

Pragmatics before Syntax? Evidence from U-Shaped Acquisition

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1. Introduction

This study examines the claim that structures that hinge on the interfaces between syntax and other cognitive systems (i.e. external interfaces) are more problematic for learners than those that do not depend on this interface (i.e. internal interfaces/narrow syntax) (Sorace and Filiaci, 2006; Tsimpli, Sorace, Heycock & Filiaci, 2004; Sorace 2011; *inter alia*). In particular, I studied the L2 acquisition of Spanish psych-verbs (e.g. *gustar* ‘to like’) as a testing ground for this prediction since their numerous intricate properties can be tested independently with regard to the type of interface to which they belong. This paper is organized as follows: section 2 presents the theoretical background relevant to the current project; section 3 introduces the two experiments that make up this study; section 4 is a general discussion that links my empirical results to the theoretical rationale presented in section 2, and; finally, section 5 closes the paper with some concluding remarks.

2. Theoretical background

2.1. The Interface Hypothesis

The term Interface Hypothesis was coined by Sorace & Filiaci (2006). However, research interest in the challenges posed by interfaces in language acquisition had started over a decade earlier. Before explaining the content and implications of the Interface Hypothesis (henceforward IH), it is imperative to define the term interface in the way that it is understood by the researchers working in this framework. The most prevalent concept of interfaces in the current L2 research seems to be connected to Ramchand & Reiss’s (2007, p.2) proposal that interfaces are: (a) “informational connections and communication among putative models within the grammar” and (b) “the connection between the language faculty and other aspects of cognition (e.g. vision, reasoning).”

Following this concept of interface and with their innovative theory, Sorace et al. have attempted to find a unifying reason for residual optionality at the near-native level of second language acquisition (Belletti, Bennati & Sorace 2007; Sorace & Filiaci, 2006), emerging optionality in L1 attrition (Tsimpli, Sorace, Heycock & Filiaci, 2004) and protracted indeterminacy in bilingual first language acquisition (Serratrice, Paoli & Sorace, 2004; Sorace, Serratrice, Filiaci & Baldo, 2009). In this project, I focus on the first case: residual optionality, which Sorace defines in the following way: “In the typical L2 endstate grammar characterized by optionality, optional variants are not in free variation: a steady state is reached, in which the target option is strongly but not categorically preferred, and the non-target option surfaces in some circumstances” (Sorace, 1999, p. 666). The IH has developed its predictions over the years, which has resulted in two different versions of the proposal. The first version (e.g. Sorace, 2006) claims that interface properties are the locus of variability as compared to the narrow syntax (i.e. syntax proper, not as it interfaces with morphology or semantics), which is hypothesized to be less problematic. The second version (e.g. Sorace & Filiaci, 2006; Sorace & Serratrice, 2009; Tsimpli & Sorace, 2006; Sorace, 2011) makes a further division between external and internal interfaces. Processes related to internal interfaces, that is, those that

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require formal properties of the grammar to interact with each other (e.g. syntax-semantics, morphology-phonology) are equated to narrow syntax with regard to the fact that whatever difficulties were there in these areas should have been abandoned by the level of near-nativeness. In contrast, the locus of optionality is now placed on external interfaces, those that require the language modules to interact with cognitive modules such as the syntax-pragmatics interface or the semantics-pragmatics interface. Although competing explanations try to explain why external interfaces are more vulnerable in language acquisition (e.g. underspecification (Hopp, 2007; Tsimpli et al., 2004)), Sorace et al. seem to agree that coordination of material between a linguistic and a cognitive module imposes a higher processing load on speakers than coordination between purely linguistic modules. This is what causes the optionality typical in the acquisition of external-interface properties (Sorace & Serratrice, 2009; Sorace, 2011 among others). In conclusion, the IH makes two very clear predictions: (1) narrow syntax and internal interface properties should be less problematic for learners than properties that belong to external interfaces; (2) external interface constructions should be harder to process than constructions that belong to the narrow syntax or internal interfaces. In this project, I focused on analyzing (1) and I did so by testing both internal and external-interface related properties of Spanish psychological predicates. Next, I will explain why these predicates are especially relevant for the IH and on what properties I will focus in the current experiments.

2.2. *Psych-verbs*

2.2.1. *An introduction to psych-verbs*

Psych-verbs are predicates that convey meanings related to emotions and psychological states. Belletti & Rizzi (1988) originally proposed a tripartite classification of psych-verbs according to their diverse semantic and morphosyntactic properties:

(1) Class I (*temere*)

Gianni teme questo
Gianni fears this

(2) Class II (*preoccupare*)

Questo preoccupa Gianni
This worries Gianni

(3) Class III (*piacere*)

a. A Gianni piace questo
To Gianni pleases this
b. Questo piace a Gianni
This pleases to Gianni

Later, this classification was extended to Spanish psych-verbs by Parodi-Lewin (1991). In this study, I will focus on Class III and will study both its morphosyntactic properties in experiment 1 and its syntactic behavior under different pragmatic conditions in experiment 2. This will allow me to evaluate the soundness of the Interface Hypothesis as a theoretical account of language acquisition (particularly second language acquisition).

First of all, I will focus on the properties that are relevant for experiment 1, which are properties of morphosyntactic and semantic nature. Probably the most idiosyncratic characteristic of Class III psych-verbs is the non-canonical alignment of thematic roles to syntactic positions: the Experiencer maps onto the indirect object and the Theme maps onto the subject. This also surfaces in idiosyncratic morphological relations: the Experiencer controls clitic agreement and the Theme controls verb agreement.

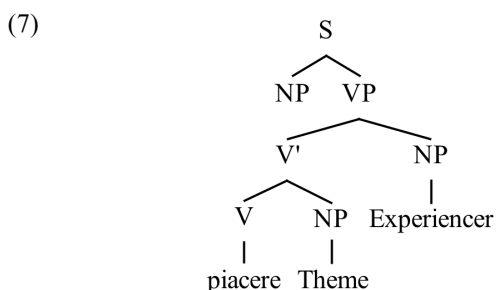
(4) A María	le	encantan	los zapatos
To María	le-dat. cl.	love-3pl.	the shoes
<i>Shoes are pleasing to María/María loves shoes</i>			
EXPERIENCER/INDIRECT OBJECT			THEME/SUBJECT

This, *a priori*, represents a violation of Jackendoff's (1990) Thematic Hierarchy (Agent (Experiencer (Goal/Source/Location (Theme)))) and Baker's (1988) UTAH "Identical thematic relationships between items are represented by identical structural relationships between those items at the level of D-structure." Following both UTAH and the Thematic Hierarchy, we expect that the Experiencer should map to the subject position and the Theme should map to the object position as we see in transitive verbs (5) or Class I psych-verbs (6). Additionally, the clitic should agree with the least

prominent argument in the Thematic Hierarchy whereas the verb should agree with the most prominent argument.

- | | | |
|--------------------------------|-------------|--------------|
| (5) María | compró | unos zapatos |
| María | bought-3sg. | some shoes |
| <i>María bought some shoes</i> | | |
| AGENT/SUBJECT | | THEME/OBJECT |
| | | |
| (6) María | adora | los zapatos |
| María | loves-3sg. | the shoes |
| <i>María loves shoes</i> | | |
| EXPERIENCER/SUBJECT | | THEME/OBJECT |

However, Belletti & Rizzi (1988) for Italian and later Parodi-Lewin (1991) for Spanish have explained the idiosyncrasies of Class III by assigning these predicates an unaccusative configuration. Thus, the underlying mapping of thematic roles to syntactic positions is guided by the Thematic Hierarchy and UTAH since the Experiencer is projected higher than the Theme at D-structure.



Secondly, I will focus on the property of psych-verbs tested on experiment 4, a property at the interface between syntax and pragmatics. The unmarked order of Spanish psych-verb constructions is the order Experiencer-Verb-Theme (EVT). Franco & Huidobro (2003) claim that the movement of the Experiencer is motivated by the EPP feature and Shortest Move since the Experiencer is projected higher than the Theme. On the other hand, the order Theme-Verb-Experiencer is regulated by discourse factors. This order arises when the Theme is a salient topic in the discourse. Syntactically, this movement is motivated because the Theme has to check a salient topic feature in T. This analysis is based on Zubizarreta's (1998) concept of T as 'a syncretic category with discourse features.'

2.2.2. Previous studies on psych-verbs

For decades, many researchers in second language acquisition have focused their attention on psychological predicates and their peculiar behavior in multiple languages. Most scholars agree that second language learners experience particular difficulties with these predicates, which derive from their non-canonical mapping of thematic roles to syntactic positions (Juffs, 1996; Montrul, 1998; White et al. 1998, 1999; *inter alia*). More recently, psychological predicates have been studied on a heritage speaker population by Toribio & Nye (2006) and dePrada Pérez & Pascual y Cabo (2011). Particularly, Toribio & Nye (2006), present their research in the framework of the Interface Hypothesis so their findings are particularly relevant for this project. They argue that heritage speakers' grammars are incomplete with regard to these constructions because they have mastered properties of the core grammar such as Agreement and Case but they still exhibit non-target behavior in the properties that relate to interfaces, both the syntax-pragmatics interface and the syntax-lexicon interface. The former becomes evident through the constant preference for pre-verbal Experiencers, while the latter is reflected in the restructuring of the argument structure towards a more transparent mapping. Consequently, their findings are much in line with the predictions of the Interface Hypothesis, which, as we will see, differ from my conclusions.

Taking into account the theoretical background presented in this section, this study attempts to answer the following question: Do the predictions of the Interface Hypothesis hold for the L2 acquisition of Spanish psych-verbs? More specifically, I focus on three sub-questions:

- (1) Can L2 learners acquire properties of Spanish psych-verbs that belong to internal interfaces?
- (2) Can L2 learners acquire properties of Spanish psych-verbs that belong to external interfaces?
- (3) Which of these types of interfaces seems to be more vulnerable in L2 acquisition?

3. The current study

3.1. Participants, methodology and statistical analysis

3.1.1. Participants

A total of 101 subjects participated in this study. 36 native speakers of Spanish constituted the control group, all of them from Spain. All participants had a college degree or were attending college at the time of the experiment. With regard to the level of English of the control participants, they had either a very basic knowledge or no knowledge of the language. None of them used English on a daily basis and they had not travelled to an English-speaking country for more than a week.¹

The experimental group consisted of 65 non-native speakers of Spanish whose first (and only) language was English. The non-native speakers were assigned to different proficiency groups according to their score in an independent proficiency test (i.e. a section of DELE (Diploma de Español como Lengua Extranjera/Diploma of Spanish as a Foreign Language). This is the common standardized measure used by many L2 researchers (e.g. Montrul 2004; Rothman & Iverson 2008, *inter alia*). Sixteen subjects were classified as near-native speakers, 21 subjects as advanced, 16 subjects as intermediate and, 12 subjects were classified as low-proficiency learners. The second language learner group was composed of both college students taking an advanced grammar and composition class (intermediate and low-proficiency groups)² and instructors of Spanish at a research university in the U.S. (advanced and near-native groups). All of them had started learning Spanish after puberty.

3.1.2. Methodology

This study encompasses 2 experiments, which were conducted in PsyScope (Cohen, MacWhinney, Flatt, & Provost, 1993) Each subject received a specific set of instructions before starting the task and conducted a training trial before each one of the experiments. The first experiment consisted of a scalar grammaticality judgment task and the second one required a scalar judgment of pragmatic felicitousness. Both tasks followed the same procedure: participants were presented with a series of sentences on a computer screen that they had to rate on a Likert scale according to how natural the sentence sounded to them. This is the way the scale was presented to them: (1) The sentence sounds really bad. You would never use it and you cannot imagine any native speaker using it. (2) The sentence sounds bad to you but not as bad as 1. You can imagine some native speakers using this sentence. (3) You can't decide or the sentence doesn't sound too bad or too good. (4) The sentence sounds pretty good to you but not as good as 5. (5) The sentence sounds good to you.

In each experiment, the way the sentences were organized was the following. First of all, a brief paragraph showed up in the computer screen. The subject had to read the paragraph and press any key to make the paragraph disappear once he had read it. This paragraph provided a context for the sentences that the subject had to rate subsequently. Next, he would see either four sentences (in experiment 1) or two sentences (in experiment 2) following the context. It is important to highlight that these sentences were presented in consecutive order. So, the subject had to rate each sentence in isolation. Subjects were not allowed to go back or change their answers. The test sentences in each

¹ By controlling the level of English in the native speaker population, I made sure that the control sample in this study represented a monolingual variety unaffected by language contact. This is especially important at the level of syntax-pragmatics, since properties related to this interface tend to be more susceptible to alteration when languages come into contact (Myers-Scotton, 2002).

² It is important to underscore that even the lower proficiency groups were not beginners, but had taken several semesters or Spanish (an average of 6) and many of them had studied abroad before the time of the experiment.

experiment always contained psych-verb constructions with some kind of manipulation; morphosyntactic and semantic (experiment 1) or pragmatic (experiment 2). Distractor sentences were presented in both experiments.

The experiments were presented in random order. Furthermore, the contexts and their corresponding sentences were randomized with respect to other contexts and sentences. Finally, the sentences within each context were also randomized. By this process of randomization, I minimized the effect of undesirable contamination between experiments, contexts and/or sentences.

3.1.3. Statistical analysis

A repeated-measures ANOVA was conducted to determine the relation between the subjects' sentence ratings and the conditions tested in each experiment. I tested the appropriate contrasts adjusting for multiple observations within subjects. These contrasts will be reported through Wald's chi-squares.³

3.2. Experiment 1

3.2.1. Experiment 1: Goals

This experiment was designed in order to test an internal interface property, and more precisely, a property that belongs to the syntax-semantics interface. In particular, it tests L2ers' understanding of psych-verbs' non-canonical mapping of semantic roles to syntactic positions (i.e. the Experiencer maps onto the object position and the Theme maps onto the subject position) and how it is represented in the agreement system (i.e. the clitic agrees with the Experiencer and the verb agrees with the Theme).

In particular, there are two main questions that I will try to answer: (1) What is the argument that controls clitic agreement in the grammar of L2ers? (2) What is the argument that controls verbal agreement in the grammar of L2ers?

3.2.2. Experiment 1: Methodology

This experiment partially replicates other recent studies by Toribio and Nye (2006) and dePrada Pérez & Pascual y Cabo (2011). It is a scalar grammaticality judgment task with 8 test items (2 tokens x 4 conditions) and 32 fillers. The test items consisted of sentences that tested agreement questions in psych-verb constructions (*convenir* 'to be convenient', *gustar* 'to like'). In particular, I looked at verb agreement and clitic agreement mismatches. The participant was presented with four possible choices: (8a) is the grammatical version in which both the clitic and the verb carry the correct agreement morphology. (8b) represents a case of clitic agreement violation. So, the clitic agrees with the Theme instead of the Experiencer. (8c) illustrates a verb agreement mismatch. That is, the verb agrees with the most prominent argument, the Experiencer. Finally (8d) includes a double agreement violation since both the clitic and the verb have incorrect agreement. (8d) represents a case of Thematic Hierarchy derived mapping since the clitic agrees with the least prominent argument and the verb agrees with the most prominent argument.

These categories will receive the following labels from this point onwards: (8a) grammatical sentence=right, (8b) wrong agreement on the clitic=*cl, (8c) wrong agreement on the verb=*vb. (8d) wrong agreement on the clitic and the verb=*cl+vb.⁴

(8) María tiene 4 hijos y no tiene mucho tiempo libre pero necesita un trabajo

María has 4 children and not a lot of time but she needs a job

a. A María le convienen trabajos de media jornada

To María le-dat.cl.-3sg suit-3pl. jobs of half working-day

³ Please notice that these are not Pearson's chi-squares. A Wald's chi-square is analogous to the F statistic when the model makes no assumption about the distribution of the error term (Zeger et al., 1988).

⁴ A follow-up study should look at the interaction between word-order and (dis)agreement to determine the relation between these two factors.

- b. *A María les convienen trabajos de media jornada
To María les-dat.cl.-3pl. suit-3pl. jobs of half working-day
- c. *A María le conviene trabajos de media jornada
To María le-dat.cl.-3sg. suit-3sg. jobs of half working-day
- d. *A María les conviene trabajos de media jornada
To María les-dat.cl.-3pl. suit-3sg jobs of half working-day
Temporary jobs are convenient/suitable for María

3.2.3. Experiment 1: Results

In figure 1 we have participants' ratings of the test items. In this section I will present the contrasts between the grammatical and the ungrammatical items for each group to determine the level of significance. The control group showed a clear preference for the grammatical items: the grammatical sentences are rated significantly higher than all of the other categories (right vs. *cl: $\chi^2=253.77$, $p<.0001$; right vs. *vb: $\chi^2=66.10$, $p<.0001$; right vs. *cl+vb: $\chi^2=385.31$, $p<.0001$). The near-native speakers showed a solid understanding of agreement in psych-verb constructions, which they demonstrated by giving significantly higher ratings to the grammatical category with respect to the three ungrammatical ones (right vs. *cl: $\chi^2=10.06$, $p<.0001$; right vs. *vb: $\chi^2=117.58$, $p<.0001$; right vs. *cl+vb: $\chi^2=215.54$, $p<.0001$). The advanced group showed basically the same patterns as the native and the near-native groups with respect to their responses to agreement violations. The grammatical items received significantly higher ratings than items with wrong agreement on the clitic (right vs. *cl: $\chi^2=144.78$, $p<.0001$), wrong agreement on the verb (right vs. *vb: $\chi^2=129.23$, $p<.0001$), and wrong agreement both on the verb and the clitic (right vs. *cl+vb: $\chi^2=210.03$, $p<.0001$). The intermediate group showed the same trend as the more advanced groups. They gave significantly higher ratings to the grammatical items than to the items with clitic agreement violations, verb agreement violations and clitic and verb agreement violations (right vs. *cl: $\chi^2=41.55$, $p<.0001$; right vs. *vb: $\chi^2=35.34$, $p<.0001$; right vs. *cl+vb: $\chi^2=33.02$, $p<.0001$). Finally, the response means of the low-proficiency group showed a similar trend to the one we saw with the more advanced groups in the sense that the grammatical items received higher ratings than the ungrammatical items. However, their distinctions across categories are not as clear-cut as the ones from the more proficient participants and, in some cases, they are unable to distinguish between grammatical and ungrammatical categories. Actually, only one of the contrasts is significant: sentences with wrong agreement on the verb are rated significantly lower than those with correct agreement ($\chi^2=4.47$, $p=0.0345$). On the other hand, sentences with wrong agreement on the clitic or wrong agreement on the clitic and the verb are given similar ratings to the grammatical test items ($\chi^2=2.46$, $p=0.1170$; $\chi^2=2.13$, $p=0.1417$).

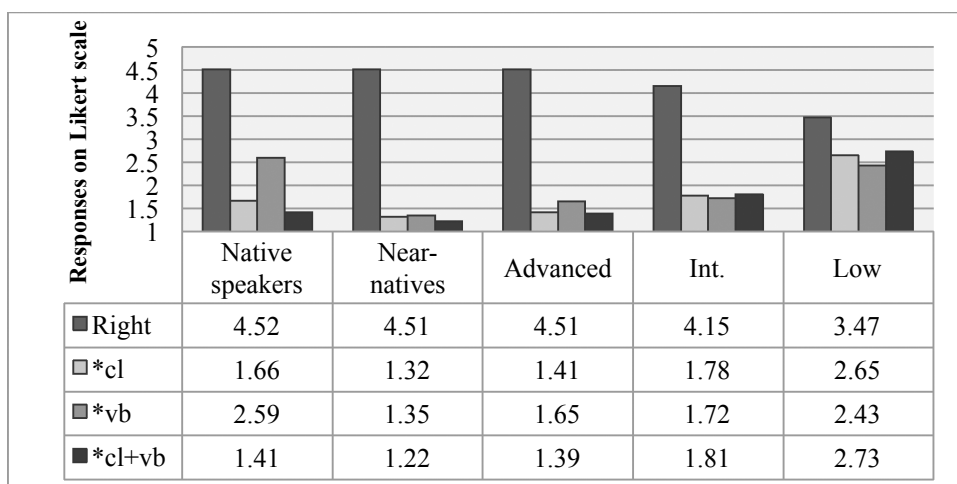


Figure 1. Response means for experiment 1

Finally, I analyzed the contrast between the control group's ratings and the L2ers' ratings to see if there was a difference in the way the groups rated the test items. There were several significant

contrasts: Near-native speakers and advanced learners rated *vb items significantly lower than native speakers ($\chi^2=10.71$, $p=0.0011$; $\chi^2=7.14$, $p=0.0076$). This is due to native speakers' lenient rating of this ungrammatical category.⁵ The ratings of the low group of *cl and *cl+vb items are significantly different than the control group's ($\chi^2=13.36$, $p=.0003$; $\chi^2=19.96$, $p<.0001$) since low learners incorrectly gave these items high ratings.

3.2.4. Experiment 1: Discussion

The results of this experiment lead me to conclude that agreement of psych-verb constructions presents certain difficulty for L2 learners, judging by the behavior of the low-proficiency group, who does not show complete understanding of these agreement relations. Agreement issues are part of the core grammar, that is, it is a property considered to belong to the narrow syntax. This is because agreement is a relation between a head and its specifier: in particular, AgrIO for clitic agreement and V for verb agreement. If this were the only operation involved, there would be no reason to expect difficulties in this area since the computational system is considered to be universal. However, in order to acquire the agreement relations of these verbs, there are other factors besides their pure syntax that need to be understood; in particular, the relation between syntax and semantics (i.e. the non-canonical mapping of semantic roles to syntactic positions) and the relation between syntax and morphology (i.e. the clitic agrees with a non-canonical object (the Experiencer) and the verb agrees with a non-canonical subject (the Theme)). Thus, mastery of the agreement system of psych-verb constructions involves understanding of the relation between syntax, morphology and semantics. This complex interaction of factors could and, as we have seen, does affect the L2 learners' level of success when acquiring this property.

The fact that agreement of Spanish psych-verbs is a source of some non-native divergence from native speakers has already been claimed in the literature. In particular, Toribio & Nye (2006) put forward a similar claim for heritage speakers. They found a tendency towards a mapping in which the most prominent argument (i.e. the Experiencer) agrees with the verb and the least prominent argument (i.e. the Theme) agrees with the clitic. This indicates a restructuring of the argument structure of these verbs towards a more canonical mapping of thematic roles to syntactic positions. This tendency becomes evident in the low-proficiency group, who actually rated *cl+vb agreement sentences (i.e. sentences that represent a direct mapping of thematic roles onto syntactic positions) indistinguishably from grammatical sentences. On the contrary, the more advanced participants did not show any tendency towards restructuring the argument structure of these verbs since they distinguished *cl+vb agreement sentences clearly from grammatical items. My findings for the more advanced groups in this respect are in line with dePrada Pérez & Pascual y Cabo (2011) who did not find evidence for direct mapping of psych predicates with heritage speaker participants.

The important issue at hand is to determine what the behavior of the non-native participants lets us infer about their subconscious knowledge of the L2 linguistic system and how this knowledge is represented. The results of this experiment could be interpreted in two different ways: First of all, the problems with agreement might be the result of a mapping problem. Thus, this will be in line with the Missing Surface Inflection Hypothesis (Haznedar & Schwartz, 1997; Prévost & White, 2000). Proponents of this view consider that absence of inflection or the substitution of a particular inflectional morpheme by a default arises from a failure to retrieve inflection under certain circumstances, which require a high processing load. Secondly, the problems with agreement can reflect a problem at the level of the syntactic representations. So, L2ers might actually not have representations that correspond to the L2 syntax, instead they might be relying on a semantically-driven grammar that chunks information based on semantic participants in the sentence and L1 parsing. Because I have no way of empirically testing the first option and also, because the results of experiment 2 are consistent with the second possibility, I argue that these low-proficiency speakers lack knowledge of the L2 syntax of psych-verbs. I will expand on this idea in the discussion of experiment 2. This experiment in itself does not support nor contradicts the IH. The IH can only be evaluated by judging these findings in conjunction with the findings of experiment 2 (section 4).

⁵ See Gómez Soler (2012) for a detailed explanation of this phenomenon (invariable *gusta*, dePrada Pérez & Pascual y Cabo, 2011).

3.3. Experiment 2

3.3.1. Experiment 2: Goals

The purpose of this experiment is to ascertain if L2 learners are able to acquire properties belonging to an external interface. In particular, the interface tested here is the syntax-pragmatics interface, and more specifically, the syntax-discourse interface. The connection between word order (i.e. syntax) and the pragmatic concept of topic (i.e. discourse) will be analyzed in detail in this task. As I discussed in section 2, EVT order is the unmarked order for these constructions; however, TVE order surfaces as a result of specific pragmatic conditions: when the Theme is the salient topic in the discourse. The first question in this experiment will be: Is EVT the unmarked construction for L2ers? The second question explores L2ers' understanding of pragmatic conditions: if L2ers understand the effect of the pragmatic context on the syntactic structure of these predicates, they should prefer TVE sentences in contexts where the Theme is a salient topic (henceforward, T-context) as opposed to those where the Experiencer is the salient topic (henceforward, E-context). Consequently, the second question is: Do L2ers prefer TVE sentences in T-contexts over E-contexts?

3.3.2. Experiment 2: Methodology

Differently from experiment 1, this experiment is a pragmatic felicitousness task. That is, all of the stimuli are grammatically correct; however, one option within each pair is more felicitous than the other one in terms of discourse factors. Consequently, this is a much more nuanced distinction than those presented in the previous experiment. In this experiment subjects not only read the sentences in the computer screen but also heard them.⁶

Each subject saw a total of 64 sentences, half of which were fillers. There were 8 tokens x 4 conditions in the test items. The verbs used were *importar* 'to matter', *caer bien* 'to like (a person)', *caer mal* 'to dislike (a person)', *gustar* 'to like', *encantar* 'to love', *divertir* 'to amuse', *asustar* 'to scare', *interesar* 'to interest', *preocupar* 'to worry', *fascinar* 'to fascinate', *covenir* 'to be convenient', *aburrir* 'to bore'. I presented the constructions embedded in different contexts that were pragmatically biased towards either TVE order or EVT order. So, in half of the contexts, the Theme was a salient topic (T-context) and, thus, we expect it to appear in pre-verbal position more often than when the Theme is the focus of the sentence (Zubizarreta, 1998). The rest of the contexts highlighted the Experiencer as a topic (E-context). As I pointed out earlier, EVT order is the unmarked order for these constructions. This means that EVT is the preferred order when neither NP is salient, when the Experiencer is a salient topic or even when the Theme is the salient argument in the discourse. Hence, I predict that, although EVT order would always be rated higher than TVE, we would see an asymmetry in the ratings assigned to TVE order depending on the context in which the structures are embedded. (9) represents an E-context whereas (10) illustrates a T-context.⁷

- (9) María es una miedica. ¿De qué tenía miedo de las arañas o de los ratones?
 María is a coward. Of what had-3sg. fear of the spiders or of the mice?
María is a coward. What was she scared of, spiders or mice?
- a. A María le asustan los ratones no las arañas
 To María le-dat.cl.-3sg. scare-3pl. the mice not the spiders
María is scared of mice, not spiders
- b. Los ratones le asustan a María, no las arañas
 The mice le-dat.cl.-3sg. scare-3pl.to María, not the spiders
Mice scare María, not spiders

⁶ The sentences were recorded with neutral intonation in order to prevent subjects from assigning the sentences different prosodic patterns (e.g. focus fronting).

⁷ One methodological problem is that there is a discrepancy in the degree of topicality in these two sentences: while in (9) the antecedent of the Experiencer in the test sentence is a null argument in the prompt question, in (10) the antecedent of the Theme is an overt argument. The null argument is a more continuous topic than the NP (Givón, 1983). These might have affected participants' responses. Thus, the results of this experiment should be taken with caution until a follow-up study is run fixing these asymmetries.

- (10) La música clásica es aburridísima. ¿Quién odia la música clásica tu madre o tu padre?
 The music classical is very boring. Who hate-3sg. the music classical your mom or your dad?
Classical music is so boring. Who hates classical music, your mom or your dad?
- A mi madre le aburre la música clásica, no a mi padre
 To my mom le-dat.cl.-sg. bore-3sg. the music classical, not to my dad
My mom gets bored with classical music, not my dad
 - La música clásica le aburre a mi madre, no a mi padre
 The music classical le-dat.cl.-3sg. to my mom, not to my dad
Classical music bores my mom, not my dad

Next, I will clarify how the saliency of the topic was established in the test items. The concept of topic is difficult to characterized and delimit. Topic can be defined as “what the sentence is about” (Reinhart, 1981) or “given/old information” (Gundel, 1985; Gundel, 1999). However, there is much controversy over how to define given vs. new information, whether topics really have to be old information and whether it is a syntactic or a pragmatic concept (Gundel & Thorstein, 2004). Furthermore, no test will allow us to pinpoint the topic of a sentence since pragmatic tests are not deterministic (Gundel & Thorstein, 2004). In addition, López (2009, p.84) warns us about the dangers of using the concept of topic as something more than “an informal, descriptive term” since it really represents an amalgam of features. Because of the intrinsic difficulties of defining and delimiting the concept of topic, I made sure that the contexts clearly represented the desired topic (either the Theme or the Experience) by carrying out a survey among native speakers. When asked, “what is this sentence about?,” native speakers were able to correctly identify the topic that I had had in mind. Twelve people filled out the questionnaire and their judgments on what the topic of the discourse was coincided with my own assumptions in all of the sentences except in one in which two speakers chose a different option. Also, by introducing a contrastive focus element, I made sure that the topic salience was further emphasized. Thus, the native controls clearly identified the topic as the element about which a choice had to be made.

3.3.3. Experiment 2: Results

The first question for this experiment was: Is EVT the unmarked order for L2ers? And this was in fact the case for all non-native groups (as well as for the native speakers) as we can see in figure 2. The fact that EVT is the unmarked structure for all groups is evidenced in their significantly higher ratings of EVT over TVE in E-contexts. All of the groups consistently rated EVT higher than TVE: control: $\chi^2=53.81$, $p<.0001$; near-natives: $\chi^2=23.70$, $p<.0001$; advanced: $\chi^2=10.21$, $p=0.0014$; intermediate: $\chi^2=6.81$; $\chi^2=0.0091$; low: $\chi^2=29.9$, $p<.0001$.

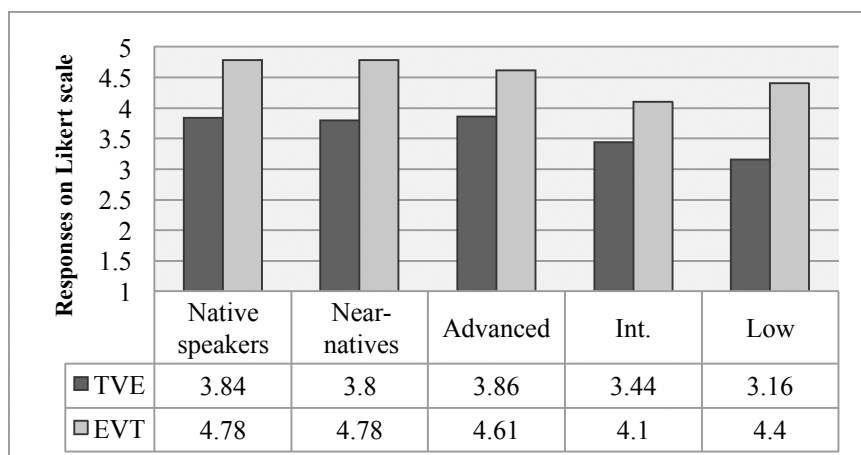


Figure 2. Response means for TVE and EVT sentences in E-contexts

The second question (Do L2ers prefer TVE sentences in T-contexts over E-contexts) attempted to analyze L2ers' understanding of pragmatic conditions on word order. Thus, I contrasted participants' ratings of TVE sentences in both types of contexts (E-context vs. T-context) (Figure 3). My predictions were borne out for the native speaker group: TVE sentences were rated significantly higher when the sentence was preceded by a context in which the Theme was a salient topic than when they were judged in conjunction with a context in which the Experiencer was highlighted as a topic ($\chi^2=11.80$, $p=0.0006$). The results of the near-native speakers are remarkably similar to those of the control group since they also display a clear relation between context (i.e. pragmatics) and word order (i.e. syntax): TVE sentences are rated significantly higher in T-contexts than in E-contexts ($\chi^2=4.67$, $p=0.0308$). In contrast, advanced speakers did not exhibit the distinctions that native and near-native speakers showed with regard to the effect of discourse on word order. Sentences with TVE order got roughly equal ratings independently from the type of context (i.e. E-context vs. T-context) in which the sentence was imbued ($\chi^2=0.49$, $p=0.4833$). This indicates that, for the advanced group, unlike native and near-native speakers, type of context plays no role in the choice of word order. That is, these learners did not completely connect the choice of word order in psych-verbs with pragmatic factors.⁸ Next, as was the case for the advanced group, we do not see an effect of type of context in the ratings that the intermediate group assigned to the test items. That is, regardless of the type of context in which the test items appear, they received a similar rating (E-context vs. T-context: $\chi^2=0.93$, $p=0.3344$). Thus, intermediate learners are immune to the effect of pragmatic factors in the word order configurations of psych-verb constructions. Surprisingly, the low proficiency group shows sensitivity to discourse factors: TVE order is rated significantly higher in T-contexts than in E-contexts ($\chi^2=5.97$, $p=0.0146$). Interestingly, this is the pattern that we saw with native and near-native speakers. It seems like, for the low-proficiency speakers, the pragmatic context and, in particular, the topichood of the previous discourse had a clear effect on the word order combinations of psych-verb constructions.

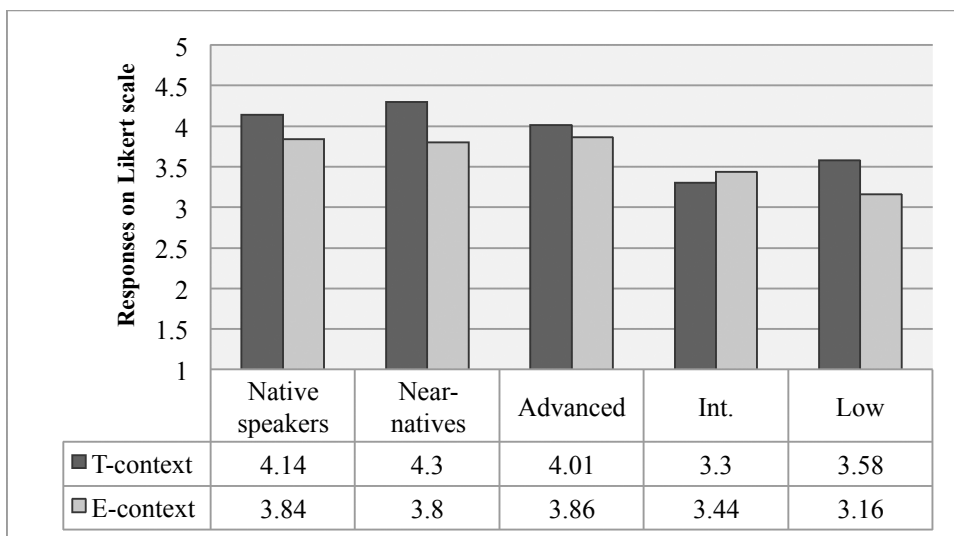


Figure 3. Response means for TVE sentences in T- and E-contexts

A comparison between the control group's ratings and the ratings of each individual L2 group reveals only one significantly different contrast between the native speakers and the intermediate group ($\chi^2=6.77$, $p=0.0093$). Thus, it seems that all groups⁹, except intermediate learners follow a similar response pattern than native speakers.

⁸ We have to point out, however, that the trends go in the right direction with TVE getting slightly higher ratings in T-contexts and EVT getting slightly higher ratings in E-contexts. Nevertheless, these distinctions are not distinct enough to reach significance.

⁹ The contrast between the control group and the advanced speakers isn't significant. We have to remember that, even if the distinctions of the advanced learners do not reach significance, they do go in the right direction.

3.3.4. Experiment 2: Discussion

In the previous experiment, I showed that lower-proficiency speakers struggle with agreement, an internal interface property. The current experiment confirms that syntax-discourse interface properties aggravate the learnability problem connected with psych-verb acquisition for intermediate and advanced participants. In contrast, and contrary to all predictions, low-proficiency speakers show an understanding of this syntax-discourse property. In this section, I will determine what the sources of difficulty/ease were and what the learners' responses reveal about both their mastery of the L2 and their mental representation of syntax-discourse properties in L2 Spanish.

The findings for the advanced learners are consistent with the main tenet of the Interface Hypothesis, mainly that external interfaces can be subject to optionality even at the highest stages of second language development. This becomes obvious since these speakers, although able to master other aspects of psych-verbs related to syntax and syntax-semantics, are unable to detect the subtle effect of discourse conditions on these predicates. However, the interesting and surprising behavior of the low-proficiency group (their sensitivity to discourse conditions and its effect on syntactic patterns) cannot be explained through the tenets of the Interface Hypothesis since the presumably intrinsic difficulty of external interface properties vs. internal interface properties is not evidenced here. Thus, we need to find an alternative explanation for the patterns of acquisition found in this experiment.

The fact that the Theme can occupy the pre-verbal position when it is a salient topic is not an isolated phenomenon related to psych-verbs. Rather, it is a more general tendency related to some basic tenets of pragmatic theory that have to do with the concept of *givenness*. In particular, this fact is connected with the given-before-new principle, (Arnold et al., 2000; Bock & Irwin, 1980; Bock & Warren, 1985; Bresnan et al., 2007; *inter alia*) which states that old information is more likely than new information to occupy earlier positions in the sentence. Because when the Theme is a salient topic, it is considered to be old information, the fact that it occupies a preverbal position derives from the given-before-new principle. This principle has been shown to hold crosslinguistically (e.g., for English, Arnold et al. 2000; for Finnish, Kaiser & Trueswell, 2004; for Japanese, Ferreira & Yoshita, 2003; for Korean, Choi 2009; Jackson, 2008). Furthermore, there is research that shows that L2 learners are able to transfer this principle when learning another language (for L1 Swedish L2 German, (Bohnacker & Rosén, 2008); for L1 German L2 Swedish, (Bohnacker, 2010)).¹⁰ So, to a certain extent, it is not surprising that L2 learners are able to transfer this principle from their L1 (English) to the L2 (Spanish) based on the findings of previous researchers, especially if we assume a model such as Full Transfer/Full Access (Schwartz & Sprouse, 1996). However, it remains to be explained why low-proficiency were able to transfer the given-before-new principle whereas intermediate and low-proficiency speakers were not. Additionally, there is a complicating factor that needs to be taken into account in order to explain the acquisition patterns found in this experiment: the given-before-new principle can be easily overridden since the unmarked order EVT can take precedence over TVE in spite of discourse conditions. This makes the acquisition of psychological predicates' word order even less straightforward and the task of extracting this information from input far from evident.

Next, I will analyze the results of each individual group to determine what stage of acquisition they represent and how they balance the pragmatic factors (i.e. given vs. new information) with the frequency and unmarked nature of the EVT construction. First of all, the low proficiency speakers seem to comply with the pragmatic factors that regulate word order (i.e. TVE better in T- than E-contexts). This indicates that the low-proficiency speakers are transferring the given-before-new principle from the L1. One plausible explanation for the behavior of this group is that they have not acquired the syntax of psych-verb constructions. If this is the case, they might be using a semantically driven syntax in which participants in the sentence are analyzed as chunks following English syntactic patterns (for instance: *Me gusta el chocolate* could be analyzed as *Me gusta=I like* and *el chocolate=chocolate*). If this is the analysis lower-proficiency participants are using, it is not

¹⁰ It is true also that other authors did not find any robust evidence for the transfer of the given-before-new principle (Park, 2011; Park & Schwartz, 2012). Others (Marefat, 2005; Callies & Szczesniak, 2008) claimed to have found evidence for transfer but their results have been put into question due to methodological issues (Park, 2011).

surprising that they are able to perform successfully in this task since all they are doing is mapping an universal principle onto an L1 syntactic template.

Then, as the learners become more proficient in the second language and they start acquiring the syntax of these constructions, the task of mapping the given-before-new principle to the new L2 grammar becomes a more complicated task than the one the low-proficiency learners were performing based on the L1 syntactic patterns. Furthermore, they realize that the given-before-new principle is violated in many cases. As a consequence, they stop relying on the L1 pragmatic conditions, which is illustrated by the fact that intermediate and advanced speakers do not make any connections between the different word orders and the type of contexts in which the sentences appear. Because they are unsure of what conditions regulate word order and how to map these pragmatic conditions onto the L2 syntax, they go adrift and enter a stage of indeterminacy. Intermediate participants, overwhelmed by the frequency of the unmarked construction are unable to make the connection with pragmatic principles. On the other hand, the advanced learners start recovering from this stage of indeterminacy and start moving towards a more native-like performance. This is an indication that they are overcoming problems at the syntax level. Although they do not show significant contrasts with regard to context and word order, they do seem to move into a direction in which pragmatic factors play a certain role (i.e. TVE is rated higher-although not significantly higher- in T-contexts than E-contexts). Eventually, the near-native speakers recover from this stage of indeterminacy. Once the syntax is stable in the endstate grammar, the pragmatic factors are understood to a practically native-level. They start understanding that, in spite of the overall preference for the unmarked EVT order, pragmatic factors do regulate Spanish psych-verb constructions to a certain extent. This indicates that only when both pragmatic factors and the frequency and unmarked nature of the EVT configuration are taken into account will L2 learners be able to behave like native speakers. The behavior of the near-native speakers differs in such a minimal way from the control group, which I believe it is fair to say that this specific syntax-discourse property has in fact been acquired and it is not subject to fossilization (contra Sorace and Filiaci, 2006; Belletti et al., 2007; Valenzuela, 2006 and in line with Rothman, 2009; Bohnacker, 2010).

4. General discussion

For the past two decades, numerous researchers have constructed their research programs around the idea that at least some learnability and/or performance challenges in SLA are connected with interface properties. However, tempting as it might be to join the proponents of such an appealing theory, the empirical results of the present study cannot be straightforwardly explained solely on the basis of what the IH claims. More accurately, it is not *uniquely* within interfaces where attested problems reside since there are certain aspects of the acquisition process than remain unexplained by appealing to the notion interface vulnerability alone.

This project attempted to answer the following research question: Do the predictions of the Interface Hypothesis hold for the acquisition of Spanish psych-verbs? I will provide an answer to this question by answering individually the three subquestions presented in section 2.

(1) Can L2 learners acquire properties of Spanish psych-verbs that belong to internal interfaces? In experiment 1, I targeted this question by testing a property that belongs to the syntax-semantics interface: agreement patterns on psych-verb constructions, which required understanding of morphology, syntax and semantics. The results show that near-native speakers, advanced and intermediate learners understand the non-canonical thematic and agreement relations of psych-verbs. However, low-proficiency speakers struggle with the morphosyntactic characteristics of psych-verbs. Based on the results of experiment 2, these difficulties seem to arise from a problem at the level of the syntactic representations. This, in principle, does not directly contradict the IH since the IH does not preclude this type of pattern in low-proficiency learners. However, it is these results in conjunctions to the findings of experiment 2 what becomes problematic for the predictions of the IH.

(2) Can L2 learners acquire properties of Spanish psych-verbs that belong to external interfaces?

This question was answered through the findings of experiment 2, which tested a syntax-discourse interface property: pragmatically-derived word order. This experiment showed an interesting U-shaped acquisition pattern, which uncover several facts about learners' access to syntax-pragmatics phenomena. While the near-native group showed a target-like behavior, this was not the case for

intermediate and advanced speakers. Conversely, low-proficiency speakers seem to understand pragmatic properties connected with psych-predicate constructions. As explained in section 3.3.4, this is related to the fact that the pragmatic conditions that regulate the pragmatically-driven order in Spanish are related to a universal principle: the given-before-new principle, which low-proficiency speakers are able to apply in spite of (or actually, thanks to) their syntactic deficiencies. These findings, specifically, the asymmetry we see in the low-proficiency speakers who favor pragmatics (i.e. external-interface properties) over syntax (i.e. internal-interface properties) cannot be easily accommodated within the predictions of the IH.

(3) Which of these types of interfaces seems to be more vulnerable in L2 acquisition?

Unfortunately, there is not a straightforward answer to this question. Different interfaces seemed to pose diverse types of challenges to different groups for various reasons. So, the distinction between external and internal interfaces and its connection to vulnerability in L2 acquisition is not as obvious as stated by the proponents of the IH. As I mentioned before, whereas low-proficiency speakers have problems with internal interfaces, intermediate and advanced learners find discursive constraints particularly challenging. And this can only be explained if we take into account several factors (e.g. transfer) that influence the acquisition process at each of its different levels in addition to the type of interface to which the property being tested belongs.

Thus, the IH cannot clearly explain the asymmetries presented above. What I found in my research is similar to what Lozano & Mendikoetxea (2010) found in their study of postverbal subjects: that pragmatics can precede syntax in second language acquisition for various reasons. In this particular case, this is due to the availability of a universal principle that is accessed presumably through the L1. Consequently, the IH's prediction that narrow syntax and internal interface properties should be less problematic than properties that belong to external interfaces does not hold in view of the present data. This forces us to reevaluate the validity of the division between internal and external interfaces in second language acquisition and warn us about the tendency to overextend the challenges of a particular external interface property (e.g. null vs. overt subjects) to all of the properties that belong to that particular interface (e.g. syntax-pragmatics) or type of interface (i.e. external interfaces).

5. Conclusion

The current study shows that whereas external interfaces present a certain level of difficulty for some groups of L2 learners, other participants (particularly, the low-proficiency learners) are sensitive to pragmatic factors in spite of their lack of mastery of the morphosyntax of these constructions. Thus, external interfaces are problematic for L2ers but not more so than internal interfaces. Additionally it is not a necessary condition that syntax will precede the understanding of pragmatic phenomena. Instead, pragmatics can come for free in L2 acquisition while the learner still struggles with the target syntactic templates. Consequently, the IH needs to go outside interface vulnerability and evaluate other factors in the acquisition process if it attempts to be a sound theoretical proposal able to explain the disparate empirical findings in current L2 research.

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