

On the Acquisition of Spanish Causative Structures by L1 Speakers of English*

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1. Introduction

The causative alternation is a common phenomenon across languages of the world. In English and Spanish, not all verb types participate in this alternation. In Spanish, it is restricted to change of state unaccusative verbs, and this is also true in English to a large extent¹, as in (1). As illustrated in (2) and (3), unaccusatives that do not denote a change of state, and unergatives, do not alternate.

- (1) a. The thief broke the window/ the window broke.
b. El ladrón rompió la ventana/ la ventana se rompió.
- (2) a. *The father arrived the girl late / The girl arrived late.
b. *El padre llegó a la niña tarde / La niña llegó tarde.
'The father caused the girl to arrive late'
- (3) a. *The clown laughed the boy/ The boy laughed.
b. *El payaso rió al niño / El niño se rió.
'The clown caused the boy to laugh'

It is well documented that English-speaking children produce causative forms unattested in the adult grammar (e.g. Bowerman 1982, Lord 1979, and Pinker 1989). The overgeneralization of causatives has also been attested in adult L2 acquisition across a variety of languages (Juffs 1996, Moore 1993, Rutherford 1987, Montrul 1997, 1999, 2001a & b, Helms-Park 2001). Researchers have raised two questions: why does overgeneralization occur and how do learners recover from it. It is particularly intriguing that this phenomenon should exist in adult acquisition given that transfer is so pervasive in the acquisition of an L2. Montrul (1997, 1999) has proposed that the overgeneralization of causatives is due to lack of knowledge of grammatically relevant aspects of the meaning of verbs, namely those that are relevant in distinguishing the different classes of intransitives that participate in the causative alternation. As speakers learn these aspects of verbal meaning, they stop overgeneralizing causatives.

The goal of the present study is to replicate and extend Montrul's work in order to test whether there are learners who distinguish between different classes of intransitives (namely, between unaccusatives and unergatives) when overgeneralizing. If this is the case, it would show that learners are sensitive to certain grammatically relevant aspects of the meaning of verbs. More precisely:

(4) Hypothesis of the present study:

If learners selectively overgeneralize the causative construction, it should be the case that they favor unaccusatives such as *llegar/arrive* and disfavor unergatives such as *reír/laugh* because the intransitive forms of change of state verbs (*break/romper*) have properties of unaccusative verbs (See Levin and Rappaport Hovav 1995).

* Thanks to Silvina Montrul and Toben Mintz for comments on a previous version of this work, and to Hiroyuki Oshita, William Rutherford and Mario Saltarelli for comments on the present paper. All errors are ours.

¹ In English, certain unergatives in semi-idiomatic usages (*bleed the patient, burp the baby, walk the dog*) and agentive verbs of manner of motion with a locative PP (*jump, march, run*). See e.g. Levin and Rappaport Hovav 1995.

The paper is organized as follows. In section 2 we describe the experimental design, including the participants in the experiments (2.1), and the materials used (2.2). In section 3, the group results are presented and discussed. In section 4, we present and discuss individual results. Finally, in section 5 we propose an account for the overgeneralization of causatives.

2. Experimental Design

2.1 Participants

The experimental group consisted of 140 students of the Spanish Basic Language Program at the University of Southern California (mean age 20.4), from which only 97 subjects were retained, namely those that knew at least 3 verbs per class² in the Vocabulary Translation Task (VTT). 47 subjects solved the Acceptability Judgment Test (AJT) and 50 of them participated in the Written Production Task (WPT). The proficiency level of the participants was measured by a Cloze test, which included 3 paragraphs in Spanish with a total of 75 blank spaces (1 blank space every 5 words), and which was corrected with the acceptable word criterion. The control group consisted of 19 native speakers of Spanish, students at the Universidad Peruana de Ciencias Aplicadas, who were tested in Lima, Peru (mean age 26.3).

The results of the Cloze test for the experimental and the control groups are shown in Tables 1-2.

Table 1 Cloze Test of the AJT group: mean percentage accuracy scores

Group	Mean	Standard Deviation	Min-Max
Control (n = 19)	90.04*	0.05	79-99
Beginners (n = 18)	22.67*	0.07	5-31
Intermediates (n = 15)	37.69*	0.03	33-41
Advanced (n = 14)	53.43*	0.09	44-69

Notes: *ANOVA: $F(3,62) = 384.072$, $p < .0001$

Table 2 Cloze Test of the WPT group: mean percentage accuracy scores

Group	Mean	Standard Deviation	Min-Max
Control (n = 19)	90.04*	0.05	79-99
Beginners (n = 21)	21.46*	0.06	7-31
Intermediates (n = 12)	36.56*	0.04	32-43
Advanced (n = 17)	59.29*	0.15	44-92

Notes: *ANOVA: $F(3,65) = 219.718$, $p < .0001$

2.2 Tests

A total of 27 verbs (Table 3) were tested in the VTT, the AJT, and the WPT. In the VTT, subjects were asked to translate into English each of the verbs in Table 3 using only one word. The purpose of this test was to determine which verbs the subjects knew, so that only the AJT and WPT responses corresponding to known verbs were used in computing group and individual results.

² 3 verbs was approximately 50% of the verbs in each class.

Table 3 AJT and WPT: Tested verbs

Unaccusatives (A)	Unergatives(E)	Transitive Alternating (TA)	Transitive Non-alternating (TNA) ³
aparecer ‘appear’	acampar ‘camp’	abrir ‘open’	atrapar ‘trap’
caer ‘fall’	fumar ‘smoke’	cerrar ‘close’	colgar ‘hang’
entrar ‘enter’	ladrar ‘bark’	cocer ‘cook’	construir ‘build’
llegar ‘arrive’	llorar ‘cry’	derramar ‘spill’	cortar ‘cut’
morir ‘die’	luchar ‘fight’	quemar ‘burn’	diseñar ‘design’
salir ‘leave’	patinar ‘skate’	romper ‘break’	escribir ‘write’
	reír ‘laugh’		levantar ‘lift’
			pintar ‘paint’

In the AJT (based on Montrul 1997, 1999)⁴, subjects rated the acceptability of sentences, each of them accompanied by a picture, using a scale from -3 (completely unacceptable) to +3 (completely acceptable)⁵. The sentences were constructed with intransitive and transitive verbs, as well as periphrastic causative uses of the tested verbs. Examples of the tested sentences are shown in (5-7) below.

(5) **Intransitive configuration:**

- a. A: La niña llegó tarde. ‘The girl arrived late’
 b. E: Juan rió. ‘John laughed’
 c. TA: La ventana se rompió. ‘The window broke’
 d. TNA: *El pollo se cortó. ‘The chicken cut by itself’

(6) **Transitive or lexical causative configuration:**

- a. A: *El padre llegó a la niña tarde. ‘The father caused the girl to arrive late’
 b. E: *Pedro rió a Juan. ‘Peter caused John to laugh’
 c. TA: El ladrón rompió la ventana. ‘The thief broke the window’
 d. TNA: El cocinero cortó el pollo. ‘The cook cut the chicken’

(7) **Periphrastic causative configuration⁶:**

- a. A: El padre hizo llegar a la niña tarde. ‘The father made the girl arrive late’
 b. E: Pedro hizo reír a Juan. ‘Peter made John laugh’
 c. TA⁷: El ladrón hizo romper la ventana. ‘The thief made the window break’

In the WPT (based on Juffs 1996), participants were asked to write 2 sentences, if possible, to describe a picture. They could use the tested verbs in the lexical and/or the periphrastic causative configuration (See 6-7 above).

3. Group Results

3.1 The Acceptability Judgment Test

Below we present the results for the different verb classes in intransitive, transitive, and periphrastic configuration. Figure 1 shows the means of acceptability of verbs in intransitive configuration. All proficiency groups were very accurate at accepting unaccusative, unergative, and transitive alternating verbs as intransitives. We ran a one-way ANOVA to compare the means of the different proficiency

³ For the sake of completeness, transitive non-alternating verbs, i.e. change of state verbs that do not participate in the causative alternation, were also tested.

⁴ We thank Silvina Montrul for lending us her pictures for the AJT, which we used in our pilot study. For this study, we thank Pierre Canueil for the picture design.

⁵ The Likert-scale used was the same as in Montrul op.cit. On the other hand, we tested one sentence per picture, while Montrul tested in some cases, two sentences simultaneously with the same picture. Also, unlike Montrul, we requested corrections in order to assess what was behind the elicited acceptability judgment.

⁶ We did not test the periphrastic form of TNA verbs.

⁷ The results for TA verbs in periphrastic causatives are not discussed in this paper.

levels for each verb class, and found no significant differences between them. As expected, learners rejected transitive non-alternating verbs in intransitive configuration⁸.

Figure 1 AJT: Verbs in intransitive configuration

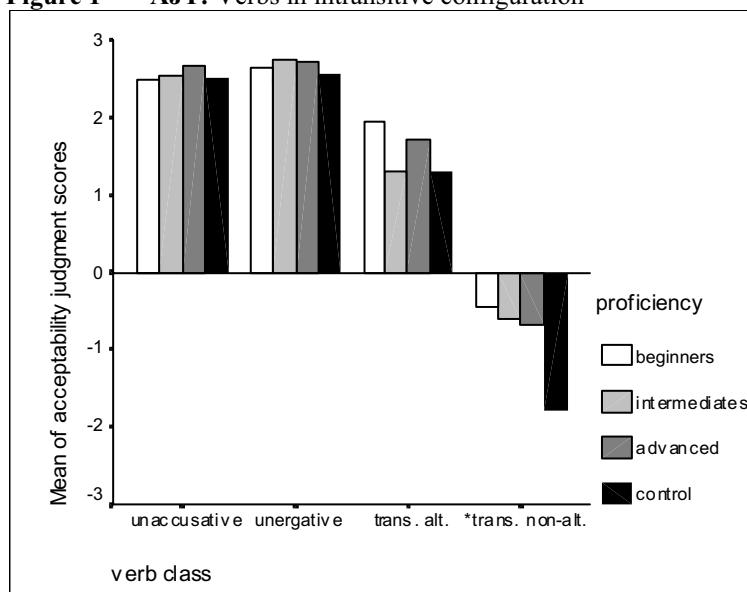


Figure 2 illustrates the acceptability means for the verb classes in transitive configuration. Again, we used a one-way ANOVA to compare the means of the different groups for each verb class. The results are summarized in (8) below.

- (8) a. Unaccusatives: There was a significant difference between the control group and all groups of learners ($p < .005$). *Learners tended to accept overgeneralized causatives with unaccusatives, unlike the control group.*
- b. Unergatives: There was a significant difference between beginners and the other groups ($p < .0005$). *The beginners tended to accept overgeneralized causatives with unergatives, unlike the other groups.*
- c. Transitive Alternating and Transitive Non-alternating: There was no significant difference across groups. *All groups accepted causatives with both transitive alternating and non-alternating verbs.*

In order to compare the acceptability means of unaccusatives and unergatives for each proficiency level, we performed paired-sample t-tests. The results are summarized in (9).

- (9) a. Beginners and Intermediates: There was a significant difference between the means of unaccusatives and unergatives (beginners $p < .05$, and intermediates $p < .005$). *Learners accepted more overgeneralized causatives with unaccusatives than with unergatives.*
- b. Advanced and Control: There was no significant difference between the acceptability means of unaccusatives and unergatives. *Advanced learners and native speakers treated both verb classes as equally unacceptable.*

⁸ There was a significant difference between the learners and the control group ($p < .05$) for the intransitive use of TNA verbs. We do not make further comments on this result since TNA verbs are not the topic of this paper.

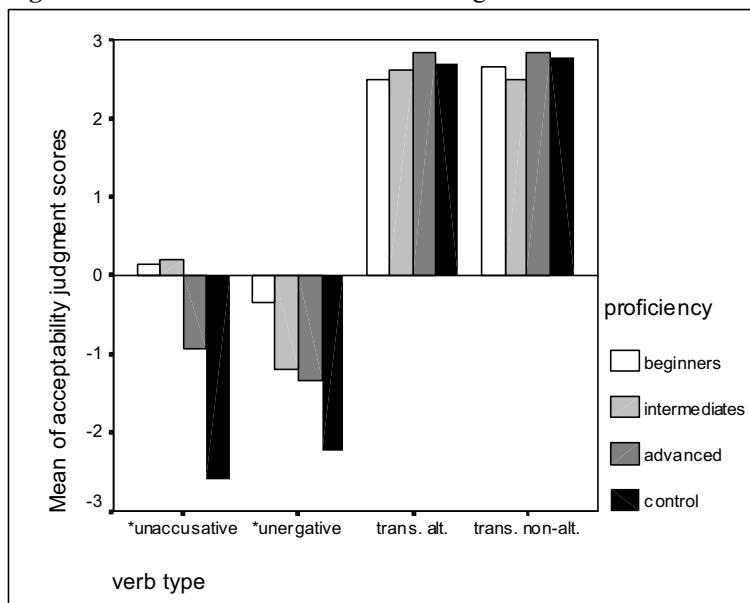
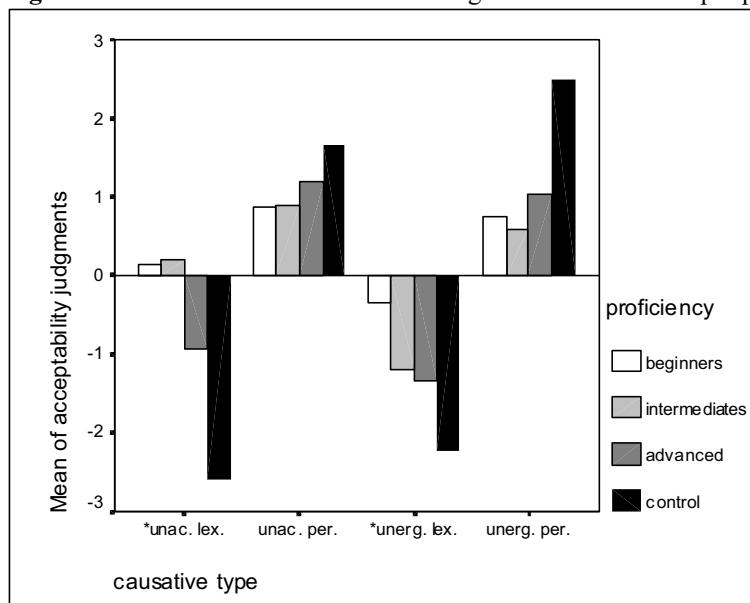
Figure 2 AJT: Verbs in transitive configuration

Figure 3 shows the means of acceptability of lexical and periphrastic causatives with unaccusatives and unergatives. We ran a one-way ANOVA to compare the means of the different proficiency levels for periphrastic causatives with unaccusative and unergative verbs. The results of this procedure are summarized in (10) below.

- (10) a. Unaccusatives: No significant difference was found between levels of proficiency. *All groups tended to accept periphrastic causatives with unaccusatives.*
- b. Unergatives: There was a significant difference between the control group and all groups of learners (beginners $p < .0001$, intermediates $p < .005$, and advanced $p < .05$). *All groups accepted periphrastic causatives with unergatives, but the control group accepted them more strongly.*

In order to compare the means of lexical causatives with the means of periphrastic causatives per level, we used paired-sample t-tests. The results are shown in (11).

- (11) a. Beginners and Intermediates: No significant difference was found between the means of lexical and periphrastic causatives with unaccusatives. *Learners tended to accept both lexical and periphrastic causatives with unaccusatives. They tended to reject lexical causatives with unergatives, and preferred instead the corresponding periphrastic causatives* (beginners $p < .05$, and intermediates $p < .0001$).
- b. Advanced and Control: We found a significant difference between the means of lexical and periphrastic causatives with unaccusatives ($p < .005$, for advanced, and $p < .0001$, for control), as well as with unergatives ($p < .0001$ for both advanced and control). *Advanced learners and native speakers preferred the periphrastic form over the lexical with both unaccusatives and unergatives.*

Figure 3 AJT: Unaccusatives and unergatives in lexical and periphrastic causatives

3.2 The Written Production Task.

Figure 4 shows the mean production rates of lexical causatives for unaccusative, unergative, and transitive alternating verbs. All groups of learners and the control group produced lexical causatives with transitive alternating verbs. On the other hand, as expected, the control group did not produce any lexical causative with unaccusatives and unergatives, while the groups of learners did so. In order to compare the means of production rates of lexical causatives with unaccusatives and unergatives for each proficiency level, we used paired sample t-tests. The results are summarized in (12).

- (12) a. Beginners and Intermediates: There was a significant difference between the production ratios of lexical causatives with unaccusatives and lexical causatives with unergatives (beginners $p < .005$, and intermediates $p < .0005$). *Learners produced lexical causatives more readily with unaccusatives than with unergatives.*
- b. Advanced: We found a significant difference between the production ratio of lexical causatives with unaccusatives and lexical causatives with unergatives ($p < .05$). *Learners produced few lexical causatives with intransitive verbs; however they still used some unaccusatives in that configuration.*

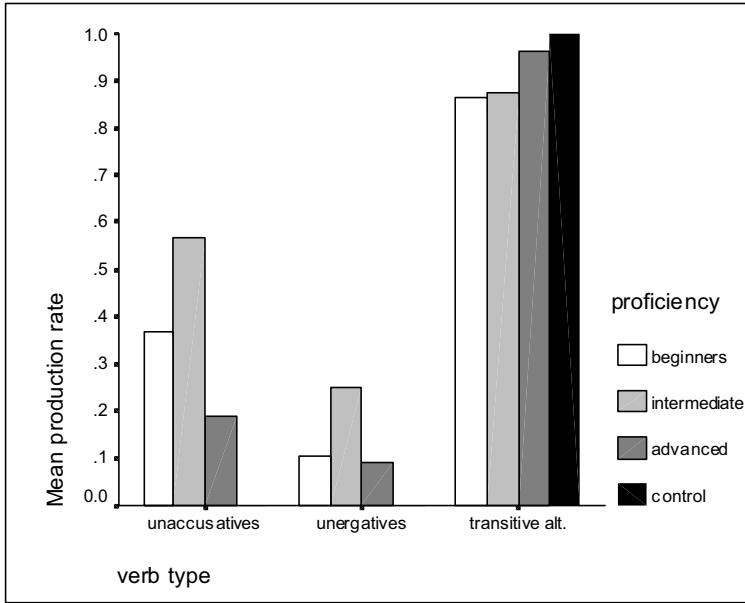
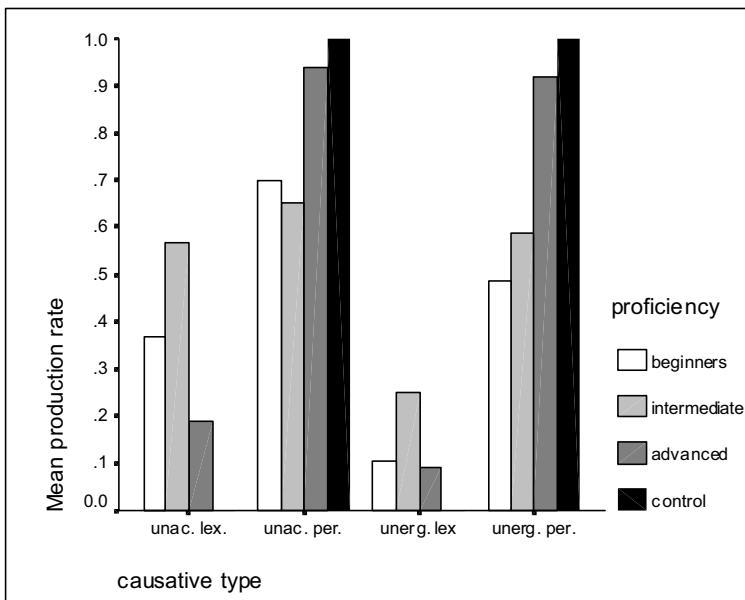
Figure 4 WPT: Lexical causatives

Figure 5 shows the production rate means of lexical and periphrastic causatives with intransitive verbs. In order to compare the production means of lexical and periphrastic causatives for each proficiency level we ran paired-sample t-tests. The results are summarized in (13) below.

- (13) a. Beginners and Intermediates: There was no significant difference between lexical and periphrastic causatives with unaccusatives, and there was one with unergatives (beginners $p < .005$, and intermediates $p < .05$). *Learners produced lexical causatives with unergatives to a lesser extent than with unaccusatives, and used instead the periphrastic form.*
- b. Advanced: We found a significant difference between lexical and periphrastic causatives with both unaccusatives ($p < .0001$) and unergatives ($p < .0001$). *Learners produced the periphrastic form with both unaccusatives and unergatives more readily than the lexical causative.*

Figure 5 WPT: Intransitives in lexical and periphrastic causatives

4. Generalizations of Group Results and Conclusion

The results presented above lead us to the following generalizations:

- (14) a. Beginner and intermediate learners showed a significantly different behavior from the advanced group: the former accepted / produced overgeneralized causatives with intransitive verbs, while the latter rejected them or produced much less of them. Advanced learners behaved differently from the control group, but only in the case of the WPT did this difference attain a level of significance.
- b. When learners accepted / produced causatives with intransitives, they did so significantly more with unaccusatives than with unergatives.
- c. The degree of acceptance / production of lexical and periphrastic causatives with intransitives was complementary: lexical causatives were accepted / produced more with unaccusatives than with unergatives, and, on the other hand, periphrastic causatives were more readily accepted / produced with unergatives than with unaccusatives.

The generalizations above confirmed our hypothesis, presented in (4) and repeated here as (15):

(15) **Hypothesis of the present study:**

If learners selectively overgeneralize the causative construction, it should be the case that they favor basic unaccusatives and disfavor unergatives because the intransitive form of change of state verbs have unaccusative-like properties.

So far, we have discussed the results obtained for each of the proficiency levels as groups, i.e., we have not focused on the individual differences that may exist within the members of these groups. Although means are representative measures of the tendency of a group, they may hide substantial differences in behavior among individuals. On the other hand, we have also treated verbs as classes, without looking at the differences that there may be across verbs in a specific class. For lack of space, we do not report in detail the individual analysis by verbs. Nevertheless, we note that all intransitives were accepted / used as causatives by some learner or other, but more frequently so *caer* 'fall', *entrar* 'enter', and *morir* 'die', among the unaccusatives, and *ladrar* 'bark', and *reír* 'laugh', among the unergatives. In what follows, we present individual results by subjects.

5. Individual Results

Since in the group results the beginners and intermediates mostly patterned together, we collapsed these groups for the individual analysis. In this analysis, we took into account subjects that did not overgeneralize at all or that did so with only 1 verb, and subjects that overgeneralized with 3 or more verbs. 16 subjects were left out because they overgeneralized causatives only with 2 verbs, and their overgeneralization ratio⁹ was lower than 50%. The criteria by which subjects were classified in groups were the following:

- (16) a. Did not accept / produce overgeneralized causatives: Subjects with 0 or 1 overgeneralization.
- b. Accepted / produced with both unaccusatives and unergatives: Subjects with equal ratio of overgeneralization.
- c. Accepted / produced more with unaccusatives or unergatives: Subjects with higher ratio of overgeneralization for one of the intransitive classes.
- d. Accepted / produced with only unaccusatives or unergatives: Subjects with an overgeneralization ratio of .5 or more for one of the verb classes, and no overgeneralization for the other class.

⁹ Overgeneralization ratio = Number of verbs per class used as causatives / Total number of verbs per class.

The results of this analysis are reported in Tables 4 and 5 for the AJT and the WPT, respectively. Both tests showed that there are subjects who did not overgeneralize causatives and others who did so.

In both tasks, the advanced group shows the highest percentage of subjects who did not accept / produce causatives with intransitive verbs. On the other hand, among the subjects who did overgeneralize causatives, the percentage of those who did so only, or more, with unaccusatives is always higher than the percentage of those who accepted / used unergative verbs as causatives. In fact, no subject accepted / produced causatives only with unergatives, and those who overgeneralized equally with unaccusatives and unergatives are rare cases (only 1 subject per level in the WPT).

Table 4 AJT: Individual Analysis by subjects

	Beg. / Int. (n = 28)	Advanced (n = 12)
Rejected overgeneralized causatives	9 (32 %)	8 (67 %)
Accepted both unaccusatives and unergatives:		
With unaccusatives and unergatives equally	0 (0 %)	0 (0 %)
More with unaccusatives	12 (43 %)	3 (25 %)
More with unergatives	5 (18 %)	0 (0 %)
Accepted only unaccusatives:	3 (11 %)	0 (0 %)
Accepted only unergatives:	0 (0 %)	0 (0 %)

(Percentages rounded to nearest integer)

Table 5 WPT: Individual Analysis by subjects

	Beg. / Int. (n = 28)	Advanced (n = 13)
Did not produce overgeneralized causatives	11 (39 %)	10 (77 %)
Produced with both unaccusatives and unergatives:		
With unaccusatives and unergatives equally	1 (4 %)	1 (8 %)
More with unaccusatives	8 (29 %)	2 (15 %)
More with unergatives	1 (4 %)	0 (0 %)
Produced only with unaccusatives:	7 (25 %)	0 (0 %)
Produced only with unergatives:	0 (0 %)	0 (0 %)

(Percentages rounded to nearest integer)

6. Generalizations of Individual Results and Conclusion

We obtained the following generalizations from the individual analysis by subjects (Tables 4-5):

- (17) a. There are *conservative* learners, who do not overgeneralize causatives.
 b. There are *creative* learners, who overgeneralize causatives. Within this group, we found two sub-groups:
1. Those who overgeneralize only with unaccusatives (10 subjects). No subject overgeneralizes only with unergatives.
 2. Those who overgeneralize with both unaccusatives and unergatives (33 subjects). It is to be noted that within this group those that overgeneralize more with unaccusatives are more numerous than those that overgeneralize more with unergatives (25 subjects vs. 6 subjects).

We conclude that the individual results are compatible with the group results.

7. Analysis

Our results lead us to reject the hypothesis that the overgeneralization of causatives is due to lack of grammatical knowledge to the extent that learners overgeneralize along the right dimension: they favor the overgeneralization with unaccusatives. We tend to think that this phenomenon is related to the type of strategy learners employ in putting to use their grammatical knowledge. Based on the individual

analysis, we identify two strategies, summarized in (18) below. Learners who use a *syntactic* strategy (18a) overgeneralize with both unergatives and unaccusatives, and those who use a *lexico-syntactic* strategy (18b) overgeneralize only with unaccusatives.

- (18) a. Syntactic strategy: The lexical information of particular verb classes is ignored. The following general form-meaning correspondence generalization is used:
Surface template $NP_1 V NP_2 \leftrightarrow [NP_1 CAUSE [NP_2 BECOME PRED]]$
- b. Lexico-syntactic strategy: The correspondence between surface syntactic template and meaning is restricted to a lexico-syntactic class, namely unaccusatives.

The subjects reported in generalization 17b.2 might be in transition from a syntactic strategy to a lexico-syntactic strategy.

As noted in (14c) there was a complementarity between the acceptance / production of lexical and periphrastic causatives, namely, lexical causatives were accepted / produced more with unaccusatives than with unergatives, and, periphrastic causatives were more readily accepted / produced with unergatives than with unaccusatives. This suggests that there is a tendency to accept / produce lexical causatives whenever possible. This might be due to the fact that lexical causatives are syntactically simpler than periphrastic forms, and therefore they may be easier to parse. This issue deserves further investigation.

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Proceedings of the 6th Generative Approaches to Second Language Acquisition Conference (GASLA 2002): L2 Links

edited by Juana M. Liceras,
Helmut Zobl, and Helen Goodluck

Cascadilla Proceedings Project Somerville, MA 2003

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Cabrera, Mónica and María Luisa Zubizarreta. 2003. On the Acquisition of Spanish Causative Structures by L1 Speakers of English. In *Proceedings of the 6th Generative Approaches to Second Language Acquisition Conference (GASLA 2002)*, ed. Juana M. Liceras et al., 24-33. Somerville, MA: Cascadilla Proceedings Project.

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Cabrera, Mónica and María Luisa Zubizarreta. 2003. On the Acquisition of Spanish Causative Structures by L1 Speakers of English. In *Proceedings of the 6th Generative Approaches to Second Language Acquisition Conference (GASLA 2002)*, ed. Juana M. Liceras et al., 24-33. Somerville, MA: Cascadilla Proceedings Project. www.lingref.com, document #1025.