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in a Second Language Spanish Course

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Abstract: This paper presents a study on the effects of explicit instruction on collocation and idiom learning in an advanced Spanish course. Twenty-five Spanish verb-noun collocations and idioms were selected from course readings. Experimental group participants received explicit instruction on these target phrases during the ten-week academic term, while control group participants encountered the phrases in the assigned texts but did not receive instruction for these target items. Pre-test results indicated that both groups had little prior knowledge of the target phrases. On the post-test, the experimental group demonstrated significant learning gains and significantly outperformed the control group. This study also examined the effects of two features of second language formulaic sequences: congruency and semantic transparency. Results indicate that both features played a role in test performance, suggesting an association between these features and the acquisition of formulaic sequences. For instance, both groups received the highest test averages for questions containing transparent target phrases, and received relatively lower averages on questions featuring less transparent target phrases. Further research on this topic would benefit second language students, because a better understanding of the effects of congruency and transparency will allow for the more effective selection of formulaic sequences for instruction.

Keywords: Formulaic sequences, collocations, idioms, L2 lexical development, explicit instruction, the Lexical Approach

Introduction

Recent research has suggested that second language (L2) learners have much to gain from learning formulaic sequences in their target language (Boers & Lindstromberg 2012; Henriksen 2012; Meunier 2012). At the same time, the literature has also noted that collocations (e.g., *ponerse triste*) and idioms (e.g., *ponerse las pilas*) are especially problematic for L2 learners (Bahns & Eldaw 1993; Chen 2011; Farghal & Obiedat 1995; Nesselhauf 2003, 2005; Zyzik 2010). Within the greater scope of L2 formulaic language learning, the acquisition of L2 collocations has become an active area of research (Granger & Meunier 2008; Wood 2010). Overall, many researchers have argued that teaching collocations is a worthwhile endeavor that merits instructional time (e.g., Bahns & Eldaw 1993; Meunier 2012; Nesselhauf 2003). At the same time, much work remains to be done to better understand how L2 learners acquire collocations and idioms, and also how language instructors can best foster such learning in their classes (Meunier 2012: 123). Another limitation of previous research has been an almost exclusive focus on L2 collocation learning with English as the target language (Pérez Serrano 2015).

The study presented here adds to a small but growing body of research examining the effects of formulaic sequence instruction in the context of L2 Spanish learning (e.g., Pérez Serrano 2015; Romero Doiz 2014; Zyzik 2010). A further contribution of this study is its focus on the effects of semantic transparency and congruency, two features of formulaic sequences that may play a role in their acquisition by L2 learners. While these features' potential effects have previously been studied to some degree (e.g., Laufer & Waldman 2011; Nesselhauf 2003, 2005), they have not yet been examined in the context of an L2 Spanish course. Two key arguments will be put forward here: first, the explicit instruction of collocations and idioms is an effective approach to fostering the acquisition of these formulaic sequences in an L2 classroom. Second, the features of congruency and semantic transparency play important roles in the acquisition of formulaic sequences. A better understanding of the effects of these features will allow for more effective selection of target phrases for L2 courses.

1. Literature Review

1.1 Defining collocations and idioms

Collocations and idioms are considered to be subsets of a larger class of multiword units known as formulaic sequences or formulae (see Boers & Lindstromberg 2012). The present study is based upon criteria proposed by Nesselhauf (2003) and by Laufer and Waldman (2011) regarding the classification of collocations and idioms. These researchers classify verb-noun sequences into three categories: free combinations, collocations, and idioms.[1] Free combinations permit a wide range of substitution among their elements; the only restrictions for such substitutions lie in grammatical and semantic restrictions inherent in the constituent words (e.g., *mirar la televisión*, *mirar una película*, but not *mirar música). Idioms feature a degree of restrictedness and are less flexible than free combinations (e.g., *break a leg* but not *break your legs). Collocations lie between idioms and free combinations in terms of restrictedness. They allow for some degree of flexibility (*make/making/made + (good/little/lots of/etc.) + progress*), but also feature restrictions beyond the semantic limitations of free combinations. For instance, *make progress* is a recurring sequence in English, whereas the sequences *create progress or *build progress are much more infrequent in first language (L1) corpora.

Laufer and Waldman (2011) note that collocations and idioms differ on the basis of semantic transparency. L2 learners can understand novel phrases that are transparent as long as they know the prototypical or literal meanings of a phrase's constituent words. While idioms often cause comprehension difficulties

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1 Nesselhauf (2003: 225) limits this classification scheme to verb-noun sequences, but argues that this scheme could also be modified to suit other grammatical categories (e.g., noun-adjective sequences).

due to their lack of transparency (e.g., *break a leg*)—the meanings of more transparent collocations such as *decir la verdad* and *prestar atención* are usually inferable even if these phrases are unfamiliar to learners.

1.2 Factors Influencing the Acquisition of L2 Collocations and Idioms

Researchers have proposed various explanations to account for the difficulties encountered by L2 learners in acquiring collocations and idioms. Wray (2002) suggests that the approaches of native and non-native speakers with regard to acquiring formulaic sequences are fundamentally different. She proposes that native speakers acquire formulae holistically, storing and retrieving them as unanalyzed and unitary chunks. By contrast, the L2 learners' lexicons tend to develop through the acquisition of individual words. As a result, learners may be less likely to store formulae in their developing lexicons as holistic units. Others have proposed more socially-induced factors: Henriksen (2012) notes that both language instructors and L2 students tend to apply a "word-focused approach" (40) when dealing with new vocabulary, leading learners to pay less attention to the recurring chunks present in the input. Considering the overwhelming number of individual words that students need to learn to reach even a basic level of proficiency, it is not surprising that most focus their efforts on expanding lexical breadth at the expense of lexical depth, leading them to overlook L2 collocations and idioms as objects of study.

Another factor that may influence the acquisition of formulae is the likelihood that a given sequence will be noticed by a L2 learner. If we accept Schmidt's (1994) hypothesis that noticing is the "necessary and sufficient condition for the conversion of input to intake for learning" (17), it may be that L2 learners do not acquire many collocations because they are simply not noticing these phrases while processing input. The fact that the meanings of many collocations are transparent and inferable may help students to comprehend collocations that they come across, but it may also reduce the saliency of these phrases. Formulae not noticed by L2 learners may not be converted into intake, and consequently they may not be integrated into the learners' lexicons. Thus, if noticing is a prerequisite for intake to occur, then flooding the learners' input with specific collocations is likely to have little impact on learning outcomes (Laufer & Waldman 2011: 665-666).

The degree of congruency between L2 formulae and their first language (L1) equivalents may also affect FS learning. Congruency refers to the degree of syntactic similarity between semantically equivalent L1 and L2 collocations. For example, the English collocation *make the bed* and its Spanish equivalent *hacer la cama* are congruent because they are directly translatable, whereas the phrases *hacer la maleta* and *pack the suitcase* are not congruent (***make the suitcase*). Studies have indicated that L1 transfer plays a major role in production of L2 collocations (e.g., Bahns & Eldaw 1993; Jiang

2009), perhaps because learners often produce L2 phrases by directly translating L1 formulae into the target language. When L1 phrases are congruent, this word-for-word strategy seems to work fine, both for collocations (*to make the bed* → *hacer la cama*) and for idioms (*break the ice* → *romper el hielo*). It is when L2 phrases are not congruent that L1 transfer errors are likely to occur. Nesselhauf (2003) analyzed a learner corpus of German students of English and found that among the collocation errors produced (e.g., **make one's homework*), "there was not a single type of mistake in which the L1 did not seem to play a role" (235).

To better understand the effects of transparency and congruency on the acquisition of collocations and idioms by L2 learners of Spanish, the following research questions (RQ) were developed:

RQ1: Does explicit instruction lead to significant differences in collocation and idiom learning between the experimental and control groups? To what extent do L2 Spanish students incidentally acquire collocations and idioms in the absence of explicit instruction?

RQ2: Do the features of congruency and transparency affect the acquisition of L2 collocations and idioms? If so, what is the exact relationship between these features and the acquisition of these phrases?

For RQ1, it was predicted that the experimental group would exhibit significant learning gains on the post-test, whereas the control group would demonstrate no significant growth. For RQ2, the researcher hypothesized that congruency and transparency would play statistically significant roles in the acquisition of the target phrases. Additionally, it was predicted that congruent phrases would be acquired more easily than non-congruent phrases, and phrases classified as both non-congruent and transparent would be less salient and therefore would be particularly problematic for students.

2. Methods

2.1 Participants and Test Phrases

The participants were undergraduate students enrolled in a third-year Spanish composition course at a large public university in the United States. Participants were divided into control and experimental groups based on their enrollment in the course's three sections.

Twenty-five verb-noun collocations and idioms were selected as the test items (See Appendix A). Their selection was based upon the same rationale as in Pérez Serrano (2015): they all appear in the course readings, and thus would be encountered by both groups.

2.2 Test Format

This study's tests adopted a multiple-choice sentence cloze format. To reduce the likelihood that participants would select the correct option by chance, students were instructed to select a fifth choice (No lo sé) when they were unable to make an educated guess. Below is a sample question (see Appendix B for the entire test):

Después del hundimiento del barco *Titanic* en 1912, el gobierno británico _____ varios estudios para determinar la causa del desastre.

trajo a cabo
trajo afuera
llevó afuera
llevó a cabo
No lo sé

The pre-test and post-test were administered during the first and last weeks of the quarter. They were identical in terms of content; however, the order of the questions and the answer choices were randomized to reduce any potential learning effects.

2.3 Experimental Treatment

The experimental treatment was straightforward. Immediately after the pre-test, the researcher presented the experimental group with an introduction to collocations and idioms, and shared some benefits that the students could enjoy by studying formulaic sequences. During this initial presentation, they also received a list of the 25 target items along with their locations in the course readings. Students were notified that they were responsible for studying the items outside of class and that the phrases would appear in course examinations. For the rest of the quarter, the researcher devoted about ten minutes per week to reviewing the phrases as they came up in the course readings. Review activities included quizzes, writing sentences containing the target phrases, and using the website *Linguee* as a resource to get a sense of how the phrases were used in Spanish.

2.4 Coding of Test Items

To examine the effects of congruency and semantic transparency, test items were classified using coding schemes developed by Revier (2009) and Yamashita and Jiang (2010) (see Figures 1 and 2). Before analyzing test data, two native Spanish speakers were consulted to verify the classifications of the researcher.

3. Results

The first RQ asked whether explicit instruction leads to acquisition of L2 collocations and idioms. With respect to the control group, this RQ also sought to examine whether mere exposure to the phrases in the readings was sufficient for their incidental acquisition. Table 1 presents the average scores for the pre-test and post-test, as well as the standard deviations for each condition.

In order to analyze the statistical significance of this data, a one-way, repeated-measure analysis of variance (ANOVA) was conducted. Table 2 presents the results of this ANOVA. This analysis examined the effects of three factors on students' test performance: treatment, pre-post (i.e., each group's pre-test vs. post-test performance), and the combined effect of the treatment and pre-post effects. All factors appeared to have statistically significant effects on test performance. Given these significant results, four additional ANOVAs were conducted to make more specific comparisons within the test data. The results of these four ANOVAs appear in Table 3.

The first two ANOVAs are between-subjects analyses and compare the test performances of the experimental and control groups on the pre-test and then on the post-test. The first ANOVA sought to determine all participants' knowledge of the test items before the experimental treatment. It also examined whether the two groups could be considered to be comparable samples of L2 Spanish students.[2] The second ANOVA examined whether the differences in the two groups' post-test results could be considered statistically significant due to the experimental treatment. In contrast to the first two analyses, the third and fourth ANOVAs were within-subjects analyses and sought to compare the growth of each group at the end of the quarter. The third measured growth within the experimental group, whereas the fourth measured the control group's growth. Additionally, this fourth ANOVA was conducted to address RQ1, i.e., to determine whether the incidental learning gains of the control group were statistically significant.

On the pre-test, both groups performed poorly, with mean percentages of 34.40% and 27.04%. Although students were instructed to avoid guessing, it is interesting to note that such a strategy would have led to an average score of 25%. This means that both groups performed only slightly better than they would have had they selected their answers by chance. The control group produced slightly higher scores than the experimental group (8.6 vs. 6.76, out of 25 possible points), suggesting that the control group may have been comprised of more proficient Spanish learners. However, the first post-hoc ANOVA produced a p-value of 0.139, suggesting that the differences in initial test scores cannot be

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2 Several recent studies (e.g., Szudarski & Carter 2016; Pellicer-Sánchez 2015; Webb, Newton & Chang 2013) have examined the effects of input flooding on incidental collocation acquisition during L2 reading. However, it is still unclear whether this approach is an effective intervention (see Pellicer-Sánchez 2015: 5-6 for a review).

considered to be statistically significant. Additionally, participants from the two groups indicated that they had similar educational backgrounds as L2 students of Spanish, having on average previously completed several years of Spanish coursework.[3] These similarities suggest that the groups were comparable in terms of their prior knowledge of the target phrases. Additionally, the mean pre-test scores suggest that all participants had little previous knowledge of the majority of the test phrases.

By contrast, there were clear differences between the two groups' performances on the post-test; with mean scores of 10.5 versus 21.53. The second post-hoc ANOVA produced a p-value of 2.187×10^{-7}, suggesting that any initial between-group differences had disappeared as a result of the experimental treatment. The experimental group produced a mean score of 86.15%, whereas on average the control group correctly answered only 42% of questions. These data suggest that the experimental group increased its knowledge of collocations and idioms as a result of the experimental treatment, with a post-test average nearly 60% greater than the pre-test average. The third ANOVA comparing the experiment group's pre-test and post-test data confirmed that these gains were statistically significant with a p-value of 3.009×10^{-6}.

Interestingly, the control group also appeared to demonstrate some degree of FS learning, with test averages of 34% and 42%. The fourth post-hoc ANOVA produced a p-value of 0.027, indicating that these gains were statistically significant. It is worth noting that the standard deviation of the control group's post-test mean (4.40) is much greater than the standard deviations for the other three test means, which are fairly uniform, ranging from 2.59 to 2.84. This greater standard deviation may be due to the individual differences within control group participants. It may be that some control group students were better at noticing and acquiring formulaic sequences, or that they devoted more time to looking up unfamiliar words when reading the course texts. Thus, it may be that the gains of a few individual students may have raised the control group's average score high enough to produce statistically significant results. The details and implications of these results will be explored further in the discussion section. Figure 3 illustrates the overall results.

The second RQ aimed to determine whether the congruency and transparency of target phrases would affect test performance. It was predicted that students would perform better on questions featuring congruent phrases and worse with regards to non-congruent phrases. The prediction regarding the effect of transparency was more complex; it was predicted that students would have the greatest difficulty with phrases coded as non-congruent and transparent, because such phrases would not be noticed and not acquired, leading to L1

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3 Additionally, a Welch two-sample t-test was performed on participants' reported years of previous study (4.8 years for the experimental group and 6 years for the control group) and these different averages were not found to be statistically significant.

transfer and the selection of answer choices that were calques (e.g., *llevó afuera). First, the relationship between congruency and test scores will be presented, as seen in Table 4.

Table 4 displays the overall performance of each group on those items classified at a given level of congruency. For example, on the pre-test, the control group correctly answered 28.57% of questions featuring non-congruent phrases. As mentioned above, the control and experimental groups were considered to be comparable, so their pre-test data were combined into a single group for analysis (see "Combined" column). A repeated-measures ANOVA was carried out examining the relationship between the combined pre-test scores for each level of congruency, producing a p-value of 4.84×10^{-6}. This analysis suggests significant effects for congruency on test performance. The pre-test averages indicate that the both groups fared better with semi-congruent phrases (C2) as compared to non-congruent phrases (C1), a trend that can be observed also in both groups' post-test results. These data seem to match the prediction that more congruent collocations and idioms are less problematic than less congruent sequences. However, this prediction was not confirmed with regards to congruent (C3) phrases. Both groups received the lowest scores on C3 items on both tests. These low scores may be due to the low number of C3 test items; only three phrases out of twenty-five were classified as congruent. Altogether, these results suggest that greater congruency may be associated with some degree of greater learnability of collocations and idioms. Nevertheless, given the low scores for the most congruent items, this relationship is not yet clear. Next, the data on semantic transparency with be presented, as displayed in Table 5.

As in Table 4, Table 5 displays the percentage of correct responses for test items in each level of semantic transparency, that is, non-transparent (T1), semi-transparent (T2), and transparent (T3). For example, on the pre-test all participants correctly answered an average of 20.50% of questions featuring non-transparent phrases. The pre-test results indicate that participants in both groups performed best on questions containing transparent items (70.66%), worse with regards to semi-transparent items (26.29%), and received the lowest scores on questions with non-transparent items (20.50%). Similar to the analysis on the effects of congruency, a one-way, within-subjects ANOVA was carried out on the relationship between the combined pre-test test scores for each level of transparency, producing a p-value of 4.89×10^{-13}, indicating that semantic transparency also had a significant effect on test performance. This pattern was also observed for both groups on the post-test, with the exception of a slight dip for T1/T2 scores in the experimental group. These data suggest a direct relationship between semantic transparency and the acquisition of collocations and idioms. As with the congruency data, however, these data need to be interpreted with caution, given that only three of the test items were coded as transparent.

4. Discussion

With regards to the first RQ, the results suggest that explicit instruction may be an effective method for fostering the acquisition of previously selected collocations and idioms in an L2 classroom. Participants receiving the experimental treatment demonstrated significant learning gains as reflected on their post-test scores. These results corroborate with those from the studies of Spanish FS learning reviewed above and suggest that collocation and idioms can be successfully taught in a L2 Spanish classroom. Additionally, these learning gains may have led to broader benefits for students' communicative abilities in Spanish. In a survey given to the experimental group at the end of the quarter, students were asked whether they felt that studying collocations and idioms had improved their ability to communicate in Spanish. Out of the twelve respondents, eleven responded affirmatively. One student agreed emphatically, writing, "Sí Sí y Sí! En general, puedo comunicarse mejor sin hablar como un gringo" [sic]. Many respondents further noted that collocation and idiom instruction had been the most beneficial for developing their receptive skills. For instance, one student commented, "When I read and listen, I can understand what is being said now due to knowing what is meant and not just what the direct translation is." This statement may reflect a greater understanding of the figurative nature of many formulaic sequences, as well as the metalinguistic awareness that when processing input not every phrase should be interpreted literally.

Based on their survey responses, it appears that the instructional treatment was relatively less helpful for developing students' productive communicative abilities. One student noted a personal tendency to avoid using collocations and idioms when speaking Spanish, writing that they often went "back to the basics" during speech production. Another mentioned that "it is still hard for me to implement them into my speaking and writing as they dont flow naturally when I talk" [sic]. On one hand, these comments many reflect the overall trajectory of L2 lexical acquisition in which receptive knowledge precedes productive knowledge, a trend also noted in Zyzik (2010) with respect to idiom learning. It should also be noted that overall the students surveyed did not report spending much time studying collocations and idioms outside of class. Respondents indicated that they spent only about 15 minutes per week independently reviewing the assigned phrases, most often before tests and quizzes. If more time had been spent studying these phrases both during and outside of class, it is possible that students would have expressed less difficulty with regards to the production of collocations and idioms.

With respect to the control group, the results indicate that some learning of the target phrases did occur. This outcome contradicts the original prediction that the control group would not demonstrate any significant incidental acquisition of the target phrases. While the standard deviations of both groups' pre-test scores were similar, the standard deviation of the control group's post-test scores was relatively large (4.40) as compared to that of the experimental group (2.60). Out

of the ten control group participants, two demonstrated large gains as compared to their pre-test scores (gains of 5 and 6 points), six exhibited slight to moderate gains (ranging from 1 to 3 points), and two participants scored one point lower compared to their pre-test scores. These results suggest that students in language courses that do not provide any form of explicit FS intervention will vary considerably in their acquisition of collocations and idioms. Along these lines, Romero-Doiz also noted (personal communication, February 16, 2016) that a few outstanding students within her study's (2014) control group demonstrated the ability to teach themselves formulaic sequences without any direct instruction from the instructor. Nevertheless, these individuals only made up a small portion of the students in her class. Despite these individual differences, however, the overall control group data do seem to suggest that some incidental learning of L2 collocations can occur, which was also suggested in a recent study by Pellicer-Sánchez (2015). On the other hand, the significant difference between the two groups' post-test scores (i.e., 10.5 vs. 21.53) suggest that explicit instruction was clearly more effective in fostering acquisition of the target phrases.

With regards to the second RQ, this study did find that both congruency and transparency play a significant role in the acquisition of collocations and idioms. Still, the exact nature of their impact is not yet clear. It appears that greater congruency may be associated with greater performance on tests of collation and idiom knowledge. This greater performance may be associated with fewer calques caused by L1 transfer. If it is true that learners tend to produce many L2 phrases by way of direct translation, then it is likely they will produce more calques when translating non-congruent L1 phrases. Conversely, this prediction was not confirmed for test items coded as congruent, as participants had the lowest test scores for C3 items. Two factors may have led to this outcome: first, there were only three test items coded as C3: *llevar al escenario* (to take to the stage) *poner en jaque* (to put in check), and *ser cosa de meses* (to be a matter of months). By contrast, there were eight C2 items and fourteen C1 items. It is possible that a larger and more balanced sample of congruent phrases would have produced different results. Second, these congruent test items may have been difficult due to additional factors besides congruency or transparency, such as their overall frequencies. It may be that participants performed worse on questions featuring congruent phrases because these formulae were relatively infrequent and thus less familiar to students. A search of Davies' online Spanish corpus confirmed this frequency difference in the case of C3 phrase *poner en jaque* and the C1 phrase *hacer una pregunta*, with the latter appearing 652 times and the former only appearing 10 times throughout the corpus.[4] It is recommended that future

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4 Both of these searches looked for all possible conjugations and tenses of the base verb, as well as other possible variations on the base collocation. For instance, the frequency search for *hacer una pregunta* was configured to return results such as *hacía una pregunta, haría una pregunta*, etc., as well as for other variations such as *hacer la pregunta, hacer varias preguntas*, etc.

studies take measures to control for frequency in the selection of test formulae (as done in Revier 2009).

The results regarding the effects of transparency appear to somewhat clearer. As the data generally indicate a direct relationship between test performance and transparency, transparency may be better predictor of test performance than congruency. The transparency results for the control group are of particular interest because they may indicate which types of phrases were incidentally acquired during the academic term and which phrases were not acquired. The control group performed slightly worse on the post-test with T3 items (73.33% versus 70.00%), possibly because these items were easily comprehended when completing the course readings. As a result, these items may not have been noticed and converted into intake, and thus never acquired. On the other hand, although it was predicted that control participants would more readily learn non-transparent items due to their greater saliency, the control group did not exhibit much growth with these items (26.25% vs. 27.50%). Interestingly, the greatest gains occurred with semi-transparent items, with an overall increase of nearly 15%. As with the congruency data, however, one limitation to the results for transparency is the small number of items coded as fully transparent (T3). Nevertheless, these results may have some implications for teaching. As noted by Lewis (1993, 1997) and Pellicer-Sánchez (2015), class time is far too limited to explicitly teach all of the formulaic sequences found in any given target language. Even though it appears that the explicit instruction of previously selected phrases appears to be more effective than the Lexical Approach (as suggested in Pérez Serrano 2015), there is clearly a need to be strategic in the selection of which formulaic sequences to teach. One key issue involves determining which types of formulaic sequences are learned incidentally through exposure to input, and which types of formulae require instructional intervention to be acquired. The results here suggest that course designers should prioritize collocations and idioms that are less semantically transparent, as both groups of received the lowest scores in this category of phrases.

5. Conclusion

This study found that explicit instruction was an effective approach for fostering the acquisition of collocations and idioms in a L2 Spanish course. Students in the experimental group demonstrated statistically significant learning gains, and they also greatly outperformed their control group peers on a test of formulaic sequence knowledge at the end of the term. At the same time, the control group also exhibited statistically significant gains on the post-test. With regards to the second RQ, the ANOVAs focusing on semantic transparency and congruency both produced statistically significant results, suggesting that these two features do affect L2 learners' acquisition of collocations and idioms. To the best knowl-

edge of the researcher, this study was the first that directly examined the role of these two features in an L2 Spanish classroom. Additionally, the results suggest that more transparent collocations and idioms are more readily learned by L2 Spanish students as compared to less transparent formulae. However, the exact relationship between these two features and test performance is not yet clear, and further research is needed.

This study features at least three limitations that affect the validity of its findings. First, the test format did not target any specific component of formulaic sequence knowledge (e.g., receptive or productive knowledge), but was instead more of a general knowledge assessment of the target phrases. In order to examine the hypothesis that greater transparency is associated with an increased production of calques (at least for non-congruent collocations), receptive and productive knowledge should be separated in future test designs. A second limitation of this study is that the observed post-test gains for both groups may be attributed to not only greater formulaic sequence knowledge, but also to an increased knowledge of the target phrases' constituent words. For example, a student who has learned the meaning of *jaque* in class may have gained sufficient lexical knowledge to correctly answer question seventeen, especially because the targeted collocation *poner en jaque* is congruent with its English equivalent *to put in check*. Here a correct response does not necessarily mean, of course, that this student has acquired the collocation in question. One solution to remedy this issue would be to repeat this study and include an additional experimental group that receives vocabulary instruction for the individual words that make up the 25 targeted collocations and idioms. This way, a comparison between the two experimental groups could determine how much of the learning gains are due to individual vocabulary learning and how much can be attributed to the acquisition of the target formulae as holistic units. A third limitation regarding the selection of test phrases was the unbalanced nature of items in each category, as noted above. Revier's (2009:129-131) procedure for target-item selection is one potential route for future studies to ensure that test phrases are balanced in terms of transparency and in terms of overall frequency.

A deeper understanding of the effects of congruency and transparency will lead to greater rates of formulaic sequence learning, both in Spanish language classrooms and in other L2 courses. More specifically, knowing which types of formulaic sequences tend to be acquired incidentally and which types require instructional intervention will allow for a more efficient and effective selection of target formulae in L2 instructional materials. There is clearly much to be done to expand our knowledge of this topic, and further studies will be invaluable in helping advanced language learners to master formulaicity, a domain of knowledge that is perhaps the final frontier of advanced second language proficiency.

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Appendix A

List of Target Phrases

Phrase	**English equivalent(s)**	**Congruency**	**Tranparency**
Tratar de	To deal with, to be about	C2	T1
Tomar conciencia	To become aware of	C1	T2
Llevar al escenario	To bring to the stage, to perform	C3	T2
Llevar a cabo	To carry out, to perform	C1	T1
Tener en cuenta	To keep in mind, to take into account	C1	T2
Merecer la pena	To be worth the trouble	C1	T2
Poner fin a	To put an end to	C2	T2
Llamar la atención	To call attention to	C2	T3
Llegar a tiempo	To arrive on time	C2	T3
Dar largas	To stall, to delay	C1	T2
Poner en marcha	To put into action	C1	T1
Poner al día	To update	C1	T1
Dar paso a	To yield to, to give way to	C2	T2
Echar de menos	To miss somebody/ something	C1	T1
Dar a conocer	To make known, to make public	C1	T2
Poner de relieve	To highlight, to emphasize	C1	T1
Poner en jaque	To put in check	C3	T2
Hacer una pregunta	To ask a question	C1	T2
Estar de acuerdo	To be in agreement	C2	T3
Darse prisa	To hurry, to rush	C1	T2
Caminar en pelotas	To be naked, to go nude	C1	T1
Pedir la palabra	To ask for a word, to ask for the floor	C2	T2
Parar en seco	To stop abruptly	C1	T2
Ser cosa de meses	To be a matter of months	C3	T2
Retomar el hilo	To pick up the thread, to continue a dialogue	C1	T1

Appendix B

Pre-test

Instructions: Write your responses on the answer form (not here). Choose the best phrase for each sentence. If you cannot make an educated guess, select "No lo sé".

1) La muerte trágica de Michael Brown _____ el tema del racismo y la brutalidad policial en los Estados Unidos.
   a. llevó al escenario
   b. tomó al escenario
   c. introdujo al escenario
   d. presentó al escenario
   e. No lo sé

2) ¿Has visto la película *Selma*? _____ la vida de Martin Luther King, Jr.
   a. trata de
   b. trata por
   c. es sobre de
   d. es alrededor de
   e. No lo sé

3) Es buena idea prohibir la distribución de bolsas de plástico en XXXX. Esta ley nos ayuda a mejor _____ de nuestro impacto en el planeta.
   a. dar conciencia
   b. tener cuidado
   c. tomar conciencia
   d. ser cuidadosos
   e. No lo sé

4) Después del hundimiento del barco *Titanic* en 1912, el gobierno británico _____ varios estudios para determinar la causa del desastre.
   a. llevó afuera
   b. trajo al cabo
   c. llevó al cabo
   d. trajo afuera
   e. No lo sé

5) Los viernes por la tarde hay mucho tráfico en la autopista I-XXXX. Si no quieres llegar tarde a tu destino, debes _____ este tráfico y salir más temprano.
   a. realizarse de
   b. contar por
   c. tener en cuenta
   d. hacer cuentas de
   e. No lo sé

6) Aunque todos tenemos vidas muy ocupadas, _____ hacer ejercicio cada día. Tiene muchos beneficios para nuestra salud.
    a.   merece el costo
    b.   cuesta la pena
    c.   vale el costo
    d.   merece la pena
    e.   No lo sé

7) El jefe dijo: "estimados empleados, quiero _____ los rumores sobre mi visita al hospital. No tengo cáncer y tengo muy buena salud."
    a.   poner cabo a
    b.   poner fin a
    c.   eliminar con
    d.   acabarse de
    e.   No lo sé

8) La publicación *Uncle Tom's Cabin* en 1852 _____ a las condiciones terribles de los esclavos en Los Estados Unidos. Antes de leerla, muchos estadounidenses no habían pensado en este asunto.
    a.   puso a luz
    b.   dio a luz
    c.   llamó la atención
    d.   mandó la atención
    e.   No lo sé

9) Es muy importante _____ para una entrevista. La puntualidad es muy importante en el mundo profesional.
    a.   estar en tiempo
    b.   venir en tiempo
    c.   llegar de horario
    d.   llegar a tiempo
    e.   No lo sé

10) Al Gore dice: "El calentamiento global es un problema urgente que debemos enfrentar ahora mismo. No podemos ignorar este problema, no podemos _____."
    a.   dar largas al asunto
    b.   hacer tiempo al asunto
    c.   tomar nuestro tiempo al asunto
    d.   pasar nuestro tiempo al asunto
    e.   No lo sé

11) ¡Qué bueno! La universidad ha recibido $100 millones de dólares del Gobernador XXXX XXXX. Ahora podemos _____ muchos proyectos e iniciativas: renovar XXXX Hall, ofrecer más clases, bajar la matrícula, etc.

a. poner en marcha
b. hacer en marcha
c. poner en progreso
d. meter en progreso
e. No lo sé

12) Nuestra jefa fue de vacaciones a Hawaii por dos semanas. Durante ese tiempo, muchas cosas pasaron en nuestra compañía. Cuando ella regresó a la oficina, yo hablé con ella para _____ de todo lo que ella había perdido.
a. darle al día
b. ponerle al día
c. hacerle al día
d. informarle al día
e. No lo sé

13) En una discusión académica, es muy importante que ninguna persona domine la conversión. Después de hablar por algunos minutos, cada participante debe _____ a los otros para que ellos también puedan expresar sus opiniones.
a. hacer paso
b. dar paso
c. ofrecer paso
d. ceder paso
e. No lo sé

14) Después de emigrar de su pueblo en El Salvador y mudarse a Chicago, Moisés _____ muchas cosas de su país: los plátanos frescos, la comida salvadoreña, y sobre todo, su familia.
a. hacía de menos
b. sentía de menos
c. echaba de menos
d. daba de menos
e. No lo sé

15) En junio de 2015, después de varios meses de rumores, Bruce Jenner _____ que ya se identificaba como mujer y que su nuevo nombre era "Caitlyn".
a. dio a conocer
b. dio a saber
c. soltó al público
d. hizo a conocer
e. No lo sé

16) Un buen profesor sabe enfatizar o _____ los puntos más importantes de su presentación. No debe perder el tiempo hablando de los detalles menos importantes.
    a. poner a luz
    b. poner de relieve
    c. hacer de relieve
    d. hace a luz
    e. No lo sé

17) En la Constitución Estadounidense, hay una separación de poderes entre las tres ramas del gobierno. Por ejemplo, el Presidente puede _____ el poder de la rama legislativa con su poder de veto.
    a. dejar en jaque
    b. meter en jaque
    c. poner en jaque
    d. hacer en jaque
    e. No lo sé

18) Marta fue a la oficina de su profesora porque quería _____ sobre el examen final.
    a. cuestionarle una pregunta
    b. hacerle una pregunta
    c. darle una pregunta
    d. echarle una pregunta
    e. No lo sé

19) El divorcio entre María y José era un proceso muy difícil y complicado porque no podían _____ sobre muchos asuntos: cuánto dinero repartir a cada persona, cómo vender su casa, etc.
    a. estar aprobados
    b. darse de acuerdo
    c. darse por aprobados
    d. estar de acuerdo
    e. No lo sé

20) Había mucho tráfico y el Sr. Trigo llegó al aeropuerto una hora antes de su vuelo internacional. Él tuvo que correr y _____ para no perder el vuelo
    a. tomarse prisa
    b. echarse prisa
    c. hacerse prisa
    d. darse prisa
    e. No lo sé

21) En una comunidad nudista no es necesario llevar ropa, de hecho,
    _____ es obligatorio.
    a. caminar con pelotas
    b. caminar en pelotas
    c. andar al aire libre
    d. caminar al aire libre
    e. No lo sé

22) La Sra. Álvarez es activista y participa mucho en la política de su
    ciudad; ella asiste a todas las reuniones del municipio y siempre
    _____ para expresar sus opiniones.
    a. pide el suelo
    b. pide el discurso
    c. pide el piso
    d. pide la palabra
    e. No lo sé

23) Cuando las personas quieren dejar de fumar cigarrillos, a veces es más
    efectivo _____ en vez de reducir su consumo gradualmente.
    a. hacer en seco
    b. parar en seco
    c. hacer el pollo tibio
    d. hacer el pavo tibio
    e. No lo sé

24) Después de graduarse, Mateo Gómez mandó su CV a muchas compañías,
    pero ninguna respondió a sus solicitudes. Después de seis meses sin éxito, él
    todavía era optimista. "_____", dijo. "eventualmente
    alguien me va a ofrecer un trabajo."
    a. se hace de meses
    b. se trata de meses
    c. Es cosa de meses
    d. es tema de meses
    e. No lo sé

25) Las negociaciones de paz entre Israel y el Estado de Palestina fueron
    interrumpidas y luego canceladas por tres años. Ahora, los dos países
    quieren reiniciar las negociaciones y _____ del
    diálogo.
    a. empezar por nuevo
    b. comenzar por nuevo
    c. regresar al hilo
    d. retomar el hilo
    e. No lo sé

Figures and Tables

(T3) Transparent: both verb and noun used in their literal core sense, e.g., *llegar a tiempo*, *estar de acuerdo*

(T2) Semi-transparent: noun is used in literal sense, verb is used in non-literal or extended sense, e.g. *hacer la cama*, *tomar conciencia*

(T1) Non-transparent: neither verb nor noun used in literal or core sense, *echar de menos*, *poner al d*ía

Fig. 1. Coding scheme for semantic transparency. Adopted from Revier (2009).

C3) Congruent: phrase can be translated completely on a word-for-word basis, e.g. *poner en jaque* ➔ to put in check

(C2) Nearly congruent: phrase is nearly congruent with the exception of one difference in preposition or article use, e.g. *poner fin a* ➔ to put <u>an</u> end to

(C1) Non-congruent: a direct translation would be highly marked, non-idiomatic or otherwise infelicitous, e.g. *hacer la maleta* ➔ *to make the suitcase

Fig. 2. Coding scheme for congruency. Modified from Yamashita & Jiang (2010).[5]

Group	Pre-test	σ	Post-test	σ
Control N = 10	8.6	2.84	10.5	4.40
Experimental N = 13	6.76	2.59	21.53	2.60

Table 1. Mean scores for pre- and post-tests for control and experimental groups.

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5 Here it should be noted that Yamashita and Jiang (2010) did not include an intermediate level for congruency (C2). For the current study, the researcher introduced this level to perform a more fine-grained analysis of the data.

Effect	DFn	DFd	F	p-value
Treatment	1	21	15.742	7.02×10^{-4}
Prepost	1	21	237.316	6.43×10^{-13}
Treatment*Prepost	1	21	114.480	5.85×10^{-10}

Table 2. Comprehensive mixed measures ANOVA on pre-test and post-test data.

Effect	Group	Test	DFn	DFd	F	p-value
Treatment	Both	Pre-test	1	21	2.369	0.139
Treatment	Both	Post-test	1	21	56.554	2.187×10^{-7}
Prepost	Experimental	Both	1	22	38.537	3.009×10^{-6}
Prepost	Control	Both	1	9	6.937	0.027

Table 3. Post-hoc ANOVAs comparing performance both between and within subjects.
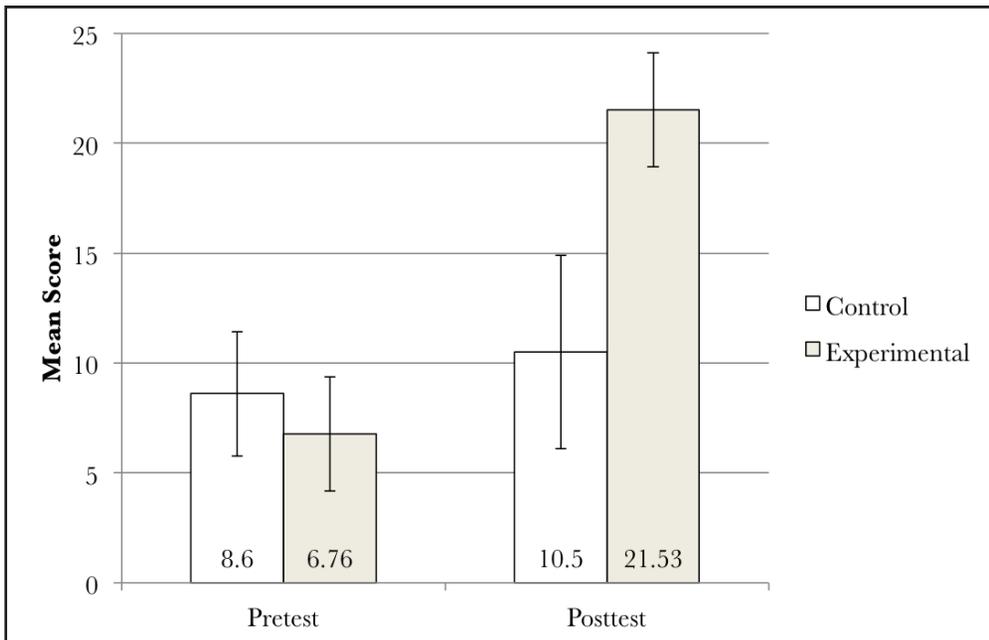
Fig. 3. Mean test scores for experimental and control groups.

	Pre-test			Post-test	
Category	Combined	Control	Experimental	Control	Experimental
C1 k = 14	21.14%	28.57%	16.19%	33.57%	85.71%
C2 k = 8	51.50%	52.50%	50.83%	53.75%	88.46%
C3 k = 3	12.00%	13.33%	11.11%	50.00%	82.05%

Table 4. Percentage of correct answers for items with different degrees of congruency.

	Pre-test			Post-test	
Category	Combined	Control	Experimental	Control	Experimental
T1 k = 8	20.50%	26.25%	16.67%	27.50%	88.46%
T2 k = 14	26.29%	30.71%	23.33%	44.29%	83.52%
T3 k = 3	70.66%	73.33%	68.89%	70.00%	92.31%

Table 5. Percentage of correct answers for different levels of semantic transparency.