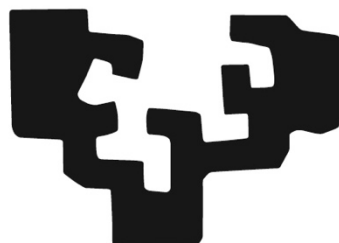


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*Word order preferences in Spanish transitive sentences:
the case of psychological verbs.*

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Abstract

The study of psychological predicates contributes to determine how semantic and syntactic information interacts. They are a type of predicates that allow different argument configurations (e.g. *Juan_{EXP} teme a María*; *A María_{EXP} le gusta Juan*). The current study aims to determine the preferences of word order of psychological verbs with dative experiencers in Spanish. I do this by replicating the experimental design in Gattei et al. (2015). I run a self-paced reading task with two variables: verb type (non-psych vs. psychological) and word order (SVO vs. OVS). Results indicate that there is an interaction between verb type and word order: faster reaction times were produced in sentences with psychological predicates with OVS word order, than in those with SVO word order. In the framework of the eADM, SVO word order in psychological predicates with dative experiencer causes a rearrangement of the first argument, provoking slower reaction times than the OVS word order.

Key words: Psycholinguistics, Psychological verbs, Sentence processing, Thematic roles, Word Order, Self-paced reading.

Psycholinguistic research studies how language is processed and, particularly, how syntactic information interacts with semantic information to understand “who did what to whom” (Gattei et al., 2018). Psychological predicates constitute a good area to study the relation between semantic and syntactic information. In Spanish, psychological predicates can present the experiencer argument as a subject with nominative case (a. *María_{EXP} teme a Pedro_{THEME}*) or as a prepositional phrase with dative case (b. *A Pedro_{EXP} le preocupa María_{THEME}*). The interaction between semantic and syntactic information does not work in the same way in (a) and in (b). In example (a), syntactic and semantic information coincides in the distribution and marking of arguments: *María* is the higher thematic role in the argument structure and it is the subject, the most prominent syntactic function in the sentence, hence this argument is put in first position. But in (b) the experiencer is not a nominative subject and it is instead the Theme that is morphologically marked as subject, though the dative marked argument appears preverbally and the nominative one postverbally against the canonical word SVO word order of the language. These different possibilities of mapping arguments of psychological predicates onto sentence frames begs the following questions: Which are the preferences of word order of psychological predicates? How does the semantic and the syntactic information interact in these predicates?

In order to determine the word order preferences in psychological predicates, this research seek to replicate the study carried out by Gattei et al. (2015). They seeked to test word order preferences in Spanish sentences with transitive verbs with and without psychological verbs (non-psych transitive verb: *La abuela le ruega a la bailarina de vestido blanco*; psychological transitive verb: *A la bailarina le apena la abuela de vestido blanco*). They ran a self-paced reading task with two conditions: word order (SVO vs. OVS) and verb type (non-psychological vs. psychological), in a experimental design containing four conditions: (a) non-psych verb / SVO: *La abuela le ruega a la bailarina de vestido blanco*; (b) non-psych verb / OVS: *A la bailarina le ruega la abuela de vestido blanco*; (c) psychological verb / SVO: *La abuela le apena a la bailarina de vestido blanco*; (d) psychological verb / OVS: *A la bailarina le apena la abuela de vestido blanco*. They found an interaction between verb type and word order: participants preferred SVO word order with non-psych verbs ((a) *La abuela le ruega a la bailarina de vestido blanco*) and a preference for OVS word order with psychological verbs ((d) *A la bailarina le apena la abuela de vestido blanco*). Gattei et al. (2015) argued that the SVO word order

in psychological predicates generates processing difficulties at subject position, generating larger reaction times than the OVS word order.

1. Theoretical background

Psychological verbs are those that express a psychological state (Belletti & Rizzi, 1988). Rizzi and Belletti (1988) argued that the argument structure of psychological predicates is Experiencer-Theme: the Experiencer is the individual who experiences the state described by the verb, and the Theme is the content or object of the mental state (Belletti & Rizzi, 1988). They argued that these two thematic roles can be projected onto a variety of syntactic structures, in which Experiencers can be mapped as subjects or objects (Belletti & Rizzi, 1988):

1. *Gianni_{EXP} teme questo.*

Gianni fears this

2. *Questo preoccupa Gianni_{EXP}.*

This worries Gianni

3.a *A Gianni_{EXP} piace questo*

To Gianni pleases this

3.b *Questo piace a Gianni_{EXP}.*

This pleases to Gianni

In Italian, the Experiencer can occupy the subject position (1 and 3.a) or the object position (2 and 3.b). The possibility of variation in the order of the arguments is exclusive of psychological verbs: the Experiencer is not always placed higher than the Theme in the argument structure, even though Experiencers are higher than Themes in the semantic hierarchy (Rizzi & Belletti, 1988). Psychological verbs as *piacere* (3.a, 3.b), with dative experiencer, allow two possible word orders: (3.a) OVS / Experiencer-Theme or (3.b) SVO / Theme-Experiencer.

Di Tullio (1996) and Cifuentes (2015) argued that the classification in Rizzi and Belletti (1988) is applicable to psychological verbs in Spanish with some differences; Psychological verbs in Spanish can be reduced to two groups: (i) psychological verbs with Experiencer in nominative case (e.g. *temer*: *María_{EXP} teme a Pedro_{THEME}*); (ii) psychological verbs with Experiencer in dative case (e.g. *gustar*, *preocupar*: *A María_{EXP} le preocupa Pedro_{THEME}*). The group of interest is the second one due to the fact that they can present their arguments in two possible word orders: (a) *Juan_{THEME} (le) preocupa a María_{EXP}*; (b) *A María_{EXP} le preocupa Juan_{THEME}*. Both word orders are allowed. Even if

the Experiencer is not in nominative case, it can naturally occupy the first position in the sentence. This phenomenon does not happen in the other group of psychological verbs: (c) *María_{EXP} le teme a Pedro_{THEME}*; (d) *?A Pedro_{THEME} le teme María_{EXP}*; neither in transitive structures with non-psych verbs: (e) *María abraza a Pedro*; (f) *?A Pedro le abraza María*.

In other languages, as in English, the classification of psychological verbs is also reduced to two groups: (i) *I_{EXP} fear thunders*; (ii) *Thunders frighten me_{EXP}* (Filip, 1996). However, these two groups differ from the two groups in Spanish: even if the Experiencer is the subject or the object of the sentence, it remains in the subject / object position; in Spanish, the Experiencer with dative case can occupy either the preverbal or postverbal position even though it is not morphologically marked as subject (nominative case and verb agreement).

These word order and argument marking discrepancies are difficult to explain if all psych predicates share the same argument structure as hypothesized by Rizzi and Belletti (1988). This is why there has been a debate in the literature regarding this issue. Bogard (1995) questioned the argument structure proposed by Rizzi and Belletti (1988), particularly, the thematic role of the argument that is not experiencer, the Theme. Dowty (1991) reviews how the thematic role Theme has received different characterizations in the literature: it is something that moves or changes state, or it can be assigned by a stative predicate; it has been claimed to be the same thematic role as Patient. Authors like Rappaport (1983) and Rozwadowska (1988) named the thematic role Theme as *Experimenter* or *Neutral*, respectively. Bogard (1995) did not agree with any of the previous proposals, establishing that the argument that is not the experiencer in psych predicates can be either the Cause of the experimentation or the Object of the experimentation.

Dowty (1991) offered a different approach for the category of thematic roles: instead of having different clusters for thematic roles, he proposed a theory in which there are only two cluster-concepts, Proto-Agent and Proto-Patient. Each of them is characterized by a set of verb entailments: arguments of a given verb can bear one of the proto-roles or both to varying degrees, depending on the number of entailments they present (Dowty, 1991). Proto-Agent entails volitional involvement in the event or state, sentience, causing an event or change of state in another participant, movement and it exists independently of the event named by the verb. Proto-Patient entails undergoing a change of state, causally affected by another participant, stationary relative to movement

of another participant, and it does not exist independently of the event (Levin, 2019). The argument with the most Proto-Agent entailments is lexicalized as the subject of the verb, and the one with more Proto-Patient entailments as its object. In some cases, arguments can show different degrees of membership in a Proto-role, as it happens in the case of psychological verbs. In English, the experiencer-object of the psychological verb *frighten* (*Mary frightens John*) presents the characteristic of the Proto-Agent “sentience”, and the Proto-Patient characteristic of “undergoing a change of state” (Levin, 2019).

Another approach to thematic roles is the “generalized semantic roles” approach (GRs), proposed on the basis of prototype theory (Rosch & Mervis, 1975). This approach does not focus on what specific thematic role receives each argument, but rather it classifies individual semantic roles into prototype categories, macroroles (Bornkessel & Schlesewsky, 2006). Two macroroles exist: Actor and Undergoer. They are generalizations across thematic relations: actor is a generalization across Agent, Experiencer, Instrument, and other thematic roles; Undergoer is a generalization across Patient, Theme, Recipient and other roles (Robert & Van Valin, 2004). It is established a dependency relation between the two macroroles: the Undergoer is hierarchically dependent upon the Actor (Bornkessel & Schlesewsky, 2006). Agent would be the prototype for Actor, and Patient for Undergoer. The Actor-Undergoer hierarchy establishes the relationship between macroroles and the arguments of a particular verb, in which the leftmost argument will be considered the actor and the rightmost the undergoer (Figure 1) (Robert & Van Valin, 2004):

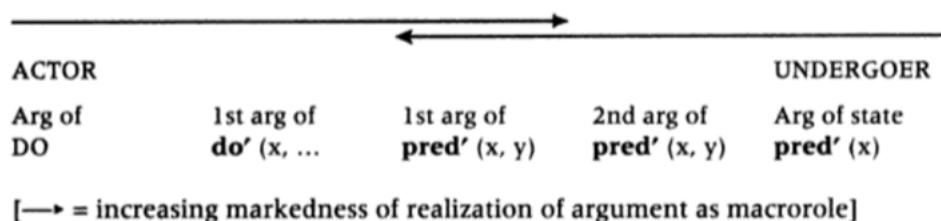


Figure 1. The Actor-Undergoer hierarchy (Robert & Van Valin, 2004).

In the case of psychological verbs with dative experiencer arguments, only one of the arguments is considered as macrorole: the experiencer argument is considered to be the Undergoer; the non experiencer argument is not mapped into the Actor-Undergoer hierarchy (Gattei et al., 2015). Psychological verbs such as *preocupar*, *gustar* do not have an Actor, but an Undergoer, and their highest ranked argument in the Actor-Undergoer

hierarchy is a non macrorole (the no experiencer argument). Additionally, the subject is used to be linked to Actor, but with these psychological verbs, it is linked to Undergoer (Gattei et al., 2015).

The generalized semantic roles approach belongs to the extended Argument Dependency Model (the eADM). The eADM is a neurocognitive model of online comprehension. This model is primarily focused on core relations, the processing of core constituents: the relations between verbs and arguments required by it (Bornkessel & Schlesewsky, 2006). The interpretation of a given argument and its relation to other arguments is not determined by their syntactic position. The eADM proposes three hierarchically organized phases for core constituent processing (Bornkessel & Schlesewsky, 2006):

- Phase 1: it is only processed basic constituent structure building; any relation information is given. It gives category information, no argument interpretation (no agreement, no case-marking, no thematic roles). This phase of processing makes use of syntactic templates, which only encodes categorial information.
- Phase 2: in this phase, argument interpretation starts, using a set of crosslinguistic information to associate an argument with an argument role or a position in an argument hierarchy. It establishes relations between arguments themselves and between arguments and the verb. Two different steps occur in this second phase: (a) Compute prominence and (b) compute linking. The assignment of prominence information (COMPUTE PROMINENCE) initiates relational semantic interpretation. *Prominence* is used as a cover term for information which helps to construct an interpretative hierarchy between the arguments of a verb. To create this hierarchy, prominence assignments are based on morphosyntactic information (morphological case, argument position) and semantic information (animacy and definiteness).

The lexical argument representation of a verb is associated with arguments that have already been processed (COMPUTE LINKING). If no argument has been already processed, the compute linking generates predictions derived from the logical structure (LS) of the verb.

- Phase 3: it employs information for further domains in order to complete the argument interpretation (context, intonation, etc.). It involves a generalized mapping between core relations (relation between arguments and arguments with verb) and noncore relations (relation between core elements (verb and arguments)

and other constituents of the sentence). It allows an evaluation of well-formedness and the capacity of repairing when required. The model includes the principle of minimality: the human language comprehension system assigns minimal structures (Figure 2).

Generalized semantic roles (GRs) are assigned in the compute prominence/compute linking in phase 2. Some arguments cannot be mapped onto any of these GRs, such as arguments with dative case. The eADM establishes that dative-marked arguments do not correspond to any GRs, they receive their interpretation directly from the Lexical Structure of the verb. This suggests that structures with dative-marked arguments should present differences in processing than those with nominative-accusative arguments (Bornkessel & Schlesewsky, 2006).

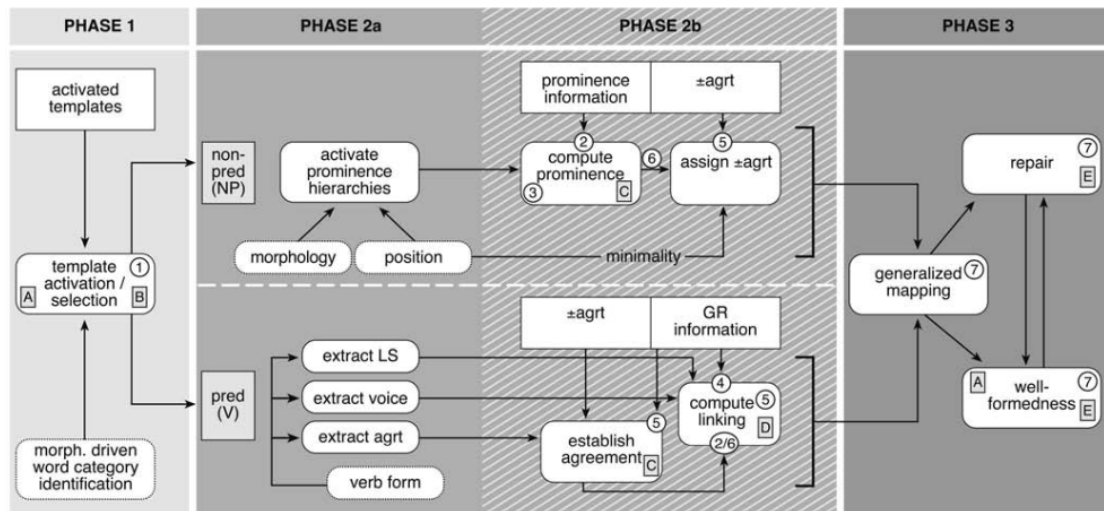


Figure 2. The three phases of processing explained in the eADM (Bornkessel & Schlesewsky, 2006).

One of the interesting aspects of psychological predicates in Spanish is the fact that psychological verbs with dative experiencers allow two possible word orders: SVO: *Juan_{EXP} le gusta a María*; and OVS: *A María_{EXP} le gusta Juan*. Although the canonical word order in Spanish is SVO, studies about processing and representation suggest that the word order OVS is preferred over SVO with verbs like *gustar* (Gattei et al., 2015; Gattei, et al., 2018). Previous research about the processing and the representation of Experiencer have been carried out. Bourguignon et al. (2012) ran an ERP study in order to highlight that different verb types (non-psych vs. psychological verbs) might elicit different ERP responses to thematic reversal anomalies. They concluded that Agents vs. Experiencers influence the processing of thematic reversal anomalies, which was

reflected in different ERP responses: a main N400 response to sentences with experiencer argument that did not appear in sentences with agent argument. Gattei et al. (2015, 2018) have been the only who have focused on the word order preferences of psychological predicates in Spanish. In both studies, it was concluded that there is an interaction between verb type and word order: in sentences with non-psych verbs, participants preferred SVO word order, whereas in sentences with psychological verbs, they preferred OVS word order. The aim of the present study is to replicate the results obtained by Gattei et al. (2015) running a self-paced reading task with comprehension questions.

Gattei et al. (2015) provided the first piece of experimental evidence regarding the interaction between word order and verb type in Spanish. Previous research in English and German showed how the interaction between word order and verb type affects processing cost (Thompson & Lee, 2009; Schlesewsky & Bornkessel, 2006; Gattei et al., 2015). Previous to Gattei et al.'s research (2015), this interaction in Spanish had only been studied in agrammatic aphasics (Beretta et al., 1996). Gattei et al (2015) examined sentences with object-experiencer psychological verbs and activity verbs in a self-paced reading task. Assuming that lexical semantics influences the structure of a sentence, they wanted to determine whether the semantic class of the verb (psychological or non-psych) can influence the processing of word order alternation (SVO/OVS). They based their work on the eADM to generate predictions about processing cost for Spanish sentences (Gattei et al., 2015). Spanish allows SVO / OVS word order. According to the eADM, Gattei et al. (2015) predicted that the cost of processing will be higher in the case that the first argument does not match with the lexical requirements of the verb, it is the case of psychological predicates with SVO word order in which a reanalysis of argument hierarchization should take place: the parser will initially categorize the first argument as an Actor, but when arriving to the verb region, this argument will need to be recategorized as a non macrorole. According to the eADM, language processing is incremental, hence the interaction between syntactic and semantic information generates predictions about upcoming words. The parser initially expects to find an actor followed by a verb which requires this type of argument, a non-psych verb (e.g. *abrazar*). In the case of psychological verbs with dative experiencer, the processing cost will be higher when it appears in first position a nominative argument, due to the fact that it will be expected to be a non-psych verb which requires an Actor. When a psychological verb is encountered after the nominative argument, it will be necessary to recategorize the argument as a non macrorole, expecting to have a second argument mapped into Undergoer.

Gattei et al. (2015) found two main results in their research: (1) there was an interaction between verb type and word order in the regions that followed the verb; (2) a main effect of word order and an interaction between verb type and word order were present in comprehension question accuracy. In other words, they observed that word order variation (SVO/OVS) interacts with the class of the verb: readers produced slower reaction times with psychological verbs and OVS word order; in contrast, in the case of non-psych verbs, readers were faster with SVO word order than with OVS (Gattei et al., 2015). These differences in reading times indicate that the lexical information of the verb motivates a reanalysis, which is shown in the region after the verb in the self-paced reading task.

2. Methodology

2.1. Participants

Sixty native speakers of Peninsular Spanish participated in the experiment. All of them received 10€ in compensation. Subjects ranged in age from 18 to 59 years old.

2.2. Materials

Forty-eight experimental sentences were created with four conditions following a 2 x 2 factorial design: verb type (psychological verb vs. non-psych verb) and word order (SVO vs. OVS). Twenty-four dative-experiencer psychological verbs and twenty-four non-psych verbs were selected for experimental sentences. Each verb was repeated twice in order to obtain forty-eight experimental sentences (see Appendix). The corpus EsPal was used to calculate word frequency per million of the verbs used (Duchon et al., 2013). Both groups of verbs matched in frequency (psychological verbs, *Mean (M)* = 7,13, *Standard Deviation (SD)* = 14,63; non-psych verbs, *M* = 7,27, *SD* = 12,53; $t(23) = 0,032$, $p = 0,974$).

Each condition was composed by two sentences with a psychological verb and other two with a non-psych verb. The first sentence of the condition (a) had the word order DP / Theme + clitic + psychological verb + PP (DP) / Experiencer, resulting in a SVO. In the second sentence (b) the linear word order changed: PP (DP) / Experiencer + clitic + psychological verb + DP / Theme, resulting in an OVS word order. Third and fourth sentences correspond to non-psych verbs. Third sentence (c) presented the following

SVO word order: DP / Agent + clitic + non-psych verb + PP (DP) / Patient. The word order of the last sentence of the condition (d) differed from the previous one: PP (DP) / Patient + clitic + non-psych verb + DP / Agent (OVS) (Figure 3).

Condition	Sentence	Question
(a) Psychological verb / SVO	<i>El padre le preocupa al abuelo que vive bastante lejos.</i>	Subject question <i>¿Es el padre quien preocupa al abuelo?</i>
(b) Psychological verb / OVS	<i>Al abuelo le preocupa el padre que vive bastante lejos.</i>	Subject question <i>¿Es el padre quien preocupa al abuelo?</i>
(c) Non-psych verb / SVO	<i>El hijo le cocina al padre que tiene ojos claros.</i>	Object question <i>¿Es el padre quien cocina?</i>
(d) Non-psych verb / OVS	<i>Al padre le cocina el hijo que tiene ojos claros.</i>	Object question <i>¿Es el padre quien cocina?</i>

Figure 3. Explanatory table of the four conditions of a sentence used in the self-paced reading task, with its corresponding question.

All DPs were animate in order to avoid animacy effects: mixing animate with inanimate noun phrases can disrupt the results because of semantic preferences: animates are preferred to inanimate nouns; this could be considered as an additional condition in further research. I did not want to have “wrap-up effects”, because of that it was added an extra PP or an extra embedded clause. Doing this, all experimental sentences had the same length, ten words.

One hundred fillers were added; among fillers, 40 had a variety of perceptual and non perceptual verbs, none of which were psychological and object relative clauses, and the other sixty fillers were sentences with different length and characteristics. Six practice sentences were included in order to show participants what the experiment consists of.

Each sentence (experimental or filler) had a question with two possible answers to test comprehension. In the case of experimental sentences, the questions could refer to the subject or to the object and the answers could be only *yes* or *no* (e.g., *¿Es el padre quien preocupa al abuelo? Sí; ¿Es el padre quien cocina? No*). The same question was used for both conditions of the sentence with the psychological verb, and another different question for both conditions with the non-psych verb. Half of the questions had as a correct answer *yes*, and the other half have as correct answer *no*. Answers to questions of fillers differed from the answers of experimental sentences. For fillers, participants were sometimes asked to select between two possible DPs (e.g., *¿Quién prepara el cóctel? El asistente*) and sometimes they were asked to answer *yes* or *no* questions (e.g., *¿El peluquero es famoso? Sí*). In the latter, also half of the answers were *yes* and the other half *no*. All answers to practice sentences' questions were DPs.

2.3. Procedure

There were created four lists containing all practice sentences and fillers, and one condition of each experimental sentence. Using E-Prime, I created a Self-paced reading containing the four lists. The sentences of each list were randomized, except from the practice sentences that appear always at the beginning of the practice. Participants did not receive feedback after having answered a question.

Participants were tested individually in the laboratory of the research centre Micaela Portilla. Sentences were presented on a 24" screen. All sentences were presented on a single line, using the self-paced word-by-word moving window paradigm.

Before starting the task, they had to sign a consent form and complete a questionnaire about the languages that they used. Each participant made a single list. During the practice sentences, the researcher was with the participant in order to verify if they had correctly understood the mechanism of the task. Once they had read the final practice sentence, they were alone, and they saw the experimental sentences and the fillers.

Space bar had to be pressed in order to make appear the first and the rest of the words of the sentence. After the last word, it appeared the question. To answer the option of the left, participant had to press the number one on the keyboard, and to answer the option of the right the number two. The order of the answers was also randomized.

The task had three pauses that were indicated on the screen. To continue with the task, participants had to press the space bar and the first word of a sentence will appear.

2.4. Statistical analysis

All participants had an accuracy rate beneath 76,9%. This percentage was obtained by analysing the accuracy rate in the comprehension part of the 48 experimental and 60 filler items. There were not included 40 fillers (experimental sentences of the experiment of Laura Villareal Buitrago) to obtain this percentage due to the high levels of errors that participants made in those items. In those sentences the correct answer is not clearly one of the two possible options presented, therefore it can cause confusion in participants when choosing the correct option. The data of 60 participants were considered for the current analysis. Mean accuracy for comprehension question is 86,98% with fillers and 85% only in experimental sentences, which indicates that participants paid attention to the task.

It was analysed the accuracy of participant's answers in the comprehension task of experimental items. 1 indicated that participants had chosen the correct answer, and 0 the incorrect one. This analysis was made considering both conditions (type of verb and word order). Percentages were calculated separately through subjects and through items.

Reaction times of the comprehension task were cleaned. The following two steps were used in that specific order in order to remove extreme values or outliers. Those below 200 milliseconds and those above 10000 milliseconds were considered outliers. The mean and the standard deviation of the reaction times data were calculated in order to eliminate those results which were below the mean plus 2,5 times the standard deviation, and those which were above the mean plus 2,5 times the standard deviation. These criteria were used to eliminate responses with extreme reaction times (outliers). All together, 208 out of 2880 data have been removed with these criteria, 7,22% of the data. Averages of reaction times in the comprehension task were calculated considering the two variables of the experiment (type of verb and word order) in ANOVA analyses. This analysis was made separately through subject and through items.

Reaction times data of the self-paced reading task followed a similar process of cleaning. Data below 100 milliseconds and those above 2000 were removed. The mean and the standard deviation were calculated per word and per condition. Then, reaction times below the mean plus 2,5 times the standard deviation and those above have been taken out. 1841 out of 31680 data were eliminated, 5,81%. Averages of reaction times in the self-paced reading task have been created taking into account the two variables of the experiment and making a distinction between averages for subjects and averages for items in ANOVA analyses.

T-Tests were made for the data obtained in the comprehension task and the self-paced reading task. It has been considered exactly the same variables and conditions than in the ANOVA analysis. This type of analysis has only been made in order to clarify the origin of a significant interaction.

3. Results

3.1. Comprehension task

Question accuracy. In the analysis of accuracy, the main effects of Verb Type ($F(1,59) = 0.281$, $MSE = 103.100$, $p = 0.598$; $F(1,47) = 0.186$, $MSE = 124.322$, $p = 0.668$) and Word Order ($F(1,59) = 0.717$, $MSE = 79.085$, $p = 0.400$; $F(1,47) = 0.199$, $MSE = 227.867$, $p = 0.658$) were not significant. The interaction between Verb Type and Word Order was significant ($F(1,59) = 41.245$, $MSE = 145.484$, $p < .001$; $F(1,47) = 72.512$, $MSE = 66.192$, $p < .001$). Two-tailed pairwise comparisons were run in order to study the origin of the interaction. These analyses showed that participants showed reversed word order accuracy patterns for each verb type. More particularly, for non-psych verbs, participants made more errors to comprehension questions related to sentences with OVS ($M = 19.861$, $SD = 12.284$) than SVO ($M = 10.833$, $SD = 10.097$) word orders ($t(59) = -5.475$, $p < .001$; $t(47) = -3.708$, $p < .001$). In contrast, for psychological verbs, participants made less errors to comprehension questions related to sentences with OVS ($M = 9.166$, $SD = 11.032$) than SVO ($M = 20.139$, $SD = 15.442$) word orders ($t(59) = 5.026$, $p < .001$; $t(49) = 4.363$, $p < .001$).

Response times. In the analysis of reaction times of the comprehension task, the main effect of Word Order ($F(1,59) = 1.817e-4$, $MSE = 308271.011$, $p = 0.989$; $F(1,47) = 0.008$, $MSE = 1.083e+6$, $p = 0.931$) was not significant. The main effect of Verb Type was significant per subjects ($F(1,59) = 25.280$, $MSE = 450452.301$, $p < .001$), and per items ($F(1,47) = 11.347$, $MSE = 999911.116$, $p = 0.002$). The interaction between Verb Type and Word Order was significant ($F(1,59) = 12.370$, $MSE = 624358.462$, $p < .001$; $F(1,47) = 17.684$, $MSE = 379656.140$, $p < .001$). Two-tailed pairwise comparisons were run in order to study the origin of the interaction. The analyses that assessing the word order effects revealed reversed word order reaction times patterns for each verb type. More particularly, for non-psych verbs, participants were faster answering questions

related to sentences with SVO ($M= 3931.040$, $SD=958.272$) than OVS ($M= 4288.855$, $SD=1109.100$) word orders ($t(59) = -2.555$, $p = 0.013$; $t(47) = -2.115$, $p = 0.040$). In contrast, for psychological verbs, participants were faster answering questions related to sentences with OVS ($M = 3494.422$, $SD = 866.345$) than SVO ($M = 3854.170$, $SD = 957.142$) word orders ($t(59) = 3.359$, $p = 0.001$; $t(49) = 2.170$, $p = 0.035$). Concurrently, the two-tailed pairwise comparisons assessing the verb type effects in each level of the word order variable showed the following: in the SVO word order condition it does not exist a difference between non-psych ($M= 3931.040$, $SD= 958.272$) or psychological verb ($M= 3854.170$, $SD= 957.142$) ($t(59) = 0.654$, $p = 0.516$; $t(47) = 0.723$, $p = 0.473$). In the OVS condition, there is a difference between non-psych ($M= 4288.855$, $SD= 1109.100$) and psychological verbs ($M= 3494.422$, $SD= 866.345$) ($t(59) = 5.355$, $p = <.001$; $t(47) = 4.705$, $p = <.001$).

3.2. Self-paced reading task

Reading times (see Figure 4). In the analysis of reaction times of the self-paced reading task, I studied word by word reaction times of both arguments and the verb, leaving aside the PP or the embedded clauses added to avoid “wrap-up” effects. In the first word, the main effects of Verb Type ($F(1,59) = 0.024$, $MSE = 791.628$, $p = 0.876$; $F(1,47) = 0.010$, $MSE = 1160.212$, $p = 0.810$), Word Order ($F(1,59) = 0.407$, $MSE = 944.555$, $p = 0.526$; $F(1,47) = 0.059$, $MSE = 1401.313$, $p = 0.810$), and the interaction between Verb Type and Word Order ($F(1,59) = 0.282$, $MSE = 898.412$, $p = 0.597$; $F(1,47) = 0.775$, $MSE = 601.903$, $p = 0.383$) were not significant.

In the second word, the main effects of Verb Type ($F(1,59) = 1.123$, $MSE = 2914.372$, $p = 0.294$; $F(1,47) = 1.205$, $MSE = 2436.621$, $p = 0.278$), Word Order ($F(1,59) = 0.167$, $MSE = 2105.943$, $p = 0.684$; $F(1,47) = 0.028$, $MSE = 2970.110$, $p = 0.869$), and the interaction between Verb Type and Word Order ($F(1,59) = 2.123$, $MSE = 2797.171$, $p = 0.150$; $F(1,47) = 2.161$, $MSE = 2806.012$, $p = 0.148$) were not significant.

In the third word, the main effects of Verb Type ($F(1,59) = 0.336$, $MSE = 1549.471$, $p = 0.564$; $F(1,47) = 0.003$, $MSE = 1856.074$, $p = 0.799$), Word Order ($F(1,59) = 0.311$, $MSE = 1245.204$, $p = 0.579$; $F(1,47) = 0.065$, $MSE = 2124.707$, $p = 0.799$), and the interaction between Verb Type and Word Order ($F(1,59) = 2.142$, MSE

= 1293.301, $p = 0.149$; $F_2(1,47) = 1.748$, $MSE = 1450.208$, $p = 0.192$) were not significant.

In the verb region, the Verb Type effect ($F_1(1,59) = 0.011$, $MSE = 3977.467$, $p = 0.916$; $F_2(1,47) = 0.081$, $MSE = 3918.892$, $p = 0.778$) was not significant. Word Order effect was significant per subjects ($F_1(1,59) = 4.902$, $MSE = 4999.915$, $p = 0.031$), and marginal per items $F_2(1,47) = 3.892$, $MSE = 3675.139$, $p = 0.054$). The interaction between Verb Type and Word Order was significant ($F_1(1,59) = 12.044$, $MSE = 2883.276$, $p < .001$) per subjects and per items $F_2(1,47) = 5.649$, $MSE = 3588.166$, $p = 0.022$). Two-tailed pairwise comparisons were run in order to study the origin of the interaction. The word order effects in each level of the verb type variable were assessed. Participants made similar reaction times in non-psych sentences with OVS ($M = 500.182$, $SD = 149.216$) and with SVO ($M = 496.334$, $SD = 171.178$) word orders ($t_1(59) = 0.329$, $p = 0.744$; $t_2(47) = -0.246$, $p = 0.807$). In contrast, for psychological verbs, participants were faster in sentences with OVS ($M = 476.984$, $SD = 125.312$) than SVO ($M = 521.253$, $SD = 176.868$) word orders ($t_1(59) = 3.950$, $p < .001$; $t_2(47) = 3.401$, $p = 0.001$).

In the region after the verb, the main effects of Verb Type ($F_1(1,59) = 1.953$, $MSE = 1934.175$, $p = 0.168$; $F_2(1,47) = 2.265$, $MSE = 1712.977$, $p = 0.139$) and Word Order ($F_1(1,59) = 1.254$, $MSE = 2380.553$, $p = 0.267$; $F_2(1,47) = 1.258$, $MSE = 1961.022$, $p = 0.268$) were not significant. The interaction between Verb Type and Word Order was significant ($F_1(1,59) = 17.941$, $MSE = 2754.973$, $p < .001$; $F_2(1,47) = 30.977$, $MSE = 1251.522$, $p < .001$). Two-tailed pairwise comparisons were run in order to study the origin of the interaction. Focusing on the word order effects reversed effects were observed for each verb type. More particularly, for non-psych verbs, participants were slower in sentences with OVS ($M = 459.811$, $SD = 79.748$) than SVO ($M = 438.163$, $SD = 67.483$) word orders ($t_1(59) = -2.453$, $p = 0.017$; $t_2(47) = -2.383$, $p = 0.021$). In contrast, for psychological verbs, participants were faster in sentences with OVS ($M = 423.176$, $SD = 83.047$) than SVO ($M = 458.931$, $SD = 85.455$) word orders ($t_1(59) = 3.702$, $p < .001$; $t_2(47) = 4.827$, $p < .001$).

In the sixth word (second word after the verb), the main effects of Verb Type ($F_1(1,59) = 1.553$, $MSE = 5905.759$, $p = 0.218$; $F_2(1,47) = 1.914$, $MSE = 4330.014$, $p = 0.173$) and Word Order ($F_1(1,59) = 0.272$, $MSE = 9516.151$, $p = 0.604$; $F_2(1,47) = 1.930$, $MSE = 4882.826$, $p = 0.171$) were not significant. The interaction between Verb Type and Word Order was not significant per subjects ($F_1(1,59) = 11.340$, $MSE =$

8455.541, $p = 0.001$), but it was significant per items ($F(2(1,47)) = 12.634$, $MSE = 5016.791$, $p < .001$). Two-tailed pairwise comparisons were run in order to study the origin of the interaction. Focusing on the word order effects, for non-psych verbs, the effect was only significant in the analysis by subjects, but not by items ($t(59) = -2.173$, $p = 0.034$; $t(47) = -1.443$, $p = 0.156$), suggesting a tendency for slower reading times in sentences with OVS ($M = 545.551$, $SD = 161.986$) than with SVO ($M = 512.137$, $SD = 148.250$) word orders. In contrast, for psychological verbs, participants were faster in sentences with OVS ($M = 517.937$, $SD = 159.031$) than SVO ($M = 564.475$, $SD = 171.193$) word orders ($t(59) = 2.444$, $p = 0.018$; $t(47) = 3.826$, $p < .001$).

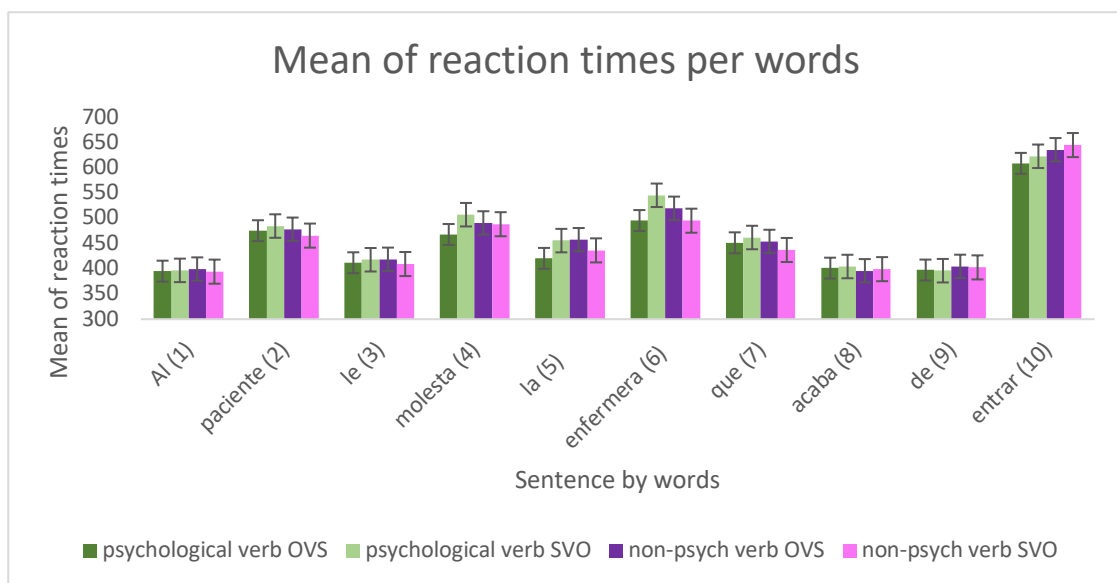


Figure 4. Graphic with mean of reaction times per words in the self-paced reading task.

In Figure 4 it is shown that significant differences in reaction times arrive in the fourth word (the verb region): psychological verbs with OVS word order are processed faster than the other structures. Non-psych verbs either with SVO or OVS word order have similar reaction times in the verb region. In the word after the verb (the fifth word), non-psych verbs with SVO word order are processed faster than non-psych verbs with OVS word order. The opposite happens with psychological verbs in the word after the verb: psychological verbs with OVS word order are processed faster than SVO word order. In the same word, psychological verbs with SVO word order and non-psych verbs with OVS word order present similar reaction times. In the sixth word, non-psych verbs with SVO word order and psychological verbs with OVS word order present the same

reaction times. In the same word, psychological verbs with SVO word order are processed slower than non-psych verbs with OVS word order (Figure 4).

4. Discussion

I have investigated the preferences of word order in sentences with either non-psych or psychological verbs. Importantly, I have replicated the results obtained by Gattei et al. (2015): (i) an interaction between verb type and word order in the words that followed the verb, and (ii) a main effect of word order and an interaction between verb type and word order in comprehension question accuracy.

Results obtained by the comprehension task and the self-paced reading task have mainly revealed an interaction between verb type (non-psych vs. psychological) and word order (SVO vs. OVS). In the comprehension task, participants were more accurate and faster when answering question with psychological verbs with OVS word order and with non-psych verbs with SVO word order. An additional verb type effect appeared in this task: questions with OVS word order took faster reaction times with psychological verbs than with non-psych verbs. This difference does not appear between non-psych and psychological verbs with SVO word order.

In the self-paced reading task, the interaction between verb type and word order has appeared in the verb region and in the two words that follow the verb: participants produced faster reaction times in sentences with non-psych verbs with SVO word order and psychological verbs with OVS word order than in those with non-psych verbs with OVS word order and psychological verbs with SVO word order. Only in the verb region, it has been found a word order effect: there is no difference in reaction times between SVO and OVS word order in non-psych sentences, whereas OVS word order are processed faster than SVO in psychological predicates.

These results support the research carried out by Gattei et al. (2015). Nevertheless, our results are not exactly identical to the ones obtained by Gattei et al. (2015): I have found an interaction between verb type and word order in the verb region also, not only in words that follow the verb, as they found (Gattei, et al. 2015). Additionally, it has not been revealed a word order effect in the comprehension task, but a verb type effect. Despite these small differences, I have replicated their most relevant results.

The eADM predicts that psychological predicates with experiencer dative argument will present differences in processing compared to those with nominative-accusative structures. The explanation of that assumption is that the dative argument does not fit in the hierarchy of macroroles (Actor/Undergoer), hence the participant has to recategorize the dative argument as a non macrorole when the word order is SVO in psychological predicates with dative argument. This prediction has been confirmed with the results obtained: lower reaction times in psychological verbs with OVS than those with SVO word order. In psychological predicates with SVO word order, participants process firstly a nominative argument which fits in the Actor category of macroroles. However, when processing the verb, participants realize that the category assigned to the first argument, Actor, is not correct due to the semantic requirements of the verb. Psychological verbs demand an Undergoer (the experiencer argument) and a non macrorole (the nominative argument). The situation changes when the first argument of the sentence is the dative argument, when the word order is OVS: participants directly process the dative argument as an Undergoer, hence there is not Actor argument, if there was one, it should be placed before the Undergoer argument. When arriving to the verb, they confirm that the information processed of the first argument fits with the requirements of the psychological verb.

In the case of sentences with non-psych, participants produced faster reaction times and were more accurate with SVO word order than with OVS word order. In the case of SVO word order, participants processed since the first argument that the argument structure is Actor-Undergoer. Nevertheless, with OVS word order, they established that the argument structure could be Undergoer-non macrorole. Interestingly, in the verb region, there is not difference in reaction times in non-psych sentences between SVO and OVS word order, it exists differences in the regions after the verb. A possible explanation for that phenomenon could be that as the Undergoer appears in first position, participant do not expect another argument, because if there was another argument, an Actor, it would have been placed higher than the undergoer. However, once they find another argument following the verb, the word order effects arise.

This research has studied how syntactic and semantic information interacts: grammatical information, such as case marking, and semantic information, such as Actor-Undergoer hierarchy, allow to categorize arguments. In the case of non-psych

structures, syntactic and semantic information converges, assigning to the nominative argument the first position in the argument structure and the higher macrorole, Actor. Notwithstanding, semantic information is put ahead of syntax information with psychological predicates: the Undergoer argument (dative experiencer argument) is placed before the non macrole argument (nominative argument), even if the non macrorole argument is in nominative case and it is considered the subject of the sentence.

5. Conclusion

The aim of this study was to determine the preferences of word order (SVO vs. OVS) in sentences with psychological or with non-psych verbs. In order to resolve this, I replicated the research carried out by Gattei et al. (2015).

I ran a self-paced reading task with a comprehension task with two variables: word order (SVO vs. OVS) and type of verb (non-psych vs. psychological). The results obtained with those tasks have demonstrated that in Spanish, psychological predicates are preferred with OVS word order rather than SVO. The opposite happens with non-psych verbs, in which the SVO word order is preferred over OVS word order.

In the framework of the eADM, psychological predicates do not present the argument structure Actor/Undergoer, but they have an Undergoer and a non macrole. Hence, OVS word order is preferred over SVO with psychological verbs: with SVO word order, the first argument will be processed as an Actor, causing a rearrangement at the verb region.

Further research could be done in order to study deeply the interaction between syntax and semantic information in psychological predicates with different argument configuration (nominative-accusative). For instance, in English, the syntactic information is put ahead in sentences like, *Thunders frightened John_{EXP}*, in which the syntactic information has placed the nominative and subject argument (*Thunders*) in first argument position. Additionally, it can be studied how other semantic information, such as animacy, can modulate the processing of this type of predicates.

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- Appendix

Each sentence presents four conditions: (a) psychological verb with SVO word order; (b) psychological verb with OVS word order; (c) non-psych verb with SVO word order; (d) non-psych verb with OVS word order.

- 1.a. La empleada le interesa al joven por sus muchos conocimientos.
- 1.b. Al joven le interesa la empleada por sus muchos conocimientos.
- 1.c. La empleada le ruega al joven por sus muchos conocimientos.
- 1.d. Al joven le ruega la empleada por sus muchos conocimientos.

- 2.a. El camarero le atrae al chico que suele venir pronto.
- 2.b. Al chico le atrae el camarero que suele venir pronto.
- 2.c. El camarero le contesta al chico que suele venir pronto.
- 2.d. Al chico le contesta el camarero que suele venir pronto.

- 3.a. La enfermera le molesta al paciente que acaba de entrar.
- 3.b. Al paciente le molesta la enfermera que acaba de entrar.
- 3.c. La enfermera le sonríe al paciente que acaba de entrar.
- 3.d. Al paciente le sonríe la enfermera que acaba de entrar.

- 4.a. El arquitecto le agrada al cliente que lleva el proyecto.
- 4.b. Al cliente le agrada el arquitecto que lleva el proyecto.
- 4.c. El arquitecto le aconseja al cliente que lleva el proyecto.
- 4.d. Al cliente le aconseja el arquitecto que lleva el proyecto.

- 5.a. El marinero le alegra al capitán siempre todas las mañanas.
- 5.b. Al capitán le alegra el marinero siempre todas las mañanas.
- 5.c. El marinero le implora al capitán siempre todas las mañanas.
- 5.d. Al capitán le implora el marinero siempre todas las mañanas.

- 6.a. La editora le convence al escritor de la nueva editorial.
- 6.b. Al escritor le convence la editora de la nueva editorial.
- 6.c. La editora le agradece al escritor de la nueva editorial.
- 6.d. Al escritor le agradece la editora de la nueva editorial.

- 7.a. La cantante le gusta al director del teatro de comedia.
- 7.b. Al director le gusta la cantante del teatro de comedia.
- 7.c. La cantante le escribe al director del teatro de comedia.
- 7.d. Al director le escribe la cantante del teatro de comedia.

- 8.a. El hijo le asusta al padre que tiene ojos claros.

- 8.b. Al padre le asusta el hijo que tiene ojos claros.
- 8.c. El hijo le cocina al padre que tiene ojos claros.
- 8.d. Al padre le cocina el hijo que tiene ojos claros.

- 9.a. La diseñadora le encanta al hombre por su buen gusto.
- 9.b. Al hombre le encanta la diseñadora por su buen gusto.
- 9.c. La diseñadora le suspira al hombre por su buen gusto.
- 9.d. Al hombre le suspira la diseñadora por su buen gusto.

- 10.a. La vecina le apena al señor que tiene un perro.
- 10.b. Al señor le apena la vecina que tiene un perro.
- 10.c. La vecina le abanica al señor que tiene un perro.
- 10.d. Al señor le abanica la vecina que tiene un perro.

- 11.a. El padre le preocupa al abuelo que vive bastante lejos.
- 11.b. Al abuelo le preocupa el padre que vive bastante lejos.
- 11.c. El padre le abastece al abuelo que vive bastante lejos.
- 11.d. Al abuelo le abastece el padre que vive bastante lejos.

- 12.a. El amigo le enfada al conductor que va con prisas.
- 12.b. Al conductor le enfada el amigo que va con prisas.
- 12.c. El amigo le soborna al conductor que va con prisas.
- 12.d. Al conductor le soborna el amigo que va con prisas.

- 13.a. La dueña le satisface al veterinario de la antigua clínica.
- 13.b. Al veterinario le satisface la dueña de la antigua clínica.
- 13.c. La dueña le indica al veterinario de la antigua clínica.
- 13.d. Al veterinario le indica la dueña de la antigua clínica.

- 14.a. El famoso le deprime al reportero que está al lado.
- 14.b. Al reportero le deprime el famoso que está al lado.
- 14.c. El famoso le abofetea al reportero que está al lado.
- 14.d. Al reportero le abofetea el famoso que está al lado.

- 15.a. El peluquero le divierte al repartidor sobre un tema complejo.
- 15.b. Al repartidor le divierte el peluquero sobre un tema complejo.
- 15.c. El peluquero le notifica al repartidor sobre un tema complejo.
- 15.d. Al repartidor le notifica el peluquero sobre un tema complejo.

- 16.a. La modelo le apasiona al pintor por su gran trabajo.
- 16.b. Al pintor le apasiona la modelo por su gran trabajo.
- 16.c. La modelo le cobra al pintor por su gran trabajo.
- 16.d. Al pintor le cobra la modelo por su gran trabajo.

- 17.a. El banquero le impone al presidente de la nueva sucursal.
- 17.b. Al presidente le impone el banquero de la nueva sucursal.
- 17.c. El banquero le canta al presidente de la nueva sucursal.
- 17.d. Al presidente le canta el banquero de la nueva sucursal.

- 18.a. La cocinera le tranquiliza al gestor de la cafetería reformada.
- 18.b. Al gestor le tranquiliza la cocinera de la cafetería reformada.
- 18.c. La cocinera le miente al gestor de la cafetería reformada.
- 18.d. Al gestor le miente la cocinera de la cafetería reformada.

- 19.a. La secretaria le cansa al profesor del instituto del barrio.
- 19.b. Al profesor le cansa la secretaria del instituto del barrio.
- 19.c. La secretaria le suplica al profesor del instituto del barrio.
- 19.d. Al profesor le suplica la secretaria del instituto del barrio.

- 20.a. La doctora le aburre al compañero del centro de salud.
- 20.b. Al compañero le aburre la doctora del centro de salud.
- 20.c. La doctora le receta al compañero del centro de salud.
- 20.d. Al compañero le receta la doctora del centro de salud.

- 21.a. El diputado le disgusta al soldado por su perfección absoluta.
- 21.b. Al soldado le disgusta el diputado por su perfección absoluta.
- 21.c. El diputado le pisotea al soldado por su perfección absoluta.
- 21.d. Al soldado le pisotea el diputado por su perfección absoluta.

- 22.a. La periodista le conmueve al cirujano de pelomuy largo.
- 22.b. Al cirujano le conmueve la periodista de pelomuy largo.
- 22.c. La periodista le entrevista al cirujano de pelomuy largo.
- 22.d. Al cirujano le entrevista la periodista de pelomuy largo.

- 23.a. El mago le irrita al participante con el sombrero negro.
- 23.b. Al participante le irrita el mago con el sombrero negro.
- 23.c. El mago le mancha al participante con el sombrero negro.
- 23.d. Al participante le mancha el mago con el sombrero negro.

- 24.a. El fotógrafo le fascina al estudiante de su clase universitaria.
- 24.b. Al estudiante le fascina el fotógrafo de su clase universitaria.
- 24.c. El fotógrafo le difama al estudiante de su clase universitaria.
- 24.d. Al estudiante le difama el fotógrafo de su clase universitaria.

- 25.a. La dependienta le interesa al informático desde hace mucho tiempo.

- 25.b. Al informático le interesa la dependienta desde hace mucho tiempo.
25.c. La dependienta le suplica al informático desde hace mucho tiempo.
25.d. Al informático le suplica la dependienta desde hace mucho tiempo.
- 26.a. El encargado le atrae al inspector por ser muy interesante.
26.b. Al inspector le atrae el encargado por ser muy interesante.
26.c. El encargado le pisotea al inspector por ser muy interesante.
26.d. Al inspector le pisotea el encargado por ser muy interesante.
- 27.a. La estudiante le molesta al profesor que llega siempre tarde.
27.b. Al profesor le molesta la estudiante que llega siempre tarde.
27.c. La estudiante le miente al profesor que llega siempre tarde.
27.d. Al profesor le miente la estudiante que llega siempre tarde.
- 28.a. La abogada le agrada al juez por sus buenos argumentos.
28.b. Al juez le agrada la abogada por sus buenos argumentos.
28.c. La abogada le agradece al juez por sus buenos argumentos.
28.d. Al juez le agradece la abogada por sus buenos argumentos.
- 29.a. La frutera le alegra al cliente con su simpática sonrisa.
29.b. Al cliente le alegra la frutera con su simpática sonrisa.
29.c. La frutera le indica al cliente con su simpática sonrisa.
29.d. Al cliente le indica la frutera con su simpática sonrisa.
- 30.a. El socorrista le convence al presidente que trabaja siempre aquí.
30.b. Al presidente le convence el socorrista que trabaja siempre aquí.
30.c. El socorrista le difama al presidente que trabaja siempre aquí.
30.d. Al presidente le difama el socorrista que trabaja siempre aquí.
- 31.a. La conductora le gusta al mecánico desde que se conocieron.
31.b. Al mecánico le gusta la conductora desde que se conocieron.
31.c. La conductora le aconseja al mecánico desde que se conocieron.
31.d. Al mecánico le aconseja la conductora desde que se conocieron.
- 32.a. El periodista le asusta al reportero que está en prácticas.
32.b. Al reportero le asusta el periodista que está en prácticas.
32.c. El periodista le contesta al reportero que está en prácticas.
32.d. Al reportero le contesta el periodista que está en prácticas.
- 33.a. El joven le encanta al gerente por su gran entusiasmo.
33.b. Al gerente le encanta el joven por su gran entusiasmo.
33.c. El joven le sonríe al gerente por su gran entusiasmo.
33.d. Al gerente le sonríe el joven por su gran entusiasmo.
- 34.a. La ganadera le apena al agricultor que no tiene inquietudes.
34.b. Al agricultor le apena la ganadera que no tiene inquietudes.
34.c. La ganadera le canta al agricultor que no tiene inquietudes.
34.d. Al agricultor le canta la ganadera que no tiene inquietudes.
- 35.a. La abuela le preocupa al nieto porque suele gastar mucho.

- 35.b. Al nieto le preocupa la abuela porque suele gastar mucho.
 35.c. La abuela le cocina al nieto porque suele gastar mucho.
 35.d. Al nieto le cocina la abuela porque suele gastar mucho.
- 36.a. La madre le enfada al adolescente porque no le escucha.
 36.b. Al adolescente le enfada la madre porque no le escucha.
 36.c. La madre le ruega al adolescente porque no le escucha.
 36.d. Al adolescente le ruega la madre porque no le escucha.
- 37.a. El millonario le satisface al banquero con sus abundantes ingresos.
 37.b. Al banquero le satisface el millonario con sus abundantes ingresos.
 37.c. El millonario le soborna al banquero con sus abundantes ingresos.
 37.d. Al banquero le soborna el millonario con sus abundantes ingresos.
- 38.a. El amigo le deprime al estudiante con todos sus problemas.
 38.b. Al estudiante le deprime el amigo con todos sus problemas.
 38.c. El amigo le escribe al estudiante con todos sus problemas.
 38.d. Al estudiante le escribe el amigo con todos sus problemas.
- 39.a. La panadera le divierte al niño cuando le cuenta chistes.
 39.b. Al niño le divierte la panadera cuando le cuenta chistes.
 39.c. La panadera le mancha al niño cuando le cuenta chistes.
 39.d. Al niño le mancha la panadera cuando le cuenta chistes.
- 40.a. La dermatóloga le apasiona al doctor que tiene un lunar.
 40.b. Al doctor le apasiona la dermatóloga que tiene un lunar.
 40.c. La dermatóloga le receta al doctor que tiene un lunar.
 40.d. Al doctor le receta al doctor que tiene un lunar.
- 41.a. La dentista le impone al cliente por su gran determinación.
 41.b. Al cliente le impone la dentista por su gran determinación.
 41.c. La dentista le entrevista al cliente por su gran determinación.
 41.d. Al cliente le entrevista la dentista por su gran determinación.
- 42.a. El repartidor le tranquiliza al portero del edificio de enfrente.
 42.b. Al portero le tranquiliza el repartidor del edificio de enfrente.
 42.c. El repartidor le abofetea al portero del edificio de enfrente.
 42.d. Al portero le abofetea el repartidor del edificio de enfrente.
- 43.a. El señor le cansa al peluquero por sus muchas exigencias.
 43.b. Al peluquero le cansa el señor por sus muchas exigencias.
 43.c. El señor le abanica al peluquero por sus muchas exigencias.
 43.d. Al peluquero le abanica el señor por sus muchas exigencias.
- 44.a. La investigadora le aburre al participante con su aburrido tono.
 44.b. Al participante le aburre la investigadora con su aburrido tono.
 44.c. La investigadora le notifica al participante con su aburrido tono.
 44.d. Al participante le notifica la investigadora con su aburrido tono.
- 45.a. El piloto le disgusta al pasajero porque gira muy brusco.

- 45.b. Al pasajero le disgusta el piloto porque gira muy brusco.
- 45.c. El piloto le implora al pasajero porque gira muy brusco.
- 45.d. Al pasajero le implora el piloto porque gira muy brusco.

- 46.a. El pescadero le conmueve al anciano porque está muy cansado.
- 46.b. Al anciano le conmueve el pescadero porque está muy cansado.
- 46.c. El pescadero le suspira al anciano porque está muy cansado.
- 46.d. Al anciano le suspira el pescadero porque está muy cansado.

- 47.a. La modista le irrita al comprador que tiene más experiencia.
- 47.b. Al comprador le irrita la modista que tiene más experiencia.
- 47.c. La modista le cobra al comprador que tiene más experiencia.
- 47.d. Al comprador le cobra la modista que tiene más experiencia.

- 48.a. La tía le fascina al sobrino que estudia una carrera.
- 48.b. Al sobrino le fascina la tía que estudia una carrera.
- 48.c. La tía le abastece al sobrino que estudia una carrera.
- 48.d. Al sobrino le abastece la tía que estudia una carrera.