HOW MUCH DOES THE FIRST LANGUAGE WEIGH IN THE SECOND LANGUAGE LEARNING OF OBJECT AND VERB PROPERTIES?

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1. INTRODUCTION

One of the defining properties of second language (L2) acquisition is crosslinguistic influence, which can be broadly defined as the influence that occurs between the two languages of the bilingual (e.g., Ringbom, 2007, 2016; Blom & Baayan, 2012; Montrul & Ionin, 2012; Gathercole, 2016; Unsworth, 2016; Llinás-Grau & Bel, 2019). In this study, we offer a characterization of crosslinguistic influence in the L2 English production of a group of sequential bilinguals that have Chinese as their first language (L1). In particular, we explore this language contact situation between Chinese and English in the domain of direct objects, given that the production–omission of direct objects is regulated differently in these two languages.

(1)   a.   I have eaten *a banana*

        b.   He's just eaten *e*

        c.   There's *some cake*$_i$ left. *I'll eat e_i later

(2)   a.   Wo   chile   *yigen*   *xiangjiao*

                I   have eaten a   banana

            "I have eaten a banana"

    b. Ta   gang   chile   *e*

       He   just   has eaten *e*

       "He's just eaten *e*"

    c. Haisheng   *yidianr dangao*$_i$. Wo wandianr   chile *e*$_i$

       Still left   some   cake   I   later   have eaten

       "There's some cake left. I'll eat (it) later"

In English, direct objects can be overt (as in 1a) or null (marked as *e* – empty– in 1b and 1c). The latter are only possible if they have a non-generic reference, thus the ungrammaticality of (1c) when compared to the grammaticality of (1b). As opposed to English, Chinese direct objects can be overt or null, null objects being unrestricted (e.g., Huang, 1982, 1984). This implies that regardless of whether the direct object has a [+generic] reference, as in (2b), or a [-generic] reference, as in (2c), null direct objects are always possible.

Taking as a point of departure this formal difference between English and Chinese related to how transitivity is instantiated, we offer an account of the L2 English production of objects by adult L1 Chinese speakers. More specifically, we seek to determine whether crosslinguistic influence effects appear and, if so, whether they are shaped (1) by the linguistic properties that transitive verbs have in English (i.e., verb type and verb form) and (2) by the proficiency level in the L2 that these bilinguals have.

The study is organized as follows. Section 2 is concerned with the two issues that constitute the backbone of the present investigation: transitivity and crosslinguistic influence. It, therefore, offers an overview of the notion of transitivity as a universal property and it accounts for how this universal property is instantiated in English and in Chinese. Furthermore, it presents an account of crosslinguistic influence and how it has been explored in terms of both directionality and effect. A review of previous works that have been conducted on the L2 acquisition of direct objects appears in Section 3. Section 4 presents the methodology which includes the research questions that guide this investigation and the description of both the experimental task and the linguistic profile

of the participants. The experimental data that we have obtained are presented and discussed in section 5, while section 6 concludes the study and offers suggestions for further work.

2. FRAMEWORK

2.1. THE NOTION OF TRANSITIVITY

Transitivity has been defined as a universal grammatical property that has the pattern in (3a) (Pérez-Leroux et al., 2008, 2018).

(3)   a.   [$_{VP}$ V XP]

        b.   [$_{VP}$ V DP]

        c.   [$_{VP}$ V null N]

All transitive verbs require a direct object, as in (3a), so that the verbal phrase (VP) incorporates the verb (V) and a direct object that is generically termed as a phrase of some sort (XP). This general pattern can be instantiated in two ways depending on whether the direct object is overtly expressed via a determiner phrase (DP) (3b) or whether it is not overtly realized and, thus, corresponds to a null noun (N) (3c).

While the pattern in (3a) is universal, the availability and instantiation of the patterns in (3b) and (3c) are language specific. In the case of English and Chinese, while both (3b) and (3c) are available, their distribution differs across the two languages. The pattern in (3b) is equally possible in the two languages, as in (4).

(4)   a.   John loves pets. He has a dog

        b.   Yuehan xihuan chongwu. Ta   you   yitiao   gou

            John   loves   pets   he   has   a   dog

            "John loves pets. He has a dog"

In English, the availability of pattern in (3c) is linked to the nature of the direct object (i.e., its genericity), as well as to the nature of the transitive verb (i.e., the type of verb in terms of its readiness to subsume both overt and null direct objects). As shown in (5a), when the direct

object has a generic reference, null objects are possible. However, when the null category *e* has a specific referent, as in (5b), the resulting structure is ungrammatical.

(5)   a.   What are you doing? I am reading *e*

       b.   *My laptop does not work but she can repair *e*

Furthermore, two transitive verb types can be distinguished in English: pure transitive verbs and mixed transitive verbs. Only the latter can have the overt pattern (3b) and the null pattern (3c), as the verb *read* in (6) –although the availability of the null option (6b) is restricted to the direct object having a [+generic] referent. Contrarily, pure verbs, like *repair* in (7) or *pick up* in (8), need to always have their objects overtly expressed (7a-8a). A null object results in ungrammaticality, regardless of whether the reference is [+generic] (7b-8b) or [-generic] (7c-8c).

(6)   a.   I am reading *a book / it*

       b.   I am reading *e*

(7)   a.   She can repair *my laptop / it*

       b.   *She can repair *e*

       c.   *My laptop does not work but she can repair *e*

(8)   a.   I will pick up *your mom* from the airport

       b.   *I will pick up *e*

       c.   *Your mom is coming today, and I will pick up *e*

Pure verbs always lack the possibility of having null objects and this is so regardless of their type: whether they are simple pure verbs (7) or phrasal pure verbs.

In Chinese, however, the pattern in (3c) is unrestricted, as shown in (9).

(9)   a.   Wo hui qu jichang   jie   *ni mama*

             I   will go   airport   pick up   your mom

             "I will pick up your mom from the airport"

       b.   Wo   hui qu   jie   *e*

I   will go   pick up   *e*

"I will pick (her) up"

c.   Ni mama   jintian   lai,   wo hui qu   jie   *e*

Your mom today   come,   I   will go   pick up*e*

"Your mom is coming today, and I will pick (her) up"

This means that all verbs are mixed transitive verbs in Chinese, and they can all take a null direct object regardless of whether it has a [+generic] reference (9a) or a [-generic] reference (9b).

2.2. THE NOTION OF CROSSLINGUISTIC INFLUENCE

Language contact situations are often characterized by crosslinguistic influence which has been defined as the influence that the knowledge of one language has on that of the other language (e.g., Jarvis & Pavlenko, 2008).

In the case of L2 acquisition and when it comes to directionality, crosslinguistic influence typically takes a specific directionally: from the L1 to the L2. That is, properties of the L1 surface when the L2 speaker is using the L2 (e.g., Bouvy, 2000; Leung, 2005).

Crosslinguistic influence can have two main effects: influence from the L1 can be said to have a facilitation effect when it leads to a lower error rate in the L2; but it can also have an interfering effect when a higher error rate is seen in the L2. The type of effect that crosslinguistic influence may have has been linked to issues such as language typology: if the bilingual's L1 and L2 differ typologically, a higher error rate is expected when compared to the situation where the bilingual's L1 and L2 are similar (e.g., Rothman, 2010; Rothman & Cabrelli Amaro, 2010; Montrul et al., 2010; Liceras & Alba de la Fuente, 2015; Schepens et al., 2016; Cuza et al., 2018; Mujcinovic & Fernández Fuertes, in preparation). Furthermore, the amount of exposure to the L2 and the proficiency in the L2 have also been said to affect crosslinguistic influence so that the higher the exposure and the higher the proficiency, the less interfering effects (e.g., Genesee, 1988; García Mayo, 2003; Muñoz, 2006, 2011; Shojamanesh et al., 2018; Fernández Fuertes et al., 2022).

In the case of the direct object domain and given the formal accounts in section 2.1, asymmetries in the availability of null objects appear when comparing English and Chinese, the language-contact scenario in the present investigation. This may suggest that, when it comes to acquisition, these asymmetries are likely to lead to crosslinguistic influence with a potential interfering effect. We turn next to previous works that have addressed crosslinguistic influence effects in the L2 acquisition of direct objects.

3. PREVIOUS STUDIES ON THE L2 ACQUISITON OF DIRECT OBJECTS

Different studies have been conducted on the acquisition of direct objects. When the two languages in contact (i.e., the L1 and the L2) are languages with a restricted use of null objects (the pattern in 3c above), results have shown that accuracy rates are high (e.g., Zyzik, 2008). However, important differences appear when comparing acceptability judgment data and production data, on the one hand, and when comparing the judgments of overt objects and those of illicit null objects. In this respect, Zyzik (2008) analyzes the L2 Spanish data of L1 English speakers and concludes that, while accuracy rates where high (94%) when judging structures with Spanish overt direct objects, rates where much lower (57.8%) for Spanish illicit null objects.

Other studies have been concerned with the analysis of L2 English data from L1 Chinese speakers, the language pair in the present study (e.g., Yuan, 1997; Nie, 2016; Wang, 2010). In this language contact situation, the two languages of the bilingual exhibit a different pattern: a language with a restricted use of null objects (the L2) and a language with an unrestricted use (the L1). The judgment data analyzed in these studies show that, while overt direct objects in English were correctly judged, it is difficult for these L1 Chinese speakers to detect illicit null direct objects in English. The consensus is that performance increases as proficiency increases.

To add on to previous analyses, we have designed the study that we present below to determine whether the patterns seen when L1 Chinese

speakers are asked to judge English structures is mirrored when they are asked to produce structures in L2 English.

4. METHODOLOGY

4.1. RESEARCH QUESTIONS

We have formulated two research questions.

- 1. Does interfering crosslinguistic influence effects appear in the L2 English production of L1 Chinese speakers in the domain of direct objects?

Given the formal differences that appear between Chinese and English, we hypothesize that there would be influence from Chinese into English with an interfering effect. This would be reflected in higher error rates than those of native speakers and in errors that could be attributed to the unrestricted nature of direct objects in Chinese.

- 2. If errors are found, which factors shape these crosslinguistic influence effects?

Two language internal factors could shape the nature of errors: verb type and verb form. In the case of verb type, while English verbs could be pure transitive verbs (i.e., not allowing null objects) or mixed transitive verbs (i.e., allowing null objects when the referent is [+generic]) but all Chinese verbs behave as mixed transitive verbs with unrestricted use of null objects, we hypothesize that this could constitute a locus for crosslinguistic influence. This would result in pure transitive verbs having a lower error rate. As for verb form, and if the potential extra difficulty that phrasal verbs might entail when compared to simple verbs in English, a different error rate could affect these two pure transitive verb forms.

To add on to the dichotomies above (i.e., verb type and verb form), the degree of proficiency in English could also shape the type and amount of crosslinguistic influence that is found in these English L2 speakers' production. In fact, the interplay between language internal factors and L2 proficiency could also play a role.

In order to provide an answer to these two research questions, we have designed the study presented below.

4.2. DATA ELICITATION: THE PRODUCTION TASK

The sentence production task involves a total of 50 short dialogues which include a picture, a question about the picture and an answer that the participant has to complete. An example appears in (10).

(10)   experimental item: *pick*
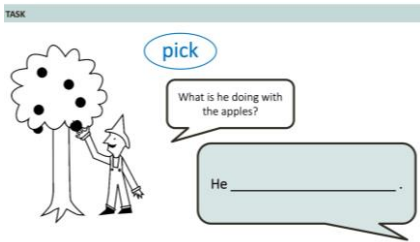
A verb in infinitival form was provided for the participant to use it in the completion of the answer to the question —the expected answer for (10) would be *He is picking them*.

Out of the 50 items, 5 were practice items, 30 were experimental items and 15 were fillers. In the case of experimental items, they involve simple pure transitive verbs (=10; example (11a)), phrasal pure transitive verbs (=10; example (11b)) and mixed transitive verbs (=10; example (11c)).

(11)   a.   What did he do with the ball?   He hit it

         b.   What did he do with the rubbish?   He threw it away

         c.   What did he do with the water?   He drank it

In all cases, the expected direct object has [-generic] reference, which means that the direct object must be overt for the sentence to be grammatically correct in English. In these same conditions, however, the use of a null object would be correct in Chinese.

Fillers and practice items (examples in 12) involve copula verbs and intransitive verbs (e.g., *be, fall, arrive*).

(12) a. What is he doing?   He is arriving

      b. What is the bird doing?   It is flying

For the design of the different items that make up the written production task, we consider the following: all direct objects refer to [-abstract] nouns, each verb was used only once, frequency was controlled for, and all verbs were checked for their classification as pure or mixed in Garrudo (1991).

The procedure that we followed for data classification took into consideration whether the direct object produced adhered to the English native pattern (classified as grammatical/accurate) o not (classified as ungrammatical/inaccurate). Other potential ungrammatical occurrences that did not relate to the issue under investigation were noted but not considered for the present analysis. These include, for instance, word order mistakes (e.g., *she it finds* instead of *she finds it*), lack of verbal inflection (e.g., *she find it* instead of *she finds it*), or wrong tense marking (e.g., *he fixes it* instead of *he is fixing it*).

All stimuli, data, and analysis scripts for the current study are available via the Open Science Framework at https://osf.io/9j5tc/?view_only=027dfd0d247d4027aee470ccbc90da13.

4.3. THE PARTICIPANTS' LINGUISTIC PROFILE

A group of 40 L1 Chinese–L2 English adult speakers from mainland China participated in this experiment. They were university students who have learned English as an L2 in an institutional context in China from the age of 6. They were divided into two proficiency groups as per the results they obtained in the Oxford Placement Test: intermediate group (=15; B1-B2) and advanced group (=25; C1).

A group of 9 L1 English adults were also tested as control.

Both participant groups gave their explicit consent to take part in this investigation which received ethical approval from the University of Valladolid Research Ethics Committee (ref. PI 19-1461). Participants also filled out a language background questionnaire that provided

information about their linguistic background, which helped us control for more homogeneous groups.

5. DATA ANALYSIS AND DISCUSSION

Overall accuracy rates for both the L1 Chinese–L2 English speakers and the L1 English speakers appear in Figure 1.

FIGURE 1. *Overall accuracy rates*
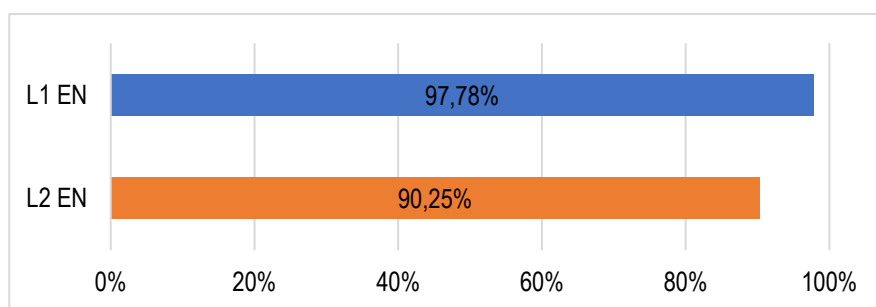
Both participant groups show high accuracy rate. However, when comparing the L1 group (M=.98, SD=.03) to the L2 group (M=90, SD=.09) the difference is statistically significant ($t(47)=2.486$, $p=.017$). That is, the L2 English group produces significantly more errors than the L1 English group.

The discrepancy between the two participant groups suggests that crosslinguistic influence with an interfering effect shapes these bilinguals' English production (research question #1).

The different factors that can contribute to shape these interfering effects (research question #2) are dealt with next. Figure 2 shows accuracy rates per verb type.

**FIGURE 2.** *Accuracy rates per verb type (pure versus mixed transitive verbs)*
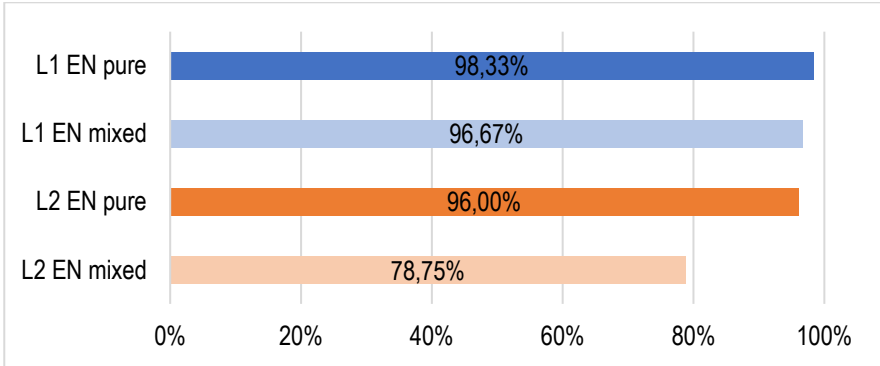
The results for the L1 English group show that accuracy rates are similar when comparing pure transitive verbs (M=.98, SD=.04) and mixed transitive verbs (M=.97, SD=.05; $t(8)$=.816, p=.438). However, in the case of the L2 English group, pure transitive verbs (M=.96, SD=.08) are significantly more accurately produced than mixed transitive verbs (M=.78, SD=.16; $t(39)$=7.391, p<.001).

When comparing between the two participants groups, similar performance is seen in the case of the pure transitive verbs ($t(47)$=.893, p=.377), but mixed transitive verbs are produced significantly better by the L1 English group ($t(42.442)$=5.823, p<.001). These results suggest that mixed transitive verbs are more vulnerable for these L2 learners and that consistency in sentence structure facilitates learning.

Accuracy rates per verb form appear in Figure 3.

**FIGURE 3.** *Accuracy rates per verb form (simple versus phrasal transitive verbs)*
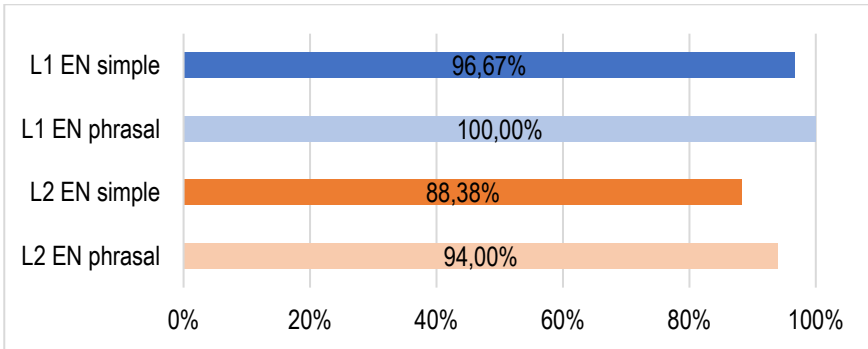
In the case of the L1 English group accuracy rates are at ceiling for both simple transitive verbs (M=.97, SD=.04) and phrasal transitive verbs (M=1.00, SD=.00; $t(8)$=-2.309, p=.05). Not so for the L2 English group where simple transitive verbs (M=.88, SD=.09) are produced with a significantly lower error rate than their phrasal counterparts (M=.94, SD=.11; $t(39)$=-3.777, p<.001).

Comparisons across the L1 group and the L2 group show that the accuracy rates in the production of the two verb forms are significantly higher in the L1 group, both in the case of the simple transitive verbs ($t(47)$=2.544, p=.014) and in the case of the phrasal transitive verbs ($t(39)$=3.509, p=.001).

These results seem to go against the expected assumption that the phrasal nature of the verb would entail more problems for these learners, given that no such verbs exist in Chinese (their L1). Quite the opposite, as these results seem to suggest, the particle in phrasal transitive verbs may be working as an indicator for direct object overtness.

When it comes to the performance of the L2 group in terms of the two proficiency groups, results are as follows.

FIGURE 4. *Accuracy rates per proficiency group*
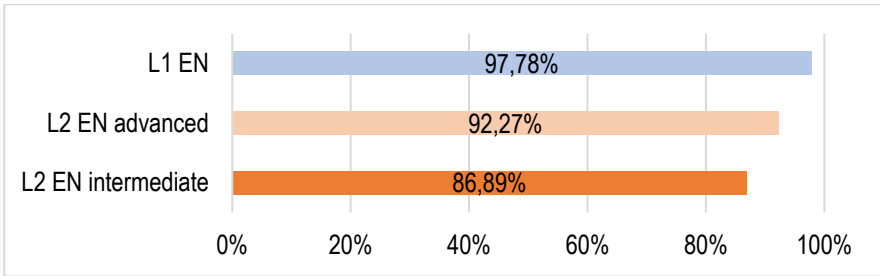
The results in Figure 4 suggest a decrease in accuracy rate from with the L1 English group in one extreme and the intermediate L2 English group in the other extreme. However, while the L1 English group (M=.98, SD=.03) performs significantly better than both L2 English groups (advanced: M=.92, SD=.06; intermediate: M=.87, SD=.12; Welch $F(2, 26.267)$=9.914, $p<.001$), the two L2 English groups do not differ significantly from one another (p=.247, 95% C.I.=[-.136,.027]).

In the light of these results, and contrary to what previous studies have found, proficiency does not seem to play a determining role in this particular area of grammar.

6. CONCLUSIONS AND FURTHER WORK

Previous studies on the L2 acquisition of direct objects by L1 Chinese–L2 English adult speakers have shown that this is a vulnerable area of grammar for these learners. This has been seen when speakers are asked to judge grammatical and ungrammatical constructions in that, while overt objects are correctly judged, English null objects are trickier. This divergency could be attributed to an interfering effect of crosslinguistic influence from the L1 (Chinese) into the L2 (English) given that null objects are unrestricted in Chinese. Contrary to Chinese, English availability of null objects is linked to the nature of the verb (i.e., pure or mixed transitive verbs) and to the nature of the referent of the direct object (i.e., [+/-generic]). In the present study we take as a point of departure this formal difference between English and Chinese as well as

the potential crosslinguistic effects it might trigger. We aim to contribute to this line of investigation by exploring how speakers behave when confronted with production and when facing different verb types and verb forms. We also consider whether proficiency (either in isolation or when combined with these linguistic factors) shapes the L2 English production of these sequential bilingual adult speakers.

Data show very high accuracy rates in the direct object production of these L2 English speakers when compared to their L1 English controls. However, they do perform significantly poorer than the controls, which suggests that crosslinguistic influence from Chinese is playing a role making their production less native like. In fact, their ungrammatical production in English would be grammatically correct in Chinese, which provides evidence that interfering effects are at play. The two linguistic factors that were explored (i.e., verb type and verb form) have emerged as influential properties in these speakers' classification of English null objects as unrestricted (because of influence from Chinese). In particular, and when it comes to verb type, unambiguous verbs seem to facilitate production, as seen in a lower ungrammaticality rate of pure transitive verbs (the ones that never take null objects in English) when compared to mixed transitive verbs (the ones that may take null objects in English). It seems that blocking the null option in English is perceived as easier for these speakers than having to learn the properties that regulate the possibility of null objects in English. When it comes to verb form, direct object overtness seems to be facilitated when producing phrasal transitive verbs in comparison with simple transitive verbs. We have attributed this to the particle in phrasal verbs behaving as a cue for object overtness. That is, instead of perceiving phrasal verbs as a more challenging verb form, given its absence in English, these speakers seem to find it easier to comply with object overtness in the case of these verbs when compared to simple transitive verbs.

As opposed to these linguistic properties (i.e., verb type and verb form), proficiency does not emerge as a determining factor in predicting these speakers' adherence to native-like performance. In fact, the advanced level L2 speakers do not perform significantly better than the intermediate ones and both seem to significantly differ from the English native controls.

There are, however, a few issues that remain open for further investigation and, among them, we would like to refer to the following two: the participants' proficiency level and the data elicitation methodology. With respect to the former, and as referred to above, no significant differences appear in the performance of the participants of the two proficiency levels we have analyzed (i.e., intermediate, and advanced). However, it could be the case that only when comparing speakers whose proficiency greatly differs would significant differences emerge (e.g., beginner versus advanced). Furthermore, using data from both beginners and highly proficient leaners could also shed some light as to whether these crosslinguistic influence interfering effects disappear early in the learning process or whether they are persistent at the end of the learning curve.

The data that we have elicited come from a guided production task that did not comprise experimental conditions in which no interfering effects were expected. This implies that a change in the methodology of data collection might contribute to further contextualize the results that we have obtained. In particular, if Chinese works as the source of influence and if we include conditions in which both Chinese and English agree, no interfering effects like the ones we have found should appear. This would happen, for instance, if null objects with a [+generic] reference are included, since they are both possible in Chinese and in English in the case of mixed transitive verbs. Furthermore, if experimental conditions change, for instance, by collecting data using a less guided production task that entails a more challenging situation for the participants (e.g., a story-telling task), vulnerabilities could be enhanced. This could be seen when contrasting mixed and pure transitive verbs so that the differences we have already reported could increase if experimental conditions make the bilinguals' task harder. Data elicited via a judgment task using similar conditions to the production task we report here (i.e., verb type and verb form) and adding the [+/-generic] contrast can also contribute to put into perspective our findings as well as those of previous studies.

7. ACKNOWLEDGMENTS

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