Authentic Processing Instruction and the Spanish Subjunctive

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Abstract: Twenty-nine subjects enrolled in a fourth-semester Spanish course were assigned to one of two treatments: processing instruction and meaning-based output instruction. The results show that processing instruction (PI) has an overall greater effect than meaning-based output instruction (MOI) on how learners interpret and produce the Spanish subjunctive of doubt. MOI did not have nearly the effect on interpretation as PI. MOI did have a positive impact on what learners were able to produce, but this effect was no greater than the PI influence on production. These results emphasize the important role of input in second language acquisition and the benefits of processing instruction in particular. Although Collentine (1998) stated that most uses of the subjunctive do not lend themselves to PI, this study has shown that input can be structured in such a way that the subjunctive is more easily processed by L2 learners of Spanish.

Key Words: processing instruction, Spanish subjunctive, input, output

Introduction

Despite the fact that there are no contemporary SLA researchers who do not ascribe an important role to input in second language acquisition, relatively few researchers and practitioners have attempted to bridge the gap between what we know about input processing and how we teach language. One exception is processing instruction, which is an instruction type based on VanPatten's (1992) model of second-language acquisition and use. Processing instruction (PI) makes a deliberate attempt to intervene in the acquisition process by giving the learner explicit information concerning the target item, and activities containing structured input. Structured input is language data (either oral or written) that has been altered in a way that encourages the second-language reader or listener to attend to the target item for meaning.

Natural but misleading processing tendencies that hinder second-language learners are what dictate how this input should be structured. For example, some research has shown that second-language learners tend to interpret noun-verb-noun strings as subject-verb-object. Because Spanish has flexible word order, this tendency often leads learners of Spanish to make erroneous conclusions concerning utterances of object-verb-subject structure. Structured input activities would provide these learners with the opportunity to interpret object-verb-subject strings. Within a given activity, the object or object pronoun would be presented first in numerous utterances. The activity would require a choice between two possible interpretations of each utterance, with only one interpretation being correct. This is just one example of how input might be structured to combat misleading processing tendencies. VanPatten (1993) proposes six general guidelines for the successful design of any lesson containing structured input activities:

(a) Present one thing [one function/use] at a time.
(b) Keep meaning in focus.
(c) Move from sentences to connected discourse.
(d) Use both oral and written input.
(e) Have learners do something with the input.
(f) Keep the learner's processing strategies in mind.

Research on processing instruction has
revealed that it is more beneficial than the traditional production-focused instruction that is found in many foreign-language textbooks. For example, Cadierno (1995) found that learners who received processing instruction performed better than the other two groups on both comprehension and production tests, even though the processing instruction group was never asked to produce any language during the treatment. Another relevant study is Cheng (1995), which found that the PI group made slightly greater gains overall than the traditional output-oriented group.

Investigations into the differential effects of processing instruction and traditional instruction on Spanish L2 acquisition have been limited thus far to object pronouns, the preterit tense, and the ser/estar contrast. The linguistic and psychological complexity of these grammatical points does not compare to the complexity of the Spanish subjunctive, the target feature used in the present study. Therefore, one cannot conclude from these studies alone what effects processing instruction might have on a more complex grammatical point. This is a motivation for the present study.

One might argue that Collentine (1998) has already concluded that output-oriented instruction and processing instruction are equally effective in tasks involving the Spanish subjunctive. It is true that Collentine (1998) found no significant difference in improvement between what he termed the “processing instruction” group and his more traditional output-oriented group. However, a closer look at his processing group’s treatment reveals that Collentine did not follow one of the most basic guidelines in designing processing instruction materials: keep the learner’s processing strategies in mind.

In order to understand how Collentine’s materials fall short of authentic processing instruction, we must recall two processing strategies in particular that most recently appeared in VanPatten (1997). Principle 1(a and b) states that lexical form is weighted more heavily than grammatical form in its importance to the learner’s input processor. This means that in sentences such as ‘Dudo que coma bien’, a learner is more likely to process Dudo for meaning than the verb ending –a, coma. After a learner has processed Dudo for meaning, the –a ending in coma provides no new information and will likely go undetected. In the Collentine (1998) instructional materials for the PI group, the affective activities did not encourage the learner to pay attention to the verb form in order to answer each item. Instead, the lexical items often revealed which answer was most logical. Another relevant shortcoming of Collentine’s PI materials relates to VanPatten’s Principle 4(a) which states that learners process items in sentence initial position first, then items in sentence final position, and finally items which are in the middle of the sentence. In the Collentine (1998) instructional materials, subjunctive forms were left in utterance-medial position, where they are least likely to be processed.

An additional concern with the Collentine (1998) study is that some of the referential activities in the PI treatment involved the processing of connected discourse rather than isolated sentences. These activities may have been too complex for the learners to derive a real benefit from them. Finally, the study could have benefited greatly from a second post-test to evaluate interpretation and production performance in the long term. Without this second assessment period, it is difficult to make conclusions about how much real language acquisition occurred for any of the groups.

In conclusion, only a few features of Spanish language have been targeted thus far in studies investigating the effects of processing instruction, and these features have been linguistically and psychologically less complex in nature than the Spanish subjunctive. Although the Spanish subjunctive was the target feature in focus for Collentine’s (1998) study, the shortcomings of that study render its results and conclusions an inaccurate portrayal of the effects of authentic processing instruction on learners’ ability to interpret and produce the
Spanish subjunctive. Therefore, further experimentation regarding the relative effects of processing instruction and output-based instruction on the acquisition of the Spanish subjunctive is needed.

The researcher will refer to the output-based instruction type chosen for the present experiment as “meaning-based output instruction” (MOI). MOI consists of explicit information about the target item and structured output activities. In the present experiment, these structured output activities were designed in a way that the target item produced was found in the most salient position. That is, as with the PI activities, the MOI activities were structured such that the subjunctive forms were utterance-initial. It should be noted that MOI is different from some output-oriented treatments in that there is no component containing traditional, output-based mechanical drills. All structured output carried a meaningful context; the target forms were produced not with the sole intention of practicing subjunctive formation, but rather to communicate opinions, beliefs, or other information related to a designated topic.

The Present Study

In view of the aforementioned limitations of previous research on processing instruction and the design flaws in Collentine (1998), the present study investigates the differential effects of processing instruction (PI) and meaning-based output instruction (MOI) on the acquisition of the present tense Spanish subjunctive of doubt. This study proposes the following research questions:

1. Does PI bring about improved performance on...
   (a) sentence-level tasks involving the interpretation of the Spanish subjunctive of doubt?
   (b) sentence-level tasks involving the production of the Spanish subjunctive of doubt?
2. Does MOI bring about improved performance on...
   (a) sentence-level tasks involving the interpretation of the Spanish subjunctive of doubt?
   (b) sentence-level tasks involving the production of the Spanish subjunctive of doubt?

3. If both PI and MOI bring about improved performance, do both types of instruction result in equal improved performance on...
   (a) sentence-level tasks involving the interpretation of the Spanish subjunctive of doubt?
   (b) sentence-level tasks involving the production of the Spanish subjunctive of doubt?

Based on previous research on processing instruction, it was hypothesized that PI would have an overall more beneficial effect on learners than meaning-based output instruction.

Subjects

The subjects consisted of 29 university students who were each enrolled in one of four sections of a fourth-semester basic Spanish course. Fourth-semester students were selected so that the vocabulary items presented in the instructional and testing materials would not limit their performance on the activities. The subjects had received no formal instruction on the Spanish subjunctive since their arrival at the university. To ensure that previous courses at the university or high school level did not constitute a confounding variable, those who scored 60% or better on either of the two tasks in the pre-test were eliminated from the study. In other words, though some subjects in the original data pool may have received previous instruction on the Spanish subjunctive of doubt, the pretest served to level out the subject’s knowledge and ability to interpret and produce the subjunctive forms. All subjects were native speakers of English, and none reported having any learning disabilities or hearing impairments. Each of four intact classes was randomly assigned as a whole to one of the two treatment groups: meaning-based output instruction (N=12) and processing instruction (N=17). Subjects were enrolled in a
Spanish-language program based on a communicative approach. The students were accustomed to reading explicit grammatical information from their textbook and workbook, and received both structured input activities and structured output activities on a daily basis. In addition, they watched the Destinos video series that served as material for classroom discussion and homework activities.

**Materials**

The researcher created two instructional packets for the treatment. Each packet was designed to reflect a different approach to teaching the Spanish subjunctive of doubt. The PI instructional packet consisted of eight structured input activities and a handout containing explicit information related to the subjunctive. The MOI instructional packet consisted of eight structured output activities and the same handout. Both instructional packets contained identical subject matter, vocabulary, and number of tokens (activity items). They differed only in that subjects in the MOI group were required to create meaning by completing sentences via producing subordinate clauses containing present-tense subjunctive forms, whereas subjects in the PI group were required to process and make decisions about pre-formed sentences which contained subordinate clauses bearing present-tense subjunctive forms. In both cases, the activity items were structured so that the subjunctive form would be more salient to the learner.

The one-page handout contained explicit information concerning the following:

1. how the subjunctive is formed.
2. where the subjunctive is located within a sentence.
3. when the subjunctive is used (only mentioning its use with expressions of doubt).
4. how to process the subjunctive.

In the last section, subjects were told that the subjunctive verb ending is redundant because it simply expresses doubt a second time. They were encouraged to pay attention to the verb ending despite its redundancy. Finally, one subordinate clause (containing the subjunctive form *entienda*) was given as an example, and subjects were required to choose between an indicative trigger and a subjunctive trigger. The answer was given to them at the bottom of the handout. After the subjects read through the handout with the instructor, they began the activities.

The PI activities required the subjects to interpret sentences containing subjunctive forms, and the students were given feedback as to what the right answers were. During this time, none of the information on the handout was repeated, and no further grammatical explanation was given. In addition, no feedback or justification was supplied when the correct answers to the activities were given. In other words, the students were told that the answer was *a* or *b*, but they were not told why. Note that the structured input groups never produced any subjunctive forms during any portion of the treatment; they were only required to respond to the input by selecting from possible answers which were already provided. Subjects were given this instruction during two class periods (two days in a row) for a total of 90 minutes of instruction time. Sample PI activity items are provided in the Appendix.

In contrast, the MOI activities required the subjects to produce subjunctive verb forms or clauses containing a subjunctive form, and the students were given feedback as to what the right answers were. As with the PI group, none of the information on the handout was repeated, and no further grammatical explanation was given. Also, no feedback or justification was supplied when the correct answers to the activities were given. When a wrong answer was given by a student, the instructor called on other students until the correct answer was given. Subjects received instruction during two class periods (two days in a row) for a total of 90 minutes of instruction time. Sample MOI activity items are provided in the Appendix.
Procedure

The pretest consisted of an interpretation task and a production task and was administered on the first day of instruction, immediately before treatment. The pretest provided a baseline measure for the effects of instruction type and served as a means of eliminating subjects with prior exposure to the subjunctive from the final data pool. Subjects who scored greater than 60% on either the interpretation task or the production task of the pretest were eliminated from the study.

All experimentation took place in the subjects' regular classroom during their regular class periods. The treatment period lasted two days with a posttest administered a day after the treatment and another posttest given one month after the treatment. Three versions of the same test were developed. For the pretest, the MOI group was given version A and the PI group received version B. After the pretest was given, the classes were randomly assigned to the two instructional conditions: meaning-based output instruction and processing instruction. All instruction took place during two consecutive class days and no homework was given. The first posttest was administered one day after the treatment. For the first posttest, the MOI group was given version C, and the PI group was given version A. One month later, the second posttest was administered to examine longer-term effects of instruction. The MOI group received version B, while the PI group received version C. Only subjects who completed all three tests (the pretest and both posttests) were included in the study.

The two days of experimental instruction were carried out by two instructors who were not the subjects' regular teachers, and who had never taught them before this study. An effect for instructor was avoided by using both instructors for both conditions. That is, half of each group was taught by one instructor, while the other half was taught by the other instructor. The researcher was not involved in the experimental instruction. The instructors selected to carry out the treatment had little knowledge of the nature of the study, and were simply told to guide the students through the activities. As mentioned earlier, the instructional materials for both groups had identical content and number of tokens. In addition, an effort was made to keep the MOI and PI groups comparable with regard to time on task and amount of practice. Both groups completed four activities on the first day of instruction and four activities on the second day of treatment. The first posttest was administered a day after the treatment and the second posttest was administered one month after treatment.

Assessment

The interpretation task consisted of a series of oral sentences in which the main clause was left blank. The test required that subjects listen to each utterance and choose between two main clauses which were written on the subject's answer sheet to complete each sentence. For each subordinate clause, there were two main clauses to choose from—one which triggered the indicative and one which triggered the subjunctive. For example, subjects would hear cante bien (___ that [3rd p. sing.] talks [subj] a lot) and had to decide between (a) Yo dudo que... (I doubt that...) and (b) Es verdad que... (It's true that...). There were twelve target items and twelve distracters. The distracters involved choosing a phrase which best completed the sentence because of its tense or person-number agreement. The language used in the interpretation test consisted of high-frequency vocabulary that the subjects had already covered in previous language courses.

The production task consisted of a sentence completion task in which there were twelve target items and eight distracters. Subjects were told to change the infinitive verb form in parenthesis (if necessary) to fill in the blank and complete each sentence correctly. The distracters were unrelated to the subjunctive mood and required subjects to use the past tense, the imperfect, the present tense, or the infinitive.
Scoring

For the interpretation task, each correct answer received a score of one, each incorrect or blank response received a score of zero, and the total points possible were nine. A correct response involved selecting the main clause that corresponded with each subordinate clause containing a verb form in the subjunctive mood. In order to remove subjects who had little room for improvement, those who scored 6 or greater on this portion of the pretest were eliminated from the study. For the production task, one point was given for any clear attempt to form a subjunctive, so that maximum score possible was nine. If the subject used the subjunctive form but the verb did not agree in person or number and/or was misspelled (trabedjen instead of trabajar, for example), the item was given a score of one. Each blank response received a score of zero, and no points were given if the subjunctive was not used when it was obligatory. Those who scored 6 or greater on the production portion of the pretest were also eliminated from the study.

Results

Table 1 illustrates the results of mean test scores and standard deviations for the PI and MOI groups. This table shows that for the interpretation data, both the PI and MOI groups improved from pretest to posttest 1. The mean score decreased only slightly from posttest 1 to posttest 2 for the PI group, while the MOI group’s mean score decreased more than 1.5 points for the second posttest. The standard deviations were much higher for the MOI group after instruction than for the PI group. For the production data in Table 1, the lower means on the pretest together with the higher means on both posttests indicate great improvement for both PI and MOI groups. The standard deviations for the production task did not differ dramatically between groups on any of the tests. In summary, the results of this study indicated that both PI and MOI have positive effects on the how learners interpret and produce the Spanish subjunctive of doubt.

Discussion

Interpretation Data

In order to determine the possible effects of instruction type on the way in which learners interpret utterances containing the present tense Spanish subjunctive of doubt, raw scores of the interpretation pretest and posttests were tabulated and a two-way analysis of variance (ANOVA) with repeated measures was performed. Instruction Type (PI, MOI) was the between-subjects factor, whereas Time (pretest, posttest 1, posttest 2) was the within-subjects factor. The results of the ANOVA shown in Table 2 reveal a significant effect for Time. This indicates that both instruction types had a significant effect on test performance. However, there was a significant effect for Instruction Type and a significant interaction between Instruction Type and Time. This indicates that the improvement for both groups was not statistically similar. That is, PI resulted in statistically greater improvement than MOI. A visual representation of the gains from pretest to posttests 1 and 2 is shown in Figure 1.

The results of the analysis of the interpretation data from this study suggest that both PI and MOI resulted in some type of knowledge gain due to the treatments. Both PI and MOI had a positive effect on how learners interpreted the Spanish subjunctive of doubt. The effects of both PI and MOI were retained over time. Therefore, the answers to Research Questions 1a and 2a are yes. Both PI and MOI bring about improved performance on sentence-level tasks involving the interpretation of the Spanish subjunctive of doubt. In addition, the improvement of the PI group on the interpretation task was significantly greater than the improvement of the MOI group. Therefore, the answer to Research Question 3a is yes. In this experiment, there was a difference between how learners who received PI and those who received MOI performed on sentence-level tasks involving the interpretation of the Spanish subjunctive of doubt.
Production Data

In order to determine the possible effects of instruction type on the way in which learners produce present-tense Spanish subjunctive verb forms, raw scores of the production pretest and posttests were tabulated and a two-way analysis of variance (ANOVA) with repeated measures was performed. Instruction Type (PI, MOI) was the between-subjects factor, whereas Time (pretest, posttest 1, posttest 2) was the within-subjects factor. The results shown in Table 3 reveal a significant effect for Time. This means that both instruction types had a significant impact on test performance. However, there was no significant effect for Instruction Type and no significant interaction between Instruction Type and Time. This means that there was no significant difference between the improvement of the MOI group and that of the PI group on the production task. Figure 2 gives a visual representation of the gains from pretest to posttests 1 and 2.

Both PI and MOI had a positive effect on how learners produced the Spanish subjunctive of doubt. The effects of both PI and MOI were retained over time. Given these results, the answer to Research Questions 1b and 2b is yes. Both PI and MOI bring about improved performance on sentence-level tasks involving the production of the Spanish subjunctive of doubt. In addition, the improvement of the PI group on the interpretation task was not significantly different from the improvement of the MOI group. Therefore, the answer to Research Question 3b is no. In this experiment, there was no difference between how learners who received PI and those who received MOI performed on sentence-level tasks involving the production of the Spanish subjunctive of doubt.

Summary

Table 4 summarizes the results of the analysis of the data for both the interpretation task and the production task. Both PI and MOI had positive effects on how learners interpreted and produced the Spanish subjunctive of doubt. Both instruction types had effects on the developing system of the learners and these effects proved to be durable over one month. That is, even four weeks after instruction, both PI and MOI had significant effects on how learners performed on both the interpretation and production tasks.

Conclusions

The results of this study indicate that PI has an overall greater effect than MOI on how learners interpret and produce the Spanish subjunctive of doubt. It seems that PI had a beneficial effect on the way in which the learners processed the input, and this led to some type of internalization in their developing system that led to improvement in production as well. MOI did not have nearly the effect on interpretation that the PI group did. MOI seems to have had an impact on what learners were able to produce, although this effect was no greater than the PI influence on production. The PI group, although receiving no production practice, appears to have received what they needed in order to produce as well as the MOI group. The fact that the MOI group was able to improve after treatment on the interpretation task may be due to learner output being utilized as incidental input for other learners. That is, during the follow-up step to each activity, when the instructor asked students to give an answer to an activity item, the student’s answer (when correct) served as incidental oral input for those who were listening.

It is important to note that there are no empirical grounds for emphasizing the importance of the explicit information provided about the Spanish subjunctive of doubt over any other component of the PI instructional materials. It may be that, as in VanPatten and Oikonen (1996), the structured input activities alone caused the positive effect. Only an experimental design containing two PI treatment groups (one receiving explicit information, one receiving no explicit information) would yield results that support or reject the notion that explicit information is necessary for pro-
cessing instruction to have its effects. That is, a modification of the present study to include these two treatments would indicate whether or not explicit information contributes to the positive effects of PI on classroom L2 learners’ interpretation and production of the Spanish subjunctive.

The principal limitations of the present study relate to the size and nature of the subject pool. To be sure, there is a need for further study using a larger and more varied subject pool. The twenty-nine participants were taken from the same fourth-semester Spanish course at a prominent Midwestern university. Hence, the learners were all products of one instructional environment. Except for their varying exposures to Spanish at the high school level, the nature of formal instruction in Spanish language that these participants had received was very similar. As a result, the present study cannot address what effects PI and MOI might have on learners of Spanish in a higher-level or lower-level course or learners with a significantly different type or amount of exposure to Spanish.

Certain methodological objections could be raised concerning this study. First, one might argue that the PI group had an advantage over the MOI group on the interpretation portion of the posttests. It is equally important, however, to note that the MOI group had an advantage on the production task, and the PI group’s improvement still equaled that of the MOI group on the production task. A second and very valid methodological objection is that the learners were simply required to produce the subjunctive form and essentially “fill in the blank.” Therefore, the results in no way provide implications for spontaneous language production. In other words, we cannot conclude from this study that PI would result in improved performance during real-time language production. Hence, further experimentation is needed.

The results of this study further emphasize the important role of input in second language acquisition and the benefits of processing instruction in particular. This does not mean that output is unimportant or that it should be overlooked in the L2 classroom, but rather that providing learners with structured input needs to be a central concern for language teachers. In addition, this study provides evidence that PI is compatible with a grammar point that is both linguistically and psychologically complex. Contrary to the conclusions drawn in Collentine (1998), who stated that most uses of the subjunctive do not lend themselves to PI, this study has shown that input can be structured in such a way that the subjunctive is more easily processed by the L2 learner.

**Note**

I would like to thank Bill VanPatten at the University of Illinois at Chicago for his helpful insights during the drafting of this manuscript.

**Works Cited**


APPENDIX

Referential PI Activity: Tu instructor(a)

You will hear the second half of a statement that someone recently made about your instructor. Circle the opinion phrase that correctly fits with each statement.

1) Yo sé que...
No creo que...

2) Es obvio que...
Dudo que...

3) Estoy seguro que...
No es verdad que...

(7 more activity items of identical structure)

Instructor's Script:

1) ...coma en casa mucho.
2) ...baile mucho en las discotecas.
3) ...hace su tarea por la noche.

(7 more script items of identical structure)

Instructor’s Script:

1) No creo que el perro...
2) Es dudoso que el pez...
3) Es posible que el gato...
4) Es imposible que la serpiente...

(7 more activity items of identical structure)

Affective MOI Activity: Michael Jordan

Choose phrases from List B at the bottom of the page and match them with phrases from List A which express your opinion about Michael Jordan. Make sure to change the verbs in List B so that they make sense in each sentence.

LISTA A

1) No creo que___________________________
2) Es dudoso que__________________________
3) Estoy seguro que________________________

(six more items of same format)

LISTA B

1) escuchar música mientras levanta pesas.
2) ser un hombre perezoso.
3) ser el mejor jugador del mundo.

(six more choices of the same format)
Table 1

Number of Subjects, Means, Standard Deviations, Minimum and Maximum Scores, and Score Ranges for PI and MOI Instruction Types on Interpretation and Production Tasks.

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Produc. Pre | PI | 17 | .88 | 1.65 | 0 | 5 | 5 |
| MOI | 12 | .33 | .89 | 0 | 3 | 3 |
| Post 1 | PI | 17 | 6.18 | 2.16 | 1 | 9 | 8 |
| MOI | 12 | 6.33 | 2.06 | 3 | 9 | 6 |
| Post 2 | PI | 17 | 6.18 | 2.46 | 1 | 9 | 8 |
| MOI | 12 | 5.25 | 3.22 | 0 | 9 | 9 |

Table 2

Summary Table for ANOVA Analysis Using Interpretation Data.

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Table 3

Summary Table for ANOVA Analysis Using Production Data.

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<td></td>
<td></td>
</tr>
<tr>
<td>Error (time)</td>
<td>54</td>
<td>195.63</td>
<td>3.62</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4

Summary Results of Instructional Effects in Terms of Task.

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Treatment</th>
<th>Immediate Effects</th>
<th>Sustained Effects</th>
<th>Relative Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpretation</td>
<td>PI</td>
<td>Yes</td>
<td>Yes</td>
<td>PI &gt; MOI</td>
</tr>
<tr>
<td></td>
<td>MOI</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Production</td>
<td>PI</td>
<td>Yes</td>
<td>Yes</td>
<td>PI = MOI</td>
</tr>
<tr>
<td></td>
<td>MOI</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>
Figure 1
Interaction Plot for Instruction Type and Time Using Interpretation Data.

Figure 2
Interaction Plot for Instruction Type and Time Using Production Data.