The logical problem of second language acquisition of argument structure: Recognizing aspectual distinctions in Spanish psych-predicates

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Abstract

Aims and objectives/purpose/research questions: This article explores the issue of second language (L2) acquisition of argument structure as it relates specifically to Spanish psych-verbs. These predicates are classified according to their distinct aspectual nature, which corresponds to different morphosyntactic properties. This study tests L2 learners’ ability to understand these subtle distinctions in spite of the impoverished input to which they are exposed and the lack of instruction and first language (L1) transfer.

Design/methodology/approach and data and analysis: Through two scalar grammaticality judgment tasks, 65 native English learners of Spanish across four proficiency levels showed a good understanding of the morphosyntactic reflexes that distinguish eventive and stative psych-verbs.

Findings/conclusions: Since these properties could neither have been learned through instruction nor transferred from the L1 or accessed straightforwardly from the input, learners must have resorted to universal mappings between meaning and syntax in order to achieve these target-like patterns of behavior.

Originality: Although the acquisition of argument structure has been the topic of a considerable amount of early research in the field, this article looks at a completely novel instantiation of argument structure and its learnability.

Significance/implications: Consequently, it contributes with new data to the long-standing debate on the poverty-of-the-stimulus (POS) argument by supporting positions that contend that L2 acquisition is characterized by a logical problem and that L2 learners can successfully overcome this POS by resorting to universal principles.

Keywords
Argument structure, psych-verbs, aspect, eventive/stative, antipassive se, word order, logical problem of second language acquisition, poverty-of-the-stimulus argument

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Introduction

The aim of this article is to explore the second language (L2) acquisition of argument structure by native English Spanish L2 learners (L2ers). Researchers working on L2 argument structure acquisition have focused on several phenomena, such as the dative alternation (Bley-Vroman & Yoshinaga, 1992) and transitivity alternations (Montrul, 2000, 2001). However, the properties studied in this article have not been previously investigated. In particular, this study tries to determine whether L2ers are aware of the subtle aspectual distinctions that characterize different classes of psych-verbs and how these are encoded in their respective morphosyntactic configurations. Based on the results of the two tasks presented here, the role of universal principles is regarded as an essential element in this acquisition process, which cannot be explained entirely in terms of first language (L1) transfer, instruction or transparent extraction from the input. In this article, I first present the theoretical issue under investigation, that is, the logical problem of argument structure acquisition. Secondly, I describe the phenomenon studied in the current project (Spanish psych-verbs). Thirdly, I provide a brief review on the literature on argument structure acquisition. Fourthly, I report on the empirical study. Finally, the article ends with some concluding remarks.

The theoretical problem: The logical problem of argument structure acquisition

The logical problem of language acquisition and the poverty-of-the-stimulus argument

The logical problem of language acquisition or the poverty-of-the-stimulus (POS) argument was first proposed for L1 acquisition (Chomsky, 1965, 1981; Pinker, 1984, 1994). The question that led to this proposal was the following: How does the child achieve an adult language production and comprehension system if the input available to him is insufficient? In this context, what is meant by “insufficient” is that the input does not provide enough positive evidence in order to account for the range of subtle linguistic phenomena that children acquire. Advocates of Universal Grammar (UG) have proposed this innate language program as the answer to the logical problem of language acquisition (Gleitman, 1990; Grimshaw, 1981; Landau & Gleitman, 1985; Pinker, 1989). If we believe that children’s grammars are constrained by UG, then the rapid acquisition of language is explained by the fact that UG restricts the child’s language choices to only those possible in natural languages. It is true, however, that for other scholars there is no such a thing as a POS problem (Cowie, 1999; Pullum & Scholz, 2002; Scholz & Pullum, 2002). For these researchers, the process of language acquisition is fully data-driven, which removes the need to resort to any mechanism to compensate for an impoverished input. Conversely, generative linguists contend that neither deductive reasoning nor sophisticated analogy can be incorporated to cover all the facts of grammar that children wind up having.

L2ers potentially face a similar POS problem (Schwartz, 1998). They need to acquire abstract properties of the target language taking as a starting point an impoverished input in which these properties are not instantiated. However, some researchers (e.g. Bley-Vroman, 1990, 2009; Meisel, 1997, 2011) have argued that UG is inaccessible after a particular age, that is, beyond a particular critical period. As a result, adults only have access to principles of UG parasitically via their L1 grammar. A consequence of this line of argumentation is that there is no logical problem of acquisition characterizing adult L2 acquisition, predicting that new properties in the L2 that cannot be transferred from the L1 have no recourse but to remain represented differently in the adult acquired grammar.
Thus, in order to test if interlanguage grammars are constrained via direct accessibility to UG in adulthood, there is a necessary set of requirements that the testing situation has to hold (Rothman, 2008; Rothman & Iverson, 2008; Schwartz & Sprouse, 2000).

(i) The construction being investigated needs to be underdetermined by the L2 input. That is, this construction cannot be acquired by means of instruction; rather, observation based on frequency and statistical analysis or any other general language mechanisms must be utilized.

(ii) This construction needs to work differently in the L1 and the L2. That way, we can rule out the possibility that the learners are transferring the knowledge from the L1.

More specifically, Pullum and Scholz (2002, p. 19) developed a series of criteria that need to be met in order to prove empirically that a specific phenomenon represents a true POS phenomenon.

(i) Acquirendum characterization: Describe in detail what is alleged to be known.
(ii) Lacuna specification: Identify a set of sentences such that if the learner had access to them, the claim of data-driven learning would be supported.
(iii) Indispensability argument: Give reason to think that if learning were data-driven then the acquirendum could not be learned without access to sentences in the lacuna.
(iv) Inaccessibility argument: Support the claim that tokens of sentences in the lacuna were not available to the learner during the acquisition process.
(v) Acquisition evidence: Give reason to believe that the acquirendum does in fact become known to learners.

In the section Psych-verbs argument structure as a POS phenomenon I will argue that the phenomena presented in this article fully meet these criteria, providing empirical evidence for POS support.

The logical problem of argument structure acquisition

First of all, there are different proposals on what argument structure is and how it should be defined. While for some, it is simply a list of arguments (Levin & Rappaport-Hovav, 1995), for others, this list is itself structured. For instance, Grimshaw (1990, p. 4) defines argument structure as “a structured representation that represents prominence relations among arguments. The prominence relations are jointly determined by the thematic properties of the predicate (via the thematic hierarchy) and by the aspectual properties of the predicate.” More recently, Bowerman and Brown (2008, p. 1) define it as “the array of participants associated with verbs and other predicates and how these participants are mapped to syntax.” For instance, in (1) the transitive verb estudiar “to study” subcategorizes for two arguments: Christina is the Agent and Math is the Theme.

(1) Christina studies Math

Secondly, while there are certain regularities in the mapping of argument structure to syntax (e.g. agents tend to be subjects) (Keenan, 1976; Perlmutter & Rosen, 1984), there is also a great deal of variation in the way argument structure is represented both in a specific language and crosslinguistically (Bowerman & Brown, 2008). Thus, the acquisition of argument structure in L2 acquisition represents a logical problem of language acquisition because the input accessible to the learner is impoverished. In addition, because the L1 and the L2 mappings do not coincide for the
properties tested in these experiments, we could expect to find both overgeneralization and under-
generalization problems. Next, I proceed to review these issues as they relate specifically to the
acquisition of Spanish psych-verbs.

The phenomenon under investigation: Argument structure of psychological predicates

The classification of psychological predicates

Psychological predicates are verbs that express psychological or emotional states. They represent
a typical case of the lack of a one-to-one mapping between meaning and syntactic structure since
their similar meanings are represented through distinct syntactic configurations. Belletti and Rizzi
(1988) provided the first tripartite classification of these verbs in Italian, which has been partially
replicated for Spanish (Franco & Huidobro, 2003; Parodi-Lewin, 1991). In broad terms, Class I
involves a regular transitive construction with an Experiencer subject and a Theme object (2). Class II
is causative in nature with a Causer in subject position and an Experiencer in object position (3a). Finally, Class III includes unaccusative constructions (4):

(2) María odia las verduras
    María hates-3sg. the vegetables
    *Maria hates vegetables

(3) María preocupó a Juan
    María worried-3sg. to Juan
    María worried Juan

(4) A María le encantan los zapatos
    To María le-dat. cl. love-3pl. the shoes
    Shoes are pleasing to María/María loves shoes

Class I should not present problems for L2 learners since it has a canonical mapping of the-
matic roles to syntactic positions (i.e. the Experiencer maps to the subject position and the Theme
maps to the object position). In contrast, Class III has a reverse mapping of thematic roles to syn-
tactic positions (i.e. the Experiencer maps onto the object position and the Theme maps onto the
subject position). Aspectually, Classes I and III are stative, while Class II is eventive. Acquiring
the difference between Class II and Class III can be challenging because there are certain Class II verbs
that alternate between Class II (eventive) (5) and Class III (stative) depending on the context in
which they appear (Montrul, 1998).

(5) María se preocupa por sus notas (Class II)
    María se worry-3sg. for her grades
    María worries about her grades

(6) A María le preocupan sus notas (Class III)
    To María le worry-3pl. her grades
    Her grades worry María

As Arad (1998) argued, the difference between the eventive and the stative interpretations is that
whereas the eventive involves a change of state in the Experiencer, the stative does not. The stative
reading includes a perception by the Experiencer that causes him to be in a specific mental state. So the predicate in the sentence *Juan annoyed Ana* could be interpreted as an eventive predicate if *Juan* did something that caused *Ana* to be annoyed. On the other hand, if *Ana* simply gets annoyed with the idea or the presence of *Juan*, then the sentence has a stative interpretation.

This distinct aspectual nature results in a different morphosyntactic representation. First of all, it is important to understand that whereas Class III verbs are individual-level predicates (ILPs), Class II verbs are stage-level predicates (SLPs). Carlson (1977) considered that SLPs are properties of stages defined as a “spatio-temporal slice” of an individual, whereas ILPs are properties of individuals. For instance, Kratzer (1995, p. 125) proposes: “That I am sitting on this chair is a very transitory property of mine. That I have brown hair is not. So, the fact that I have brown hair is a property of me. On the other hand, the fact that I am sitting on a chair corresponds to a stage of my individual person.” Kratzer (1989, 1995) analyzes the distinction between ILPs (Class III) and SLPs (Class II) in syntactic terms. In her view, SLPs have a Davidsonian event argument that denotes events or spatiotemporal locations. In contrast, ILPs lack this position. Parodi-Lewin (1991) applied this same analysis to Classes II and III of Spanish psych-verbs. She proposed that while Class II has a [+eventive] argument position (which is only filled when the verb has an eventive interpretation), this position lacks in Class III. This entails some direct consequences for the word order configurations allowed by these predicates; because in the eventive syntactic configuration there is an extra event argument position, which is filled by a [+eventive] argument, it is not possible for the Experiencer to raise. Consequently, eventive psych-verbs only allow the Causer-Verb-Experiencer (CVE) configuration (7). On the other hand, the lack of this [+eventive] position in stative Class III predicates allows both the Theme and the Experiencer to raise. Thus, these predicates allow two possible word order configurations: Experiencer-Verb-Theme (EVT) and Theme-Verb-Experiencer (TVE) (8). The acquisition of these different word order configurations will be explored in experiment 1.

(7) Class II:

a. María preocupó a Juan (CVE)  
   María worried-3sg. to Juan

b. *A Juan preocupó María (EVC)  
   To Juan worried María
   *María worried Juan

(8) Class III:

a. A María le gusta Juan (EVT)  
   To María le like-3sg. Juan

b. Juan le gusta a María (TVE)  
   Juan le like to María
   *Juan likes María

At the morphological level these two classes are also distinguished. Here I will focus on one specific difference: the use of antipassive *se*. Antipassive *se* is a decausativizer/detransitivizer (Franco, 1990) and, as such, it can only co-occur with the causative class of psych-verbs (Class II) since this class involves a Causer argument and follows a transitive pattern (9). On the contrary, Class III lacks a Causer argument and does not have a transitive configuration, since it lacks a direct object (10). The acquisition of antipassive *se* will be studied in experiment 2.
Although the classification of psych-verbs into stative and eventive predicates is universal, the way this distinction is encoded differs from language to language. For instance, English has stative Class III psych-verbs (*Chocolate pleases children*), although they are infrequent. In addition, it has psych-predicates that alternate between an eventive and a stative reading (*María worries about her grades versus Her grades worry María*). However, there are some important differences between the two languages. English does not have flexible word order like Spanish and it lacks clitics. Hence, it has to resort to different strategies to encode the stative/eventive distinction in psych-verbs (Arad, 1998). Thus, not only has the learner to understand which verbs are stative and which ones are eventive, but also s/he has to decipher how these meanings are encoded in the L2.

**Psych-verbs argument structure as a POS phenomenon**

In this section, I will provide evidence that the properties tested in this experiment do in fact represent a case of POS as defined by the criteria established by Pullum and Scholz (2002, p. 19).

(i) Acquirendum characterization.

a. Experiment 1: Learners know that stative psych-verbs have two possible word order configurations and eventive ones have only one.

b. Experiment 2: Learners know that stative psych-verbs do not allow antipassive *se* and eventive ones do.

(ii) Lacuna specification.

a. Experiment 1: Sentences with stative psych-verbs with EVT and TVE configurations and sentences with eventive verbs with CVE configuration.

b. Experiment 2: Sentences with antipassive *se* with eventive psych-verbs.

(iii) Indispensability argument: Although it is true that access to the sentences in lacuna might be helpful for both experiments, this piece of positive evidence is insufficient to succeed in the acquisition of the complex patterns tested on these experiments as it is argued in (iv).

(iv) Inaccessibility argument: My argument is that, although these sentences are partially available to the learner, the complexity of the nuanced aspectual distinctions is not easily extractable from the input by means of analogy or deductive reasoning for the following reasons.

a. Experiment 1: Sentences with TVE order are extremely infrequent in the input. Actually, an analysis of current L2 textbooks done by the author shows that these sentences are completely inexistent in pedagogical materials designed for L2ers. Also, causative sentences (CVE) are uncommon, since textbooks focus on stative psych-verbs. In addition, the incorrect order with Class II verbs (*A Nico asustó Ana ‘Ana scared Nico’*) could be grammatical under a focus fronting interpretation. Thus, these
seemingly impossible sentences exist in the input in a specific pragmatic context. A similar situation is true for TVE, which is subject to specific pragmatic conditions (i.e. when the Theme is a salient topic in the discourse). Consequently, having some of these sentences available in the input will not be enough to acquire the complex pragmatic restrictions that regulate them.

b. Experiment 2: Sentences with *se* with eventive psych-verbs are abundant in the input. The problem is that, given the nuanced aspectual distinction between Class II and Class III verbs, the learner could, in principle, overextend *se* to Class III. Also, sentences with *se* and stative verbs exist in the input with a reflexive or reciprocal meaning. So, the task of figuring out which verbs allow *se* and which do not and which type of *se* is allowed by each one, is not something that could be straightforwardly extractable from the input.

(v) Acquisition evidence.

a. Experiment 1: The results of this experiment indicate that L2ers across all of the proficiency levels tested were able to recognize the word order distribution of Spanish psych-verbs.

b. Experiment 2: The findings in this experiment suggest that L2ers across all of the proficiency levels tested understood that antipassive *se* is only compatible with eventive psych-predicates.

The acquisition of argument structure

Different topics have been explored in this area, such as the dative alternation (Bley-Vroman & Yoshinaga, 1992; Wolfe-Quintero, 1992), transitivity alternations (Montrul 2000, 2001), the different conflation patterns of motion verbs (Inagaki, 2002) or unaccusative/unergative configurations (Hirakawa, 1995).

As for psych-verbs, the specific topic of this study, several studies examine the challenges L2ers experience when acquiring the non-canonical alignment of thematic roles to syntactic positions in these predicates (Juffs, 1996; Montrul, 1998; White et al. 1999; inter alia). However, the hybrid behavior of Class II and its overlapping characteristics with Class III has principally been studied in the L2 acquisition literature by Rubio (2000, 2001) from a pedagogical perspective. His goal was to determine whether traditional instruction or processing instruction (VanPatten, 1996) was more beneficial for acquiring a specific property of psych-verbs: the use (or lack of use) of the clitic in Classes II and III. The traditional approach consisted of a grammatical explanation, followed by activities that required students to use the just-learned structures immediately (i.e. output-focused approach). On the other hand, processing instruction is an input-focused approach in which the teacher’s explanations are followed by activities set out to analyze and understand the L2 input at a deeper level. Not only did Rubio find an advantage of processing instruction over traditional instruction but he also found that processing instruction had beneficial results in both interpretation and production. Since Rubio’s research focused on a specific aspect of this categorization problem (i.e. clitic case as a marker of lexical aspect), his pedagogical findings could be further evaluated with regard to the properties tested in these experiments.

Notwithstanding, little is known about whether learners do in fact acquire other properties that distinguish these two aspectual classes and what this means for the mental representation of these properties, which is what I intend to determine in this article.
The empirical study

Research questions

The goal of this study is to determine whether L2ers of Spanish understand the different aspectual nature of psych-verbs (Classes II and III), and how this is encoded in morphosyntactic terms. That is, can Spanish L2ers acquire the argument structure alternations that take place in Classes II and III of psych-predicates? For that purpose, the word order alternations of psych-verbs and the use of antipassive *se* with these predicates will be tested on these two classes. In particular, the study targets two very concrete questions.

(11) Are L2ers aware of the fact that Class III has two possible word order configurations while Class II allows only one? (see (7) and (8)). Here, I will address two additional questions:

a. Do L2ers distinguish between the ungrammatical status of Experiencer-Verb-Causer (EVC) sentences in Class II and the grammatical status of TVE sentences in Class III?

b. Do L2ers distinguish between the grammatical order (CVE) in Class II and the unmarked order (EVT) in Class III?

(12) Are L2ers aware of the fact that Class II allows antipassive *se* whereas Class III does not? (see (9) and (10)).

Participants

A total of 101 subjects participated in this study, of which 36 monolingual educated native speakers (NSs) from Spain constituted the control group. The experimental group consisted of 65 non-native speakers of Spanish whose first (and only) language was English. The L2ers were assigned to different proficiency groups according to their score in an independent proficiency test, a section of DELE (Diploma de Español como Lengua Extranjera), (Near-native speakers (NNSs) = 16; Advanced = 21; Intermediate = 16; Low = 12). All participants started to learn Spanish at about the age of 14 in a classroom setting. In addition, some learners spent some time in Spanish-speaking countries through study-abroad programs. The subjects were unaware of the focus of the study.

Methodology

This study encompasses two grammaticality judgment tasks, 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 experiment. 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. (1) The sentence sounds really bad. You would never use it and you cannot imagine any NS using it. (2) The sentence sounds bad to you but not as bad as 1. You can imagine some NSs 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 and you can imagine NSs using it. Each experiment was organized as follows: a brief paragraph (which provided a context for the sentences that the subject had to rate subsequently) showed up in the computer screen. Next, the sentences were presented in consecutive order; consequently, the subject had to rate each sentence in isolation. Subjects were not allowed to go back or change their answers. All items were randomized.
In experiment 1, there were 48 sentences; 24 critical items and 24 fillers. Half of the test items contained sentences with Class II verbs and the other half contained Class III verbs. The contexts in these tasks were created in a way that underscores the aspectual properties of each class respectively. Thus, for Class II verbs, the context would be unambiguously interpreted as eventive (13). In turn, the context for Class III verbs highlighted the stative nature of these predicates (14).

(13) Nico estaba estudiando silenciosamente cuando de repente Ana entró en la habitación
Nico was silently studying when Ana suddenly came into the room

a. Ana asustó a Nico (CVE)
   Ana scared-3sg. to Nico
   *Ana scared Nico

b. *A Nico asustó Ana (EVC)
   To Nico scared-3sg. Ana
   Ana scared Nico

(14) Victoria cree que a su hermano le pasa algo. No está haciendo los deberes y está faltando a clase. Eso es muy raro en él porque siempre ha sido un chico muy responsable.
Victoria thinks that something is going on with her brother. He is not doing his homework and he is missing class. It is strange weird because he has always been a very responsible boy

a. A Victoria le preocupa su hermano (EVT)
   To Victoria le-dat. cl. worry-3sg. her brother
   Her brother worried Victoria

b. Su hermano le preocupa a Victoria (TVE)
   Her brother le-dat. cl. worry-3sg. to Victoria
   Her brother worried Victoria

Something important to take into account is that in (13), (13a) is completely grammatical whereas (13b) is completely ungrammatical according to theoretical accounts (Parodi-Lewin, 1991). In contrast, in (14), while both constructions are grammatical, (14a) is the unmarked configuration (Franco & Huidobro, 2003). So, when comparing (13a) to (14a) we expect both constructions to get similar ratings, since both are grammatical. However, when comparing (13b) and (14b) the prediction would be that the ratings for (14b) would be significantly higher than for (13b), since (14b) is grammatical (although marked) and (13b) is simply ungrammatical.

Furthermore, in order to prevent subjects from assigning sentences an undesirable prosodic pattern, the sentences were recorded with neutral intonation. Therefore, subjects heard the sentences at the same time that they read them on the screen. This manipulation was introduced to meet a specific purpose: Class II constructions could be grammatical in an EVC order if the Experiencer is stressed; in this case, it constitutes a case of focus fronting (A NICO, asustó Ana “Ana scared NICO”) (Slabakova, Rothman, & Kempchinsky, 2011). In order to avoid this interpretation of the sentence, participants listened to all of the sentences with neutral intonation.

In experiment 2, there were also 24 critical items and 24 fillers. Half of the test items included Class II psych-verbs, which allow the se-construction, while the other half included Class III predicates, which do not. Therefore, in (15), both options are grammatical while in (16) the option with antipassive se is ungrammatical.
(15) Todos los departamentos de letras en las universidades están cerrando. Los chicos ya no quieren estudiar arte o literatura. Ahora todo el mundo estudia negocios

All of the humanities departments at different universities are closing. Students don’t want to study art or literature. Now, everyone studies business

a. A los jóvenes no les interesa la cultura
   To the young no les-dat cl interest-3sg the culture
   Young people are not interested in culture

b. Los jóvenes no se interesan por la cultura
   To the young no se-antipassive interest-3pl for the culture
   Young people are not interested in culture

(16) En esta universidad todo el mundo quiere salir de fiesta pero nadie presta atención a las cosas importantes

At this university, everyone wants to go out but nobody pays attention to the important things

a. A nadie le importa la política
   To nobody le-dat cl care the politics
   Nobody cares about politics

b. *Nadie se importa sobre la política
   Nobody se-antipassive care about the politics
   Nobody cares about politics

Results

A repeated-measures analysis of variance (ANOVA) was conducted to determine the relation between 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 (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).

In experiment 1, first I focus on the first research question: Do non-native speakers distinguish between the ungrammatical status of EVC sentences in Class II (17) and the grammatical status of TVE sentences in Class III (18)?

(17) Class II: *A Nico asustó Ana (EVC)
   To Nico scared-3sg. Ana
   Ana scared Nico

(18) Class III: Su hermano le preocupa a Victoria (TVE)
   Her brother le-dat. cl. worry-3sg. to Victoria
   Her brother worried Victoria

In Figure 1, we can see that the control group showed an awareness of the word order patterns in different classes of psych-verbs, although the distinctions were not as categorical as described in theoretical accounts. As predicted, TVE (Class III) was rated significantly higher than EVC (Class II) ($\chi^2 = 36.56, p < .0001$) by the NSs. This indicated that, for NSs, the semantically different classes are equally different at the syntactic level. Interestingly, the mean for EVC order
is not particularly low (mean = 2.25), although it received an ungrammatical rating (see the Discussion section for an explanation). As was the case for the NSs, NNSs also showed knowledge of the word order restrictions in psych-predicates by scoring TVE (Class III) significantly higher than EVC (Class II) ($\chi^2 = 66.29, p < .0001$). The advanced speakers also respected the word order patterns presented by Classes II and III by rating TVE in Class III significantly higher than EVC in Class II ($\chi^2 = 72.49, p < .0001$), as was the case for intermediate ($\chi^2 = 4.30, p = 0.0382$) and low-proficiency learners ($\chi^2 = 25.80, p < .0001$).

Next, I will address the second question: Do non-native speakers distinguish between the grammatical order (CVE) in Class II (19) and the unmarked order (EVT) in Class III (20)?

(19) Class II: Ana asustó a Nico (CVE)
   Ana scared-3sg. to Nico
   *Ana scared Nico*

(20) Class III: A Victoria le preocupa su hermano (EVT)
   To Victoria le-dat. cl. worry-3sg. her brother
   *Her brother worried Victoria*

For the control group, neutral order was significantly better with Class III than Class II predicates ($\chi^2 = 10.18, p = 0.0014$). However, we can see in Figure 2 that the mean ratings are really close (EVT: 4.92; CVE: 4.75). The same is true for NNSs ($\chi^2 = 12.60, p = 0.0004$). As for advanced and intermediate learners, CVE/EVT were scored equally high in both classes ($\chi^2 = 2.56, p = 0.1096; \chi^2 = 0.23, p = 0.6321$). Finally, with low-proficiency speakers, the neutral order gets higher ratings with Class II verbs than Class III verbs ($\chi^2 = II 24.26, p < .0001$). This is something particular to this group, which could be the result of influence from the subject–verb–object (SVO) order, which is dominant in the L2ers’ L1.

Next, I present the results of experiment 2 by focusing on the first research question: Do L2ers prefer antipassive *se* in Class II (21) over Class III (22)?

(21) Class II: Los jóvenes no se interesan por la cultura
To the young no se-antipassive interest-3pl for the culture
Young people are not interested in culture

(22) Class III: *Nadie se importa sobre la politica
Nobody se-antipassive care about the politics
Nobody cares about politics

As can be seen in Figure 3, the control group made a clear distinction between Classes II and III regarding the use of the antipassive se. Sentences with antipassive se containing Class III psych-verbs were rated significantly lower than those containing Class II psych-verbs ($\chi^2 = 1799.7, p < .0001$). NNSs were also sensitive to the use of the antipassive se. The se morpheme received significantly higher ratings with Class II than with Class III psych-verbs ($\chi^2 = 172.89, p < .0001$). This
was also true for advanced ($\chi^2 = 192.10, p < .0001$), intermediate ($\chi^2 = 21.18, p < .0001$) and low-proficiency learners ($\chi^2 = 11.85, p = 0.0006$).

**Discussion**

In experiment 1, both native and non-native speakers recognized that whereas TVE is grammatical in Class III, EVC is ungrammatical with Class II. This indicates that L2ers have knowledge of the word order alternations available for different classes of Spanish psych-predicates. However, EVC sentences, predicted to be fully ungrammatical, were rated higher than expected by all groups, including the NSs. This could have been the result of participants assigning this sentence a focus fronting interpretation (*A NICO asustó Ana* “Ana scared NICO”) where the sentence without clitic would be actually grammatical (Slabakova et al., 2011). With respect to EVT/CVE sentences, natives and near-natives showed a preference towards EVT (Class III) over CVE (Class II), which could be the result of several factors: (a) a preference for eventive sentences to include a dative clitic, which is typical in *leísta* dialects (*Ana le asustó a Nico* instead of *Ana asustó a Nico* ‘Ana scared Nico’); or (b) contamination from the other experiments included in the battery of tests, since the configuration EVT was tested in all of the experiments, but CVE was only tested in the current task. On the other hand, the fact that the low-proficiency group gave higher ratings to CVE (Class II) than EVT (Class III) shows this group’s overreliance on their native language’s SVO syntactic frame.

The behavior of non-native learners in this experiment and the way they pattern with NSs have direct implications for L2 mental representations. The fact that EVC is always given the lowest ratings is consistent with Parodi-Lewin’s (1991) argument. Since the [+eventive] argument position projected for Class II verbs is filled by a [+eventive] argument when sentences have an eventive interpretation, the Experiencer cannot be hosted in that position and, as a result, it cannot raise. In Class III, however, the Theme can freely move since this class lacks the [+eventive] argument position. By analyzing the performance data of L2ers, we can conclude that their mental representation of Class II and Class III psych-verbs is in fact different, which becomes evident in L2ers’ understanding of the syntactic reflexes of these two distinct aspectual classes.

A key question is: how do L2ers arrive at these conclusions? Firstly, neither the fact that psych-verbs can be classified into different classes according to their aspectual properties, nor the fact that these classes have distinct morphosyntactic characteristics is ever introduced in the L2 classroom. Thus, non-native speakers’ understanding of the word order patterns compatible with different classes of psych-verbs is not the result of pedagogical intervention. In addition, the TVE configuration is rare and, actually, non-existent in pedagogical materials. Secondly, the restrictions that regulate word order in psych-verb constructions are quite complex, which make the L2 input fairly opaque: EVT and TVE are both grammatical with Class III predicates but they are so to different degrees since EVT is the unmarked order. An additional complicating factor is the fact that these orders are regulated by pragmatic factors (Franco & Huidobro, 2003; Gómez Soler, 2012). Furthermore, Class II is supposed to only have one possible combination of arguments (CVE). However, the order EVC could be grammatical under a focus fronting interpretation. In the third place, the L2ers’ L1 could not guide them in this particular property. English has the same stative/eventive alternation with psych-verbs; however, the reflexes of this distinction are different in English and Spanish. In English, both Classes II and III have only one possible order: CVE (*Ana scared Nico*) and TVE (*Shoes are pleasing to María*), respectively. Consequently, the restricted word orders of the participants’ L1 will not provide them with enough information to understand the syntactic subtleties of these predicates in Spanish. Thus, the only recourse learners could have
guiding their acquisition is the universal regularities that link the meanings eventive and stative with particular syntactic structures (Kratzer, 1995; Parodi-Lewin, 1991).

Next, the results of experiment 2 show that L2ers are aware of the restrictions related to the use of antipassive se with Spanish psych-predicates: Overall, sentences with antipassive se received higher ratings with Class II verbs than with Class III. This finding shows that subjects have a solid understanding that the decausativizer se restricts the verb valency by one and that its use is restricted to causative Class II verbs. In general, L2ers complied with Spanish natives’ intuitions; however, they did deviate sometimes from the native patterns of response: although intermediate and low-proficiency participants made a significant distinction between the use of antipassive se in Class II and III, their ratings for antipassive se with Class III verbs (*Juan se gusta con María ‘Juan likes María’) are surprisingly high considering this construction is completely ungrammatical. It can be hypothesized that they confused antipassive se and reflexive anaphoric se or reciprocal se. This is possible because, whereas antipassive se is only grammatical with Class II psych-verbs, the reflexive and reciprocal clitics are grammatical with Classes II (23) and III (24) (Franco, 1990).

(23) María se enfadó (consigo misma)
    María reflexive se got angry-3sg.
    (with herself)
    Maria got angry at herself

(24) María se encanta (a sí misma)
    María reflexive se loves-3sg. (to herself)
    María loves herself

Even though it is hard to determine how plausible this hypothesis is without further testing, it is clear is that the difficulties of the lower-proficiency learners are connected with the multiplicity of meanings and functions that the pronoun se plays in Spanish grammar (Batchelor & Pountain, 1992; Solé & Solé, 1987). This morpheme, which is connected to argument structure, varies in meaning and function depending on the type of predicate (unergative (e.g. to talk), unaccusative (e.g. to arrive), transitive (e.g. to eat), alternator (i.e. those that have a transitive and an anticausative interpretation (e.g. to break)) and the number of arguments involved in a sentence as well as their thematic roles. Hence, the homophonous se constructions might have blurred the judgments of the two less proficient groups.

The question of how L2ers could have achieved this (almost) native behavior needs to be explored. With respect to instruction, as in the case of experiment 1, the fact that non-native participants respected the restrictions imposed by antipassive se on psych-predicates is remarkable, since this issue is never presented or practiced in the L2 classroom. In addition, the antipassive construction is not easily extractable from the input because of the much nuanced semantic distinction between the verbs that do and do not allow it and because of the multiple meanings of se, which I explain in detail below. Furthermore, we have to consider the potential role of participants’ L1 in aiding them to restrict their options in the current experiment. It is conceivable that subjects could have transferred their knowledge from their L1 to complete this task since, in English, this phenomenon is also captured by an overt morpheme; namely, a get passive (Toth, 2000, p.180):

(25) \(\check{\text{María se preocupó}}\)
    \(\check{\text{Maria got worried}}\)
However, this transfer of knowledge is not as straightforward as it seems at first sight. As discussed, the pronoun *se* in Spanish has multiple counterparts in English ranging from zero morpheme to the *get* passive, as we just saw, in the case of anticausative *se*, a reflexive pronoun (e.g. himself) in the case of reflexive *se*, a reciprocal pronoun (e.g. each other) in the case of reciprocal *se*, and *be* passives in the case of passive *se*. So, since there is a one-to-many correspondence between Spanish and English with respect to the pronoun *se*, guidance from the L1 is not completely transparent: it would certainly require the learner to achieve a certain level of understanding of the antipassive construction as compared to other *se* constructions in Spanish before the L1 could provide any scaffolding. Certainly, the L2er will need to develop sensitivity to the different classes of verbs (and their argument structure) and how these classes interact with the pronoun *se* in order to successfully acquire antipassive *se* with psych-verbs. Table 1 (a replication of Toth’s (1997, p. 25) table) illustrates how different types of *se* combine with different classes of verbs and their arguments taking into account also their thematic roles.

In general, the L2ers in this study distinguished between Classes II and III of psych-verbs at the morphological and syntactic level. Accordingly, they show knowledge of how subtle aspectual distinctions are encoded morphosyntactically in the L2. Because this type of knowledge could not be deduced form the input, transferred from the L1 or acquired through explicit learned mechanisms; the behavior of L2ers in these experiments seems to indicate direct access to principles that guide universally the grouping of predicates into semantic classes. This piece of empirical evidence adds to the body of literature (Dekydtspotter & Sprouse, 2001; Dekydtspotter, Sprouse, & Anderson, 1997, 1998; Schwartz & Sprouse, 1994, 1996, 2000) that supports positions that contend that L2 acquisition is characterized by a logical problem (Schwartz, 1998) and that L2ers can successfully overcome this POS by resorting to universal principles. By extension, the evidence presented here is problematic for those who argue that L2 acquisition is subject to a critical period (e.g. Bley-Vroman, 1989, 1990; Long, 2005). In fact, these findings suggest that there is not a critical period at least in the domain of morphosyntax as argued by Rothman (2008). Instead, L2ers are able to restructure their syntax and add new morphological possibilities to their L1 grammars (Sprouse, 2004).

### Table 1. The uses of *se* mapped across four major semantic classes.

<table>
<thead>
<tr>
<th>VERB CLASS and D-STRUTURE</th>
<th>Impersonal se</th>
<th>Passive se</th>
<th>Anticausative se</th>
<th>Reflexive/ reciprocal se</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unergatives: <em>nadar</em> (to swim)</td>
<td>✓</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>[NP [vP V]]</td>
<td>agent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unaccusatives: <em>llegar</em> (to arrive)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>[e [vP NP]]</td>
<td>theme</td>
<td>agent</td>
<td>agent</td>
<td>theme/ benefactive</td>
</tr>
<tr>
<td>Alternators: <em>romper</em> (to break)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>[e [vP NP]] or [NP [vP NP]]</td>
<td>agent</td>
<td>agent</td>
<td>agent</td>
<td>theme/ benefactive</td>
</tr>
<tr>
<td>Accusatives <em>ver</em> (to see)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>[NP [vP NP]]</td>
<td>theme</td>
<td>agent</td>
<td>agent</td>
<td>theme/ benefactive</td>
</tr>
</tbody>
</table>
Conclusion
Taking stock, the task of the L2er acquiring the argument structure alternations of Spanish psych-verbs would be daunting were s/he not guided by some universal principles, particularly regarding the grouping of predicates into semantic classes and the regularities provided by linking rules that map specific meanings to particular morphosyntactic structures. This is so because of three main reasons: (1) participants’ behavior cannot be explained through pedagogical intervention; (2) the guidance that the L1 could provide is very restricted; and (3) the input is underdetermined. In addition, their mental representation of these classes seems to be UG-constrained because the types of errors that participants made could be explained without resorting to the concept of wild grammars: they either stem from methodological issues or are connected with mapping errors.

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Notes
1. The distinction stative/eventive does not fully correspond with individual-level predicates/stage-level predicates. Whereas all individual-level predicates are stative, stage-level predicates can be both stative and eventive. However, only eventive predicates can be stage-level predicates.
2. Although this sentence could be grammatical with a reflexive meaning (e.g. She liked herself when she looked at herself in the mirror), what I am evaluating here is the impossibility of interpreting this sentence with an inchoative reading.
3. All sentences in the experiment were recorded with neutral intonation to avoid this phenomenon; however, I cannot be sure of what kind of prosodic interpretation participants were assigning to the sentences. Had I included test items with both neutral and focus fronting intonation, this could have helped me confirm this hypothesis that focus fronting is responsible for the high ratings of this type of test items.
4. I am not arguing that this aspect of grammar could not be taught in the L2 classroom. However, because of the ways current textbooks and pedagogical materials are designed, these subtleties of psych-verbs are never introduced in the classroom. Thus, I contend the learner would not be aware of these properties via formal instruction unless a teacher would have prepared special materials for this topic, which was not the case for the participants in this study.
5. This sentence could be grammatical with a reflexive meaning (i.e. Juan likes himself) but not as it is constructed in the current example.

References


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Inmaculada Gómez Soler has a Ph.D. from the University of North Carolina in Chapel Hill. Her research focuses on generative second language acquisition, particularly as it as it pertains to the syntax-semantics and syntax-pragmatics interface.