrir las plazas libres. (*a* should not be used)
    The university needs ___ more foreign students in order to cover all free vacancies.

Participants were familiar with the vocabulary used in the experimental sentences. Although there was no time limit for the task, all participants completed it within twenty minutes. Instructions were presented in English for the English participants and in Spanish for the control group and Catalan-Spanish bilinguals. Instructions clearly indicated how to fill in the gaps by giving three examples. Participants were instructed to indicate their 'first intuition' and not to go back and change their answers.

3.3. Results

The data were first screened for outliers. Three items showed an accuracy of 2 standard deviations below the mean in the group of monolingual speakers of Spanish and were excluded from the data from further analyses. The results from the remaining data are given in Table 2 below.

Table 2: Accuracy in percentage

		C1	C2	C3	C4	C5	C6	C7
Spanish monolinguals [N=16]	Mean	98.8	94.8	93.8	88.5	93.8	99.5	99.0
	SD	5.0	8.0	10.3	15.8	11.2	2.1	4.2
	Range	80-100	83-100	67-100	67-100	75-100	92-100	83-100
Catalan-Spanish [N=18]	Mean	83.3	90.7	60.2	62	56.9	76.4	100
	SD	17.1	8.5	15.3	24.8	20.7	23.8	0
	Range	40-100	83-100	50-100	17-100	25-100	17-100	100
English-Spanish [N=16]	Mean	70	86.5	76	54.2	59.4	66.7	94.8
	SD	24.2	16.4	21.9	24.7	20.2	24.9	8
	Range	20-80	50-100	33-100	0-83	25-100	80-100	83-100

Note: C1= condition relates to [+animate, +specific] objects, requires a; C2= condition relates to [-animate, +/-specific] objects, requires absence of a; C3= condition relates to [+animate, -specific], requires absence of a; C4= condition relates to the aspectual class (i.e., stative/activity verbs) of the predicate, but subject is animate, requires a; C5= condition relates to the aspectual class (i.e., stative/activity verbs) of the predicate, but subject is non-animate, requires absence of a; C6= condition relates to the aspectual class (i.e., accomplishment/achievement verbs) of the predicate, regardless of whether subject is animate or non-animate, requires a.

A repeated measures ANOVA with the factors 'Group' (bilingual, monolingual) as between-subjects variable and 'Sentence Type' (7 conditions) as within-subjects variable was used to identify differences between the groups and conditions. To cancel out the differences in the proficiency level, we covaried the proficiency score of the participants. The analysis showed a main effect of 'Group' ($F_{(2, 46)} = 17.445$, $p < .001$) and a significant interaction between 'Group' and 'Sentence Type' ($F_{(12,276)} = 4.501$, $p < .001$) reflecting differences between the groups in their performance in the 7 conditions. Pairwise comparisons using Bonferroni correction were used to determine differences

between the seven conditions in each group separately. Monolingual speakers performed equally well in all conditions. In contrast, the other groups showed differences between the conditions, as shown in Table 3. Catalan-Spanish bilinguals performed significantly better in the control condition (condition 7) compared to all other conditions, and they performed significantly better in Conditions 1 and 2 compared to Conditions 3, 4, and 5.

Table 3: Difference between conditions in the Catalan-Spanish participants

	C1	*C2*	*C3*	*C4*	*C5*	*C6*	*C7*
C1	-						
C2	ns	-					
C3	p < .05	p < .001	-				
C4	p < .01	p < .01	ns	-			
C5	p < .05	p < .001	ns	ns	-		
C6	ns	ns	ns	ns	ns	-	
C7	p < .05	p < .01	p < .001	p < .001	p < .001	p < .001	-

English-Spanish bilinguals performed significantly better in the control condition (Condition 7) compared to conditions 1, 4, 5, and 6, and the difference was approaching significance for Condition 3, as shown in Table 4 below. They also performed significantly better in Conditions 1 and 2 compared to Condition 4, and better in Condition 2 compared to Condition 5.

Table 4: Difference between conditions in the English-Spanish participants

	C1	*C2*	*C3*	*C4*	*C5*	*C6*	*C7*
C1	-						
C2	ns	-					
C3	ns	ns	-				
C4	p = .055	p < .01	ns	-			
C5	ns	p < .01	ns	ns	-		
C6	ns	ns	ns	p = .057	ns	-	
C7	p < .05	ns	p = .058	p < .001	p < .001	p < .01	-

Planned pairwise comparisons between the three groups using Bonferroni correction showed that the monolingual Spanish group performed significantly better than Catalan-Spanish and English-Spanish bilinguals in all conditions except from Condition 2 and the control Condition 7, as shown in Table 5 below. Catalan-Spanish bilinguals performed significantly better than English-Spanish bilinguals in Conditions 3 and 7.

Table 5: Difference between conditions in all participants

	Spanish vs. Catalan-Spanish	*Spanish vs. English-Spanish*	*Catalan-Spanish vs. English-Spanish*
C1	p < .01	p < .001	ns
C2	ns	ns	ns
C3	p < .001	p < .01	p < .05
C4	p = .001	p < .001	ns
C5	p < .001	p < .001	ns
C6	p = .001	p < .001	ns
C7	ns	ns	p < .05

To investigate individual variation within each group of participants, we calculated how many participants performed above chance level in each group and each condition, as shown in Table 4.

Table 6: Percentage of participants performing above chance

	C1	*C2*	*C3*	*C4*	*C5*	*C6*	*C7*
L1 speakers [N=16]	100%	100%	100%	100%	100%	100%	100%
Catalan-Spanish [N=18]	83%	100%	39%	61%	39%	78%	100%
English-Spanish [N=16]	63%	94%	75%	44%	44%	56%	100%

All monolingual Spanish speakers performed above chance in all conditions and in the control condition also all the learners performed above chance. All Catalan-Spanish speakers and 94% of the English-Spanish bilinguals performed above chance in Condition 2. In contrast, 39% of Catalan-Spanish bilinguals performed below chance in Condition 3 and 5. Likewise, 44% of English-Spanish bilinguals performed below chance level in Condition 4 and 5.

To investigate whether the groups of participants showed more errors of omission or commission, we averaged the conditions requiring the preposition *a* (C1, C4, C6) and the conditions requiring leaving a gap, as shown in Table 7, and conducted a repeated measures ANOVA with the factors 'Group' (bilingual, monolingual) as between-subjects variable, and 'Error Type' (omission, commission) as within-subjects variable, and we covaried the participants proficiency level. Recall that neither Catalan nor English require that NP direct objects are preceded or marked by a preposition.

Table 7: Percentage of errors of omission vs. commission

		omission	*commission*
Monolinguals	Mean	4.4	5.9
	SD	5.1	8.5
[N=16]	Range	0-17	0-25
Catalan-	Mean	26.1	31.1
Spanish	SD	17.5	10.7
[N=18]	Range	0-76	14-47
English-	Mean	36.4	26
Spanish	SD	22.5	14.9
[N=16]	Range	6-77	6-53

This analysis showed a main effect of 'Group' (F (2, 46) = 19.463, p < .001) reflecting a higher error rate in Catalan-Spanish bilinguals compared to monolinguals (p < .001) and English-Spanish bilinguals compared to monolinguals (p < .001). Overall, Catalan-Spanish bilinguals made more errors of commission and English-Spanish bilinguals made more errors of omission, but this difference did not reach significance level.

4. General Discussion

The main purpose of the present study was to examine interface vulnerabilities with the help of a completion task designed to test marked accusative case in Spanish (i.e., personal *a*) which is an example of lexical case controlled by different interpretable, semantic features as described in Section 2. Two groups of adult bilinguals (18 Catalan-Spanish and 16 English-Spanish) and 16 monolingual Spanish adults took part in this study that addressed two research questions. Firstly, we sought to investigate whether adult bilinguals show residual optionality in the acquisition of the personal preposition *a*. The answer to that question was yes. On the one hand, our results showed that the monolingual group performed equally well in all conditions, but the two groups of bilinguals showed differences between conditions. Group results indicated that Catalan-Spanish bilinguals scored significantly better in Conditions 1 and 2 compared to Conditions 3, 4, and 5. Regarding the English-Spanish bilinguals, we also found variability across their performance in the different conditions. These results corroborate previous results reported in Montrul (2004) and in Guijarro-Fuentes and Marinis (2007).

The significant differences between the monolingual and the bilingual groups are in line with findings reported in previous research (Guijarro-Fuentes and Marinis, 2007; Serratrice, Sorace and Paoli, 2004; Sorace, 2004; Tsimpli, Sorace, Heycock and Filiaci, 2004). Taking together the group results and the individual analysis, it seems that the acquisition of interpretable, semantic features associated with the personal preposition *a* are a clear barometer of residual optionality even when the bilinguals are close to the monolingual end state as demonstrated by the analyses. Furthermore, our results show that subjects have the most difficulty with performing the most complex conditions (i.e., Condition 3, 4, 5 and 6). Tentatively, the pattern of results could be explained if we consider that there are syntax-semantics (or internal interface) and syntax-pragmatics/discourse (or external interface) issues intersected in the presence/absence of the personal preposition *a*. That is, whereas definiteness relates more to semantics, specificity relates also to the discourse context: one only knows that an indefinite DP such as 'una secretaria' is specific or not from the context (Condition 1). Following the same line of reasoning, Animacy (Condition 2) relates to semantics, and lexical aspect also relates largely to semantics of the predicate, but whether or not the inherent telicity of a given predicate is actually realized in a particular case will also depend on the discourse context which accounts for Condition 3, 4, 5 and 6. Thus, similarly to Tsimpli and Sorace (2006), we claim that the conditions that relate to the syntax-discourse interface are harder to acquire than the conditions that relate to the

syntax-semantics interface. Thus, only external interfaces seem to be problematic for our bilingual populations and cause incomplete acquisition[5].

Secondly, we tried to answer the question of whether or not language contact, exposure, and type of setting (i.e., the language environment) have an impact on the acquisition of the personal preposition *a*. The answer to that question is yes to some degree. According to our findings, Catalan-Spanish bilinguals performed slightly better than English-Spanish bilinguals even when we cancelled out the effect of proficiency. In addition, Catalan-Spanish bilinguals made overall more errors of commission, whereas English-Spanish bilinguals made more errors of omission. That is, the two groups of bilinguals showed a different pattern of errors despite the fact that the L1 of both groups does not require NP direct objects to be marked with lexical case. Catalan-Spanish bilinguals opted for overuse of the personal *a*, whereas English-Spanish bilinguals opted for the omission of *a*. Both groups were aware that they have to use this preposition in particular contexts, but when in doubt, each group followed a different strategy, both of which are in some sense economical. Thus, the two bilingual groups do not unidirectionally follow the same pattern of errors. These findings lead us to the issue of cross-linguistic influence which is the second strand in the interfaces research (cf. Hulk and Müller, 2000; Müller and Hulk, 2001). The acquisition of the interpretable, semantic features associated with personal *a* do not seem to be prone to cross-linguistic influence. The pattern showed by the two groups of bilinguals does not seem to be determined by their first language. Contrary to our expectations, we found that only in the English-Spanish bilinguals, the language that has the most economical option (i.e., English) exerts some kind of influence. Thus, it can be definitely stated for the present study that language contact/environment does not influence the path of acquisition as far as the personal *a* is concerned. However, it is possible that the lack of the superficial overlap could explain the variability found amongst the Catalan and English bilinguals in attaining the Spanish target variety.

However, a word of caution is needed in interpreting our results since an additional confound could have an effect on the results. We acknowledge that comparing the two experimental groups is problematic because of the multiple additional variables that exist between them (and that we did not control for in the experiment reported herein). Recall that the two experimental groups differ in (a) context of acquisition (i.e. classroom vs. naturalistic), (b) L1 (English vs. Catalan), and crucially (c) age of acquisition of Spanish. Although the age of acquisition is not explicitly tested in the present investigation, the English learners of Spanish acquired Spanish after the critical period. In contrast, the Catalan group is referred to as childhood sequential bilinguals (although we recognize that the definition of speakers living in Catalonia being sequential bilinguals is in and of itself problematic, since it is likely that these speakers had intense exposure to Spanish from birth or very shortly afterwards, given the greater context of Spanish/Catalan in Spain). Hence, it is important in stating the implications of the present study to note that the bilingual speakers tested here might have began acquiring Spanish at different points in life, namely before (i.e., the Catalan group) or after the critical period (i.e., the English group). Echoing some of the main findings within the generative linguistics research, it has not been definitively established that after the critical period adult learners continue to have access to the language acquisition mechanisms as they had as children. Therefore, future research could make an attempt to qualify the personal *a* as a phenomenon with features acquirable in adulthood according to more recent accounts of local impairment (e.g. *Failed Functional Features*, *Representational Deficits* accounts (Franceschina, 2001; Hawkins & Chan, 1997; Hawkins &

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[5] Furthermore, as part of a larger study in progress we also consider the acquisition of narrow syntactic properties (e.g., the accusative and dative clitic objects) that hinges on the acquisition of the same features aiming to disentangle whether the acquisition of personal *a* (and other interface phenomena, e.g., clitic-doubling) exhibits optionality in adult bilinguals due to its position at an interface. Due to space limitations we only report on a subset of our main results. Overall means on all experimental sentence types (e.g., clitics with finite, non-finite and restructuring verbs) combined indicated similar patterns of accuracy: Spanish monolinguals (percentage *M*=94.5%), Catalan/Spanish bilinguals (percentage *M*= 90.5%) and English/Spanish bilinguals (percentage *M*= 89.9%). Following on from those findings, knowledge of clitics by bilingual speakers of Spanish (that is, Catalan and English bilinguals of Spanish) is identical to that of monolingual Spanish speakers, but their knowledge of the preposition *a* (and clitic-doubling in the case of the English/Spanish bilinguals) with direct objects which are subject to factors such as specificity, animacy, lexical aspects is significantly more indeterminate as reported in the main text. Thus, from these results, albeit tentative, it is clear that the purely narrow syntactic properties are acquired, but the interface properties are not. Hence we claim that the fossilization of the personal *a* (and to the same effects clitic-doubling) would be due to its location at the interface, and maybe to some maturational effects.

Franceschina, 2004)). Furthermore, it has been documented that success in L2 language acquisition in childhood does correlate to the onset of acquisition. Given that the Catalan group have probably had exposure starting at or around birth and that the English group did not have exposure to Spanish until after the critical period, any differences seen between the two groups could conceivably be due to maturational effects. However, to precisely and accurately test these hypotheses, carefully controlled methodology must be selected in future research. One is regarding subject selection. If future researchers wish to show the effects of acquisition context, they must select appropriate groups, controlling for all variables but one (to the extent possible). One way to do this would be by comparing the adult English group with exposure after the critical period with an adult English group that learned Spanish in a naturalistic context before the critical period. An alternative scenario would be to compare English adults who learned Spanish in childhood with the Catalan group, which would still create the classroom/immersion contrast[6].

Finally, an important point we would like to make is that our study included a relatively small sample of participants (34 bilingual adults in total) and the methodology involved off-line tasks that rely on meta-linguistic knowledge. This may not be sufficient to determine subtle differences between the groups. Therefore, our main interpretations and conclusions concerning interface vulnerabilities and cross-linguistic directionality (or transfer) are tentative. Furthermore, given the potential confounding factors in the shape of the bilinguals L2 Spanish, we acknowledge that the findings from our main analyses are critically dependent on the assumption, that one's knowledge of the language is more important of a factor in performance in the L2 than when the L2 was learned or any other non-linguistic factors. Clearly, more research is needed to address the impact of the language environment in the acquisition of interface phenomena.

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