

2017

The Order of Explicit Information in Processing Instruction

Erin McNulty Díaz
Dickinson College

Follow this and additional works at: http://scholar.dickinson.edu/faculty_publications

 Part of the [Educational Methods Commons](#), and the [Spanish Linguistics Commons](#)

Recommended Citation

Díaz, Erin McNulty. "The Order of Explicit Information in Processing Instruction." *Applied Language Learning* 27, no. 1-2 (2017): 41-72.

This article is brought to you for free and open access by Dickinson Scholar. It has been accepted for inclusion by an authorized administrator. For more information, please contact scholar@dickinson.edu.

The Order of Explicit Information in Processing Instruction

ERIN MCNULTY DIAZ
Dickinson College

The two main components of Processing Instruction (PI) are Explicit Information (EI) and Structured Input (SI). Most researchers have concluded that the SI is more responsible for learner gains than the EI (Benati, 2004a, 2004b; VanPatten & Oikennon, 1996; Wong, 2004). However, some researchers have found that EI does significantly impact learner gains (Cox & Sanz, 2015; Farley, 2004b; Farley & McCollam, 2004; Fernández, 2008; Henry, Culman, & VanPatten, 2009). The conventional order of PI is EI followed by SI. The present study seeks to ascertain if the order of EI and SI affects learner gains as measured by interpretation and production scores on four assessments tasks. Two instructional interventions were designed to respond to this research question. The first treatment group received EI and then SI (traditional order) and the second group practiced with SI before encountering the EI.

The grammatical target of the subjunctive/indicative contrast after the temporal adverb cuando provided a number of acquisitional challenges that were addressed in the EI with five input processing principles. A pretest/posttest/delayed posttest (after five months) design was used to measure learner gains. Repeated measures ANOVAs were used to further analyze the scores from these tasks by total, subjunctive, and indicative items. Findings indicated that the order of EI was not statistically significant, but points to explicit feedback as a contributive factor.

Keywords: *Explicit Information, pedagogy, Processing Instruction, Spanish, subjunctive*

INTRODUCTION

Processing Instruction (PI) operationalizes VanPatten's Input Processing (IP) principles in an approach to grammar instruction. The two main components of Processing Instruction (PI), Explicit Information (EI) and Structured Input (SI), have been investigated to determine the causative component of PI. The role of EI is disputed in the literature. Some researchers have found that SI is the component of PI that provokes learner gains (Benati, 2004a, 2004b; VanPatten & Oikennon, 1996; Wong, 2004) and others have demonstrated the EI plays a positive role in learner performance (Cox & Sanz, 2015; Farley, 2004b; Farley & McCollam, 2004; Fernández, 2008; Henry, Culman & VanPatten, 2009). Previous investigations have not studied whether the order of presentation of instructional treatments affects learner gains: EI + SI versus SI + EI.

To this end, two instructional interventions were designed to ascertain if the order of the EI affected learner gains. The targeted grammatical feature for this PI study is the subjunctive/indicative contrast after *cuando* [when]. One treatment group received explicit information then structured input. A second treatment group received structured input then explicit information. The instructional interventions were delivered via a website designed by the researcher. Participants ($n = 14$) were enrolled in an intensive first semester university course without previous exposure to the subjunctive. A pretest/posttest/delayed posttest (after five months) design was used to measure learner gains on production and interpretation tasks. Repeated measures ANOVAs were used to further analyze the scores from these tasks by total, subjunctive and indicative items. Results suggest that the component ordering of PI may contribute positively to learner gains.

The Targeted Grammatical Feature

The targeted grammatical feature for this study is the temporal adverb, *cuando*, plus subjunctive/indicative. This grammatical feature has been previously investigated by a number of PI researchers. Lee and McNulty (2013) focused on the effects of participant language background on acquisition after a PI intervention. Both Henshaw (2011) and McNulty (2012) investigated the two activity types within structured input: referential and affective activities. Discourse-level composition as a result of a PI intervention on the subjunctive/indicative contrast after *cuando* was investigated by Benati, Lee, and McNulty (2010). What is interesting about this grammatical feature in particular is the fact that Spanish allows for both the indicative and the subjunctive after *cuando* depending on the context. The subjunctive is used when the context has not yet happened or is anticipated, as well as when the speaker is not sure when or even if something will happen. When a sentence contains a future reference, it is by its very nature uncertain and the subjunctive encodes the uncertainty of the event as in example (1). Jorge will rest when he

finishes his work at some point in the future; the event of finishing his work has not yet happened or may never happen.

- (1) *Jorge va a descansar cuando termine su trabajo.*
[Jorge is going to rest when he finishes his work.]
- (2) *Jorge siempre descansa cuando termina su trabajo.*
[Jorge always rests when he finishes his work.]

In contrast, the indicative is used when the event is certain or habitual as in (2). The indicative encodes the certainty of the outcome. The habitual action does not reveal ambiguity or doubt. When Jorge's work is finished, he always rests.

Acquisitional Challenges

The subjunctive/indicative target for the present study was limited to present tense, third person singular *-ar* verbs. The Spanish mood distinction for third-person singular *-ar* verbs is a non-tonic vocalic change: from an *-a* to an *-e*. In addition to perceptual saliency, VanPatten has formulated a number of Input Processing principles that describe and categorize different types of processing problems that learners may encounter when confronted with novel input. Five of those principles apply to the acquisition of this grammatical feature (VanPatten, 2007).

VanPatten's Lexical Preference Principle (P1b) describes the learner's preference for processing lexical items over grammatical features when both describe the same. Using example (1), learners would tend to rely on the future reference (i.e., *va a descansar* [is going to rest]) over processing the subjunctive inflection, the *-e* in *termine* [finishes] to process the uncertainty of the sentence. In other words, learners will tend to interpret the uncertainty of the clause through the periphrastic future rather than the grammatical inflection of the subjunctive in the dependent clause.

Related is the Preference for the Nonredundancy Principle (P1c), in which learners tend to process non-redundant grammatical markers before redundant ones. In the *cuando* plus subjunctive/indicative, the targeted grammatical feature (subjunctive/indicative) is redundant and therefore less attractive and necessary for learners to process. The subjunctive inflection coding is redundant in that it repeats the notion of uncertainty found in the independent clause with the periphrastic future.

It is because learners will tend to process meaningful items before nonmeaningful, as stated in the Meaning before the Nonmeaning Principle (P1d), the grammatical redundant inflection tends to get overlooked. Travis (2003) asserts that in cases like this, the subjunctive "functions as a kind of agreement marker: its meaning is consistent with the proposition expressed, but in itself it does not add any meaning to the construction" (p. 58). The inflectional marking on the subjunctive verb is redundant to the semantic meaning found in the main clause and non-meaningful in the sense that it does

not add to the interpretation of the sentence.

The fourth VanPatten principle that applies to this context is the Availability of Resources Principle (P1e). This principle states that the performance of learners is limited by their processing resources and in order for them to process either redundant or nonmeaningful features, their overall processing resources cannot be drained. The participants in this study are first semester university students and as beginning learners, are often taxed by vocabulary, sentence structure, etc.

Lastly, the Sentence Location Principle (P1f) states that sentence-initial and sentence-final positions are more readily processed than sentence-medial positions. The targeted grammatical feature in this study is not found in an optimal processing position, either first or last, but rather in a medial sentential position.

These factors together make the subjunctive/indicative contrast with *cuando* especially challenging for learners. Despite the challenges inherent in the subjunctive, treatment groups were designed, utilizing PI to push learners to attend to grammatical markers for meaning.

Processing Instruction

Explicit Information

Processing Instruction encourages L2 learners to abandon their current and erroneous processing strategies for strategies that encourage them to make new and accurate form-meaning connections. The two components of PI: Explicit Information (EI) and Structured Input (SI) together accomplish this. Traditional instruction offers grammatical explanations that describe the targeted feature. PI, like traditional instruction does the same, but goes a step further and includes information regarding new strategies that encourage the learner to process the input differently so that their intake is that much richer and correct. The EI of PI encourages the learner to alter their default and often, erroneous processing strategies for new processing strategies that are target language appropriate. PI's EI includes two aspects: 1) explicit information about the target structure, in this case the indicative/subjunctive distinction with *cuando* and 2) explicit information highlighting the new processing strategies for the learner. The new processing strategies will encourage learners to process the target item more effectively, while abandoning their current default strategies.

The EI in this study offered two suggestions to the learners (Appendix A). With regular Spanish verbs, the difference between the present indicative and subjunctive mood forms is a change in a non-tonic vowel (with the exception of 1st person plural, which is tonic), which may be difficult for learners to detect. The EI first directed the learners to detect the subjunctive form itself. A non-tonic vowel in the middle of a sentence is not as salient as in other positions. The second processing problem concerned the subjunctive/indicative distinction. Learners cannot and should not associate the word *cuando*

with the use of the subjunctive or the indicative exclusively. Both moods are possible and their meanings are quite different. Drawing learner's attention to these processing problems also directs learner's attention to the place where the form-meaning connection has to take place. Focusing learner's attention to these processing problems is essential to the PI's EI.

Structured Input

Structured Input (SI) is the practice that PI offers a learner. SI is intentionally and purposefully manipulated to privilege the form within a meaningful context. Structured *input* provides the learner with practice that, interestingly, never requires the learner to produce a form. There are six guidelines for SI practice: 1) use one form at a time, 2) keep meaning in focus, 3) move from sentences to discourses, 4) use both oral and written input, 5) have the learner do something with the input, and 6) keep the learner's processing strategies in mind (Farley, 2005; Lee & VanPatten, 1995; VanPatten, 1996). With the exception of the fifth guideline due to treatment time constraints, all guidelines were followed.

There are two types of SI activities: referential and affective. Both activities push the learner to attend to the target form in order to respond. Referential activities have a correct/incorrect answer if the target form is processed properly. Most often, referential activities take the form of multiple choice questions or item matching. In contrast, affective activities do not have a correct/incorrect response. These activities ask the learner to respond to input that includes the target form with their own opinion or judgment. Theoretically, the learner processes the target form and registers their opinion [see Houston (2010) for an interesting study designed to measure the processing of affective activities]. Affective activities can take formats such as a true/false or yes/no design. Because responses are subjective, all answers are valid. Affective activities serve as a type of input flood in that "they allow learners to see the target forms in meaningful contexts and relate the meaning of each form to their own lives in some way" and obviously provide learners with more "SI with the target feature in the most salient position" (Farley, 2005, p. 87).

Processing Instruction Research

Processing Instruction research began with a study on the acquisition of Spanish object pronouns by native speakers of English. Since that first investigation of VanPatten and Cadierno (1993), much research has been done on PI, expanding the number of L2 languages from Spanish to English (Benati, 2005), French (Lee & Benati, 2007a; VanPatten & Wong, 2004), Italian (Benati, 2001, 2004a, 2004b; Lee & Benati, 2007a, 2007b), and Japanese (Benati, 2008; Lee & Benati, 2007a, 2007b). Not only has PI research encompassed more L2 languages, but also L1 languages. Whereas most PI research has focused on L1 English speakers, other L1 speakers have also been included in PI research.

Native speakers of Chinese and Greek formed Benati's 2005 participants and Lee and Benati (2007a, 2007b) used native speakers of Italian. Benati, Lee, and McNulty (2010) added to the list of native speakers with Cantonese, German, Mandarin, Polish, and Russian.

PI studies began with VanPatten and Cadierno's 1993 work on Spanish object pronouns and was then continued by other researchers (Morgan-Short & Bowden, 2006; Sanz, 2004; VanPatten & Cadierno, 1993; VanPatten & Oikkenon, 1996), and extended to other L2 grammatical features with a variety of inherent acquisitional challenges: Spanish object pronouns, the Spanish preterit tense (Cadierno, 1995), the Spanish preterit/imperfect distinction (Lee, Benati, Aguilar-Sánchez & McNulty, 2007), the Spanish copula (Cheng, 2002, 2004), the Spanish negative informal commands (Lee, Benati, Aguilar-Sánchez, & McNulty, 2007), the Spanish subjunctive (Benati, Lee, & McNulty, 2010; Farley, 2001a, 2001b, 2004a, 2004b; Farley & McCollam, 2004, Henshaw, 2011; Lee & McNulty, 2013; McNulty, 2012), the Spanish anticlausitive clitic *se* (Toth, 2006), the Italian future tense (Benati, 2001, 2004a), the Italian subjunctive (Lee & Benati, 2007a, 2007b), the Italian gender agreement on adjectives (Benati, 2004b), the French causative (VanPatten & Wong, 2004), the French negative and indefinite article (Wong, 2004b), the French subjunctive (Lee & Benati, 2007a), the Japanese past tense (Lee & Benati, 2007a, 2007b), and the English simple past (Benati, 2005).

PI research has grown in the number of L2 languages, grammatical features with their associated processing problems, and the L1 of the participants. Despite such variety, PI has consistently been shown to be effective in measures of interpretation and production. Some studies have examined the components of PI, namely EI and SI in order to pinpoint the efficacy of PI. Some researchers have concluded that the causative component of PI is SI practice (Benati, 2004a, 2004b; VanPatten & Oikennon, 1996; Wong, 2004b), whereas others found that EI plays a contributing role (Farley, 2004b; Farley & McCollam, 2004).

Of particular interest are two studies: Fernández (2008) and Henry, Culman, and VanPatten (2009) that measured the processing *of* instruction or, in other words, how quickly and accurately instruction was processed, rather than determining the efficacy of the instructional intervention based on the scores of an aural interpretation of written production task. Fernández (2008) used three measures: trials to criterion, response time, and accuracy after criterion for a PI treatment group and SI treatment group. The trials to criterion were defined as the number of SI activities attempted before correctly responding to three consecutive target items and one distractor item in the instructional intervention. Response time was operationalized as a period of time between the stimulus (what was seen or heard) and the selection of the response. The accuracy of criterion figure was calculated by taking the number of correct items after criterion and dividing it by the total number of SI items after the criterion was achieved. For object pronouns, Fernández reported that PI and SI treatment groups behaved equivalently. However, with regard to the subjunctive of doubt,

the PI treatment group that included EI and SI performed better than the SI treatment group. Her results indicate that EI may have a role in processing features and could be dependent on the type of grammatical feature.

Henry, Culman, and VanPatten (2009) partially replicated the Fernández (2008) study but used the grammatical target of German article case markings and only measured the number of trials to criterion. They found that the PI group was significantly quicker in reaching criterion than the SI group, lending support to the notion that EI may be a causative component in processing novel input. These studies prompt this study's research questions: Does the order of introduction of the Explicit Information (before or after Structured Input) on the Spanish subjunctive/indicative contrast after *cuando* affect learner performance as measured by interpretation and form production tasks? Are these effects held over time?

RESEARCH DESIGN

Participants

Volunteer undergraduate student participants were solicited from fourteen intact first year intensive Spanish classes at a large mid-western university. This study is part of a larger study that was comprised of ten treatment groups, only two of which are relevant to the present study. Of the 203 learners who were originally recruited for the ten treatment groups, only fourteen participants completed the study over a five-month period for the two relevant treatment groups. Treatment group ERA (explicit information + referential activities + affective activities) was comprised of seven participants, as was treatment group RAE (referential activities + affective activities + explicit information). The treatment groups differed only when they had access to the EI.

To ensure that participants had the same background knowledge with regard to the Spanish subjunctive/indicative choice with *cuando*, participants had to score below a 50% on the subjunctive items in all four tasks described below. First-year learners were chosen for this study, differentiating the participants in this study from those in other studies (Collentine, 1995, 1997, 1998, 2004; Farley, 2001a, 2001b; Cox & Sanz, 2015; Farley & McCollam, 2004; Gudmestad, 2006; Fernández, 2008; Lubbers Quesada, 1998). Participants also had to participate in all three meetings (pretest, posttest and delayed posttest).

Timeline

The timeline for this study consisted of three meetings with participants as seen in Table 1. The first meeting was conducted in the classroom. Participants were asked to sign an informed consent, complete a background questionnaire, and respond to the tasks described below. The second meeting

included the instructional intervention in a language lab followed by an immediate posttest. The final meeting was in the classroom and participants were asked to take a delayed posttest, approximately five months after the instructional intervention.

Table 1

Timeline of Investigation

<i>When?</i>	<i>What?</i>	<i>Where?</i>
Time 1	Informed Consent Background Questionnaire Pretest	classroom
Time 2	Treatment (ERA, RAE) Posttest	language lab
Time 3	Delayed Posttest	classroom

Note: E=Explicit Information; R=Referential; A=Affective

Instructional Intervention Website

A website was designed using Dreamweaver 9.0, so that multiple instructional treatments could be simultaneously and randomly administered to intact classes. Learners were asked to click the letter on the screen that corresponded with the letter affixed to their workstation. Adjoining workstations were never assigned the same letter. Each letter corresponded to a different instructional intervention. The group ERA received EI (and was available to them throughout the treatment), followed by 24 referential activities and 24 affective activities (Appendices B and C). Treatment group RAE, received the same 24 referential and 24 affective activities as treatment group ERA, but was given access to the EI only after having completed the SI practice. All SI practice items were developed in accordance with VanPatten's SI guidelines and were reviewed by nine near-native and native speakers from a variety of countries to ensure unambiguous SI practice items and answers that were agreed on unanimously.

For both treatment groups, feedback was given as responses were selected. For correct or acceptable answers (in the case of affective activities), students would see: "That's CORRECT! Please select *next question*". For incorrect responses, participants would receive this message: "Remember the form of the verb clues you looked into whether the time is uncertain or not. An *-a* signals certainty (present tense). An *-e* signals uncertainty (future reference). TRY AGAIN".¹

Assessment Tasks

Four assessment tasks were designed for this study measuring sentence interpretation and form production with aural and written prompts as detailed in Table 2 (Appendix D). Most PI investigations tend to use assessment tasks that are similar to Assessments I and IV used in this investigation (e.g., Benati, 2001, 2005; Farley, 2001a; Morgan-Short & Bowden, 2006; VanPatten & Wong, 2004) with aural prompts for interpretation items and written prompts for form production. The present study added Assessments II and III to make the design more balanced. Table 2 shows the breakdown of assessment by aural and written prompt and by what was required of the learner: interpretation or production. This study therefore includes an aural prompt for sentence interpretation *and* form production as well as a written prompt for sentence interpretation *and* form production.

Table 2

Assessment Tasks

	<i>Aural Prompt</i>	<i>Written Prompt</i>
<i>Sentence Interpretation</i>	I	III
<i>Form Production</i>	II	IV

All testing (pretest, posttest, and delayed posttest) were paper and pencil tests as opposed to computerized tests due to logistical considerations and availability of computer labs. Listening tasks were administered before production tasks to eliminate task order effect. A digital recording was made in a soundproof studio by a male, native speaker colleague in an effort to eliminate distracting noises and offer a consistent speech sample. The recording was played only once so that the test would measure real-time comprehension.

In Assessment I, learners heard the first part of a sentence ending in *cuando* and were asked to select the appropriate response. There were six items per assessment task with three items designed to provoke the indicative and three items designed to provoke the subjunctive. All targeted verbs were regular *-ar* verbs. Assessment II also employed an aural prompt. Learners heard the first part of a sentence and then were asked to complete the sentence by correctly conjugating the verb provided. Assessments III and IV were of the same style as Assessments I and II except that instead of an aural prompt, participants were given a written prompt.

RESULTS

Interpretation

Means

As can be seen in Table 3, the interpretation mean scores for total items between Time 1 and Time 2 improved for both treatment groups, although treatment group RAE to a lesser extent. Between Time 2 and Time 3, interpretation mean scores for total items declined for both treatment groups. As Table 3 indicates, the average pretest interpretation score on total items was 6.430 out of a possible 12.000 (54%) for the treatment group ERA and 6.860 out of 12.000 (57%) for the RAE treatment. The average posttest interpretation score on total items for treatment group ERA was 9.430 (79%) and 7.000 (58%) for the RAE treatment. Five months later, the average delayed posttest interpretation score on total items for treatment group ERA was 6.860 (57%) and 5.290 (44%) for the RAE treatment.

Table 3

*Mean Scores for Interpretation Tasks (Descriptive)
for Treatments ERA and RAE*

		<i>Group ERA</i>			<i>Group RAE</i>		
		<i>M</i>	<i>N</i>	<i>SD</i>	<i>M</i>	<i>N</i>	<i>SD</i>
<i>Pretest (Time 1)</i>	Total	6.43	7	1.618	6.86	7	2.035
	Subjunctive	2.29	7	0.951	2.86	7	1.345
	Indicative	4.14	7	1.069	4.00	7	1.000
<i>Posttest (Time 2)</i>	Total	9.43	7	2.149	7.00	7	4.203
	Subjunctive	4.57	7	1.134	3.29	7	2.430
	Indicative	4.86	7	1.215	3.71	7	2.059
<i>Delayed Posttest (Time 3)</i>	Total	6.86	7	0.690	5.29	7	1.976
	Subjunctive	3.43	7	0.976	2.86	7	0.900
	Indicative	3.43	7	0.976	2.43	7	1.397

Note: E=Explicit Information; R=Referential; A=Affective

The interpretation mean scores for subjunctive items between Time 1 and Time 2 improved for both treatment groups as can be seen in Table 3. Between Time 2 and Time 3, interpretation mean scores for subjunctive items also declined for both treatment groups. The average pretest interpretation score on subjunctive items was 2.290 out of 6.000 (38%) for the ERA treatment group and 2.860 out of 6.000 (48%) for the RAE treatment group. The average posttest interpretation score on subjunctive items for treatment group ERA was 4.570

(76%) and 3.290 (55%) for the RAE treatment. Five months later, the average delayed posttest interpretation score on subjunctive items for treatment group ERA was 3.430 (57%) and 2.860 (48%) for the RAE treatment.

As can be seen in Table 3, the interpretation mean scores for indicative items between Time 1 and Time 2 improved for treatment group ERA and declined for treatment group RAE. Between Time 2 and Time 3, interpretation mean scores for indicative items declined for both treatment groups. The average pretest interpretation score on indicative items was 4.140 out of 6.000 (69%) for the ERA treatment group and 4.000 out of 6.000 (67%) for the RAE treatment group. The average posttest interpretation score on indicative items for ERA treatment group was 4.860 (81%) and 3.710 (62%) for the RAE treatment group. Five months later, the average delayed posttest interpretation score on indicative items for treatment group ERA was 3.430 (57%) and 2.430 (41%) for the RAE treatment.

Pretest Scores

A one-way ANOVA performed on interpretation pretest scores revealed no significant differences between the two treatment groups for total items, $F(1, 12) = 0.190, p = .671$. Additionally, one-way ANOVAs were run on the interpretation scores of subjunctive items ($F(1, 12) = 0.842, p = .377$) and the interpretation scores on indicative items ($F(1, 12) = 0.067, p = .801$) individually to further establish that both treatment groups started the experiment with equivalent knowledge of the target structure. Therefore, any differences found on subsequent scores between treatment groups can be attributed to treatment effects rather than to preexisting differences. Table 4 presents a summary of the F statistic and p values that resulted from the one-way ANOVAs.

Table 4

One-way ANOVA on Pretest scores for Treatments ERA and RAE

		<i>df</i>	<i>F</i>	<i>p value</i>
<i>Interpretation</i>	Total	1, 12	0.190	.671
	Subjunctive	1, 12	0.842	.377
	Indicative	1, 12	0.067	.801

Note: E=Explicit Information; R=Referential; A=Affective.
Significant at the $p < .05$ level.

Repeated Measures ANOVA

Having determined that there were no statistical differences among pretest scores, the interpretation score for total items was submitted first to a repeatedmeasures ANOVA. In order to clarify or pinpoint the component

responsible for the significance or lack thereof, separate repeated measures ANOVAs were run for the interpretation score on subjunctive items and the interpretation score on indicative items. Table 5 presents this data.

Table 5

ANOVA on Location of Explanation Comparison of Treatments ERA and RAE for Interpretation Measures

		<i>Total</i>	<i>Sub.</i>	<i>Ind.</i>
<i>Time</i>	<i>df</i>	2, 11	2, 11	2, 24
	<i>F</i>	2.054	6.604	4.742
	<i>p</i> value	0.175	0.013*	0.018*
<i>Treatment</i>	<i>df</i>	1, 12	1, 12	1, 12
	<i>F</i>	2.500	1.130	2.723
	<i>p</i> value	0.140	0.309	0.125
<i>Time * Treatment</i>	<i>df</i>	2, 11	2, 11	2, 24
	<i>F</i>	3.513	3.712	0.652
	<i>p</i> value	0.066	0.059	0.530

Note: E=Explicit Information; R=Referential; A=Affective;

Sub=Subjunctive; Ind=Indicative.

* $p < .05$.

The pretest, posttest, and delayed posttest scores were submitted to a 2 x 3 repeated measures ANOVA for the interpretation score on total items. Treatment (ERA or RAE) was the between-subjects factor and the repeated measure, or the within subjects factor, was Time (pretest, posttest, delayed posttest). The results indicate that there was not a significant main effect for Time ($F(2, 11) = 2.054, p = .175$), no significant main effect for Treatment ($F(1, 12) = 2.500, p = .140$) and no significant interaction ($F(2, 11) = 3.513, p = .066$) at the alpha = .05 level. These results indicate that neither treatment groups improved significantly on the interpreting sentences as measured by a total score as a result of instruction, and that both treatment groups behaved similarly.

The pretest, posttest, and delayed posttest scores were submitted to a 2 x 3 repeated measures ANOVA for the interpretation score on subjunctive items. Treatment (ERA or RAE) was the between-subjects factor and the repeated measure, or the within subjects factor, was Time (pretest, posttest, delayed posttest). The results indicate that there was a significant main effect for Time ($F(2, 11) = 6.604, p = .013$), no significant main effect for Treatment ($F(1, 12) = 1.130, p = .309$) and no significant interaction ($F(2, 11) = 3.712, p = .059$) at the alpha = .05 level. These results indicate that both treatment groups improved significantly on the interpreting sentences as measured by a subjunctive score as a result of instruction, and that both treatment groups behaved similarly.

The pretest, posttest, and delayed posttest scores were submitted to a 2 x 3 repeated measures ANOVA for the interpretation score on indicative items. Treatment (ERA or RAE) was the between-subjects factor and the repeated

measure, or the within subjects factor, was Time (pretest, posttest, delayed posttest). The results indicate that there was a significant main effect for Time ($F(2, 24) = 4.742, p = .018$), no significant main effect for Treatment ($F(1, 12) = 2.723, p = .125$) and no significant interaction ($F(2, 24) = 0.652, p = .530$) at the alpha .05 level. These results indicate that both treatment groups improved significantly on the interpreting sentences as measured by an indicative score as a result of instruction, and that both treatment groups behaved similarly.

Post hoc Analysis

Interpretation scores on total items. Although there was not a significant interaction between Time and Treatment ($F(2, 11) = 3.513, p = .066$) for interpretation scores on total items, because the p value was approaching significance, data for each individual treatment group (ERA, RAE) was submitted to an individual repeated measures ANOVA to investigate the trends across time for each treatment, as seen in Table 6.

Table 6
ANOVA for P values for Time * Treatment that Approach Significance on Interpretation Scores of Total Items

	Time		
	df	F	p value
ERA	2, 12	6.809	.011*
RAE	2, 12	0.786	.478

Note: E=Explicit Information; R=Referential; A=Affective.

* $p < .05$.

The results indicate that for treatment group ERA, there was a significant main effect for Time ($F(2, 12) = 6.809, p = .011$). In order to tease apart this finding, a pairwise comparison was done to pinpoint where the differences were, as noted in Table 7.

Table 7
 P values from Pairwise Comparisons for Treatment ERA on Interpretation Scores on Total Items

	Time 1	Time 2	Time 3
Time 1	X	.014*	.555
Time 2	-	X	.049*
Time 3	-	-	X

Note: E=Explicit Information; R=Referential; A=Affective.

* $p < .05$.

As demonstrated in Table 7, interpretation scores on total items for treatment group ERA has a significant difference between Time 1 and Time 2 (pretest to posttest) as well as Time 2 and Time 3 (posttest to delayed posttest), but is not significant between Time 1 and Time 3 (pretest to delayed posttest).

Interpretation scores on subjunctive items. Although there was not a significant interaction between Time and Treatment ($F(2, 11) = 3.712, p = .059$) for interpretation scores on subjunctive items, because the p value was approaching significance, data for each individual treatment group (ERA, RAE) was submitted to an individual repeated measures ANOVA to investigate the trends across time for each treatment, as seen in Table 8.

Table 8
*ANOVA for P values for Time * Treatment that Approach Significance on Interpretation Scores of Subjunctive Items*

	Time		
	<i>df</i>	<i>F</i>	<i>p</i> value
<i>ERA</i>	2, 12	7.291	.008*
<i>RAE</i>	2, 12	0.149	.863

Note: E=Explicit Information; R=Referential; A=Affective.

* $p < .05$.

The results indicate that for treatment group ERA, there was a significant main effect for Time ($F(2, 12) = 7.291, p = .008$). In order to tease apart this finding, a pairwise comparison was done to pinpoint where the differences were, as shown in Table 9.

Table 9
P values from Pairwise Comparisons for Treatment ERA on Interpretation Scores for Subjunctive Items

	Time 1	Time 2	Time 3
Time 1	X	.005*	.066
Time 2	-	X	.172
Time 3	-	-	X

Note: E=Explicit Information; R=Referential; A=Affective.

* $p < .05$.

As demonstrated in Table 9, interpretation scores on subjunctive items for treatment group ERA demonstrate a significant difference between Times 1 and 2 (pretest to posttest) but not between Times 2 and 3 (posttest to delayed posttest), and are also not significant between Times 1 and 3 (pretest to delayed posttest).

Production

Means

As can be seen in Table 10, the production mean scores for total items between Time 1 and Time 2 improved for treatment group ERA, but declined for treatment group RAE. Between Time 2 and Time 3, production mean scores for total items declined for treatment group ERA and improved for treatment group RAE. As Table 10 indicates, the average pretest production score on total items was 5.710 out of a possible 12.000 (48%) for the treatment group ERA and 6.140 out of 12.000 (51%) for the RAE treatment. The average posttest production score on total items for treatment group ERA was 8.290 (69%) and 5.290 (44%) for the RAE treatment. Five months later, the average delayed posttest production score on total items for treatment group ERA was 4.860 (41%) and 6.000 (50%) for the RAE treatment.

The production mean scores for subjunctive items between Time 1 and Time 2 improved for both treatment groups as can be seen in Table 10. Between Time 2 and Time 3, production mean scores for subjunctive items also declined for both treatment groups. The average pretest production score on subjunctive items was 0.000 out of 6.000 (0%) for the treatment group ERA and 1.000 out of 6.000 (17%) for the RAE treatment group. The average posttest production score on subjunctive items for treatment group ERA was 3.000 (50%) and 1.860 (31%) for the RAE treatment. Five months later, the average delayed posttest production score on subjunctive items for treatment group ERA was 0.000 (0%) and 0.430 (7%) for the RAE treatment.

As shown in Table 10, the production mean scores for indicative items between Time 1 and Time 2 declined for both treatment groups. Between Time 2 and Time 3, production mean scores for indicative items declined for treatment group ERA and improved for treatment group RAE. The average pretest production score on indicative items was 5.710 out of 6.000 (95%) for the treatment group ERA and 5.140 out of 6.000 (86%) for the RAE treatment group. The average posttest production score on indicative items for treatment group ERA was 5.290 (88%) and 3.430 (57%) for the RAE treatment. Five months later, the average delayed posttest production score on indicative items for treatment group ERA was 4.860 (81%) and 5.570 (93%) for the RAE treatment.

Table 10
*Mean Scores for Production Tasks (Descriptive)
 for Treatments ERA and RAE*

		<i>Group ERA</i>			<i>Group RAE</i>		
		M	N	SD	M	N	SD
<i>Pretest (Time 1)</i>	Total	5.71	7	0.488	6.14	7	1.464
	Subjunctive	0.00	7	0.000	1.00	7	1.414
	Indicative	5.71	7	0.488	5.14	7	1.864
<i>Posttest (Time 2)</i>	Total	8.29	7	2.059	5.29	7	3.352
	Subjunctive	3.00	7	1.915	1.86	7	2.116
	Indicative	5.29	7	0.951	3.43	7	1.988
<i>Delayed Posttest (Time 3)</i>	Total	4.86	7	1.215	6.00	7	1.528
	Subjunctive	0.00	7	0.000	0.43	7	1.134
	Indicative	4.86	7	1.215	5.57	7	0.787

Note: E=Explicit Information; R=Referential; A=Affective

Pretest Scores

A one-way ANOVA performed on production pretest scores revealed no significant differences between the two treatment groups for total items, $F(1, 12) = 0.540$, $p = .477$. Additionally, one-way ANOVAs were run on the production scores of subjunctive items ($F(1, 12) = 3.500$, $p = .477$) and the production scores on indicative items ($F(1, 12) = 0.615$, $p = .448$) individually to further establish that both treatment groups started the experiment with equivalent knowledge of the target structure. Therefore, any differences found on subsequent scores between treatment groups can be attributed to treatment effects rather than to preexisting differences. Table 11 presents a summary of the F statistic and p values that resulted from the one-way ANOVAs.

Table 11
One-way ANOVA on Pretest scores for Treatments ERA and RAE

		<i>df</i>	<i>F</i>	<i>p value</i>
<i>Production</i>	Total	1, 12	0.540	.477
	Subjunctive	1, 12	3.500	.086
	Indicative	1, 12	0.615	.448

Note. E=Explicit Information; R=Referential; A=Affective.

* $p < .05$.

Repeated Measures ANOVA

Having determined that there were no statistical differences among pretest scores, the production score for total items was submitted first to an individual repeated measures ANOVA. In order to clarify or pinpoint the component responsible for the significance or lack thereof, separate repeated measures ANOVAs were run for the production score on subjunctive items and the production score on indicative items. Table 12 presents this data.

Table 12

ANOVA on Location of Explanation Comparison of Treatments ERA and RAE for Production Measures

		<i>Total</i>	<i>Sub.</i>	<i>Ind.</i>
<i>Time</i>	<i>df</i>	2, 11	2, 11	2, 24
	<i>F</i>	1.880	12.610	2.377
	<i>p value</i>	0.199	0.001*	0.114
<i>Treatment</i>	<i>df</i>	1, 12	1, 12	1, 12
	<i>F</i>	0.392	0.027	3.429
	<i>p value</i>	0.543	0.872	0.162
<i>Time * Treatment</i>	<i>df</i>	2, 11	2, 11	2, 24
	<i>F</i>	3.757	2.355	3.057
	<i>p value</i>	0.057	0.141	0.066

Note: E=Explicit Information; R=Referential; A=Affective;

Sub=Subjunctive; Ind=Indicative.

* $p < .05$.

The pretest, posttest, and delayed posttest scores were submitted to a 2 x 3 repeated measures ANOVA for the production score on total items. Treatment (ERA or RAE) was the between-subjects factor and the repeated measure, or the within subjects factor, was Time (pretest, posttest, delayed posttest). The results indicate that there was not a significant main effect for Time ($F(2, 11) = 1.880, p = .199$), no significant main effect for Treatment ($F(1, 12) = 0.392, p = .543$), and no significant interaction ($F(2, 11) = 3.757, p = .057$) at the alpha = .05 level. These results indicate that neither treatment groups improved significantly on form production as measured by a total score as a result of instruction, and that both treatment groups behaved similarly.

The pretest, posttest, and delayed posttest scores were submitted to a 2 x 3 repeated measures ANOVA for the production score on subjunctive items. Treatment (ERA or RAE) was the between-subjects factor and the repeated measure, or the within subjects factor, was Time (pretest, posttest, delayed posttest). The results indicate that there was a significant main effect for Time ($F(2, 11) = 12.610, p = .001$), no significant main effect for Treatment ($F(1, 12)$

= 0.027, $p = .872$), and no significant interaction ($F(2, 11) = 2.355, p = .141$) at the $\alpha = .05$ level. These results indicate that both treatment groups improved significantly on subjunctive form production as measured by the subjunctive score as a result of instruction, and that both treatment groups behaved similarly.

The pretest, posttest, and delayed posttest scores were submitted to a 2 x 3 repeated measures ANOVA for the production score on indicative items. Treatment (ERA or RAE) was the between-subjects factor and the repeated measure, or the within subjects factor, was Time (pretest, posttest, delayed posttest). The results indicate that there was not a significant main effect for Time ($F(2, 24) = 2.377, p = .114$), no significant main effect for Treatment ($F(1, 12) = 3.429, p = .162$), and no significant interaction ($F(2, 24) = 3.057, p = .066$) at the $\alpha = .05$ level. These results indicate that neither treatment groups improved significantly on indicative form production as measured by the indicative score as a result of instruction, and that both treatment groups behaved similarly.

Post hoc Analysis

Production scores on total items. Although there was not a significant interaction between Time and Treatment ($F(2, 11) = 3.757, p = .057$) for production scores on total items, because the p value was approaching significance, data for each individual treatment group (ERA, RAE) was submitted to an individual repeated measures ANOVA to investigate the trends across time for each treatment, as seen in Table 13.

Table 13

*ANOVA for p values for Time * Treatment that approach significance on Production Scores of Total Items*

		<i>Time</i>	
	<i>df</i>	<i>F</i>	<i>p</i> value
<i>ERA</i>	2, 12	4.528	.075
<i>RAE</i>	2, 12	0.583	.573

Note: E=Explicit Information; R=Referential; A=Affective.

Significant at the $p < .05$ level.

The results indicate that there was not a significant main effect for Time for treatment group ERA or RAE, therefore a pairwise comparison was not required.

Production scores on indicative items. Although there was not a significant interaction between Time and Treatment ($F(2, 24) = 3.057, p = .066$) for production scores on indicative items, because the p value was approaching significance, data for each individual treatment group (ERA, RAE) was

submitted to an individual repeated measures ANOVA to investigate the trends across time for each treatment, as seen in Table 14.

Table 14
ANOVA for *P* values for Time * Treatment that Approach Significance
Production Scores of Indicative Items

	Time		
	<i>df</i>	<i>F</i>	<i>p</i> value
ERA	2, 12	1.528	.256
RAE	2, 12	3.057	.085

Note: E=Explicit Information; R=Referential; A=Affective.
Significant at the $p < .05$ level.

The results indicate that there was not a significant main effect for Time for treatment group ERA or RAE and therefore a pairwise comparison was not required.

DISCUSSION/CONCLUSION

Knowing that some researchers (Cox & Sanz, 2015; Farley, 2004b; Farley & McCollam, 2004; Fernández, 2008; Henry, Culman & VanPatten, 2009) have found that Explicit Information contributes positively to learner performance, the question became whether the timing of when learners were introduced to the EI had any effect. Does the location of the Explicit Information (before or after Structured Input) on the Spanish subjunctive/indicative contrast after *cuando* affect learner performance as measured by interpretation and form production tasks?

There was a significant main effect for Time on three scores: the interpretation scores on subjunctive and indicative items and the production scores on subjunctive items. The main effect for Time for these three scores is attributable to the differences between pretest and posttest scores. In other words, the instructional intervention affected these three scores as one might expect, but did so similarly between treatments. As there was no main effect for Treatment and no significant interaction between Time and Treatment, the simple answer to the research question is that the location of the Explicit Information (before or after Structured Input) does not affect learner performance on interpretation and production tasks. The timing of the EI, before or after SI, did not change learner outcome between treatments. It should be noted that the SI practice for both treatments did offer metalinguistic information about the grammatical feature. Although this explicit feedback cannot be considered EI, it did provide all learners with processing information. Removing this explicit feedback or simplifying this feedback to correct/incorrect in the future might provide a clearer result.

Revisiting the repeated measures ANOVAs (see Tables 5 and 12), there were four scores that approached significance and were considered further (see Tables 6-9, 13, 14). For the four scores that approached significance, interpretation scores on total and subjunctive items as well as production scores on total and indicative items, only treatment group ERA had a main effect for Time in the two interpretation scores.

The ERA treatment group demonstrated a benefit from pretest to posttest on interpretation scores on total items and a significant change from posttest to delayed posttest, but the gains in the posttest were not sustained five months later on the delayed posttest. ERA's interpretation scores on subjunctive items improved from pretest to posttest, but gains were not sustained through the delayed posttest. There was no main effect for Time for the treatment group RAE.

Group ERA received the Explicit Information in advance of the Structured Input practice and the metalinguistic feedback from the referential activities confirmed their knowledge. Theoretically, group RAE received metalinguistic knowledge via the SI practice and were able to confirm their hypothesis about the grammatical feature with the EI. Given that statistically each treatment behaved equivalently, it would seem that the placement of EI is not critical. Whereas it cannot be concluded that the location or timing of the EI is statistically significant, there are indications that the metalinguistic feedback offered by the referential activities may have contributed to or compensated for the absence of the EI first in group RAE. Although these results are not statistically significant, this study contributes to the field of knowledge by ruling out order of EI and pointing to explicit feedback as a possible causative or contributive component to the success of Processing Instruction. However, given the small number of participants in this study and the mixed results that prior research has demonstrated on the importance of EI, replication of this study or studies with a different grammatical focus could help to better define EI's role in PI acquisition.

NOTE

1. It should be noted that this explicit feedback was provided to both treatment groups (ERA and RAE) and, although not considered EI, did contain processing information.

REFERENCES

- Benati, A. (2001). A comparative study of the effects of processing instruction and output-based instruction on the acquisition of the Italian future tense. *Language Teaching Research*, 5, 95-127.
- Benati, A. (2004a). The effects of structured input and explicit information on the acquisition of Italian future tense. In B. VanPatten (Ed.), *Processing instruction: Theory, research, and commentary* (pp. 207-255). Mahwah, NJ: Erlbaum.
- Benati, A. (2004b). The effects of processing instruction and its components on the acquisition of gender agreement in Italian. *Language Awareness*, 13, 67-80.
- Benati, A. (2005). The effects of processing instruction, traditional instruction and meaning-output based instruction on the acquisition of English past simple tense. *Language Teaching Research*, 9(1), 67-93.
- Benati, A. (2008). *Japanese language teaching: A communicative approach*. London: Continuum.
- Benati, A., Lee, J. F., & McNulty, E. M. (2010). Exploring the effects of processing instruction on a discourse-level guided composition with the Spanish subjunctive after the adverb *cuando*. In A. Benati, & J. F. Lee (Eds.) *Processing instruction and discourse* (pp. 97-147). London: Continuum.
- Cadierno, T. (1995). Formal instruction from a processing perspective: An investigation into the Spanish past tense. *The Modern Language Journal*, 79, 179-93.
- Cheng, A. (2002). The effects of processing instruction on the acquisition of *ser* and *estar*. *Hispania*, 85, 308-323.
- Cheng, A. (2004). Processing instruction and Spanish *ser* and *estar*: Forms with semantic-aspectual value. In B. VanPatten (Ed.), *Processing instruction: Theory, research, and commentary* (pp. 119-141). Mahwah, NJ: Erlbaum.
- Collentine, J. (1995). The development of complex syntax and mood-selection abilities by intermediate-level learners of Spanish. *Hispania*, 78, 122-135.
- Collentine, J. (1997). The effects of irregular stems on the detection of verbs in the subjunctive. *Spanish Applied Linguistics*, 1, 3-23.
- Collentine, J. (1998). Processing instruction and the subjunctive. *Hispania*, 81, 576-587.
- Collentine, J. (2004). Commentary: Where PI research has been and where it should be going. In B. VanPatten (Ed.), *Processing instruction: Theory, research, and commentary* (pp. 119-141). Mahwah, NJ: Erlbaum.
- Cox, J. & Sanz, C. (2015). Deconstructing PI for the ages: Explicit instruction vs. practice young and older adult bilinguals. *IRAL*, 53(2), 225-248.

- Farley, A. P. (2001a). Processing instruction and meaning-based output instruction: A comparative study. *Spanish Applied Linguistics*, 5, 57-94.
- Farley, A. P. (2001b). Authentic processing instruction and the Spanish subjunctive. *Hispania*, 84, 289-299.
- Farley, A. P. (2004a). The relative effects of processing instruction and meaning-based output instruction. In B. VanPatten (Ed.), *Processing instruction: Theory, research, and commentary* (pp. 143-168). Mahwah, NJ: Erlbaum.
- Farley, A. P. (2004b). Processing instruction and the Spanish subjunctive: Is explicit information needed? In B. VanPatten (Ed.), *Processing instruction: Theory, research, and commentary* (pp. 227-239). Mahwah, NJ: Erlbaum.
- Farley, A. P. (2005). *Structured input: Grammar instruction for the acquisition-oriented classroom*. New York, NY: McGraw-Hill.
- Farley, A. P., & McCollam, K. (2004). Learner readiness and L2 production in Spanish: Processability theory on trial. *Estudios de Lingüística Aplicada*, 22(40), 47-69.
- Fernández, C. (2008). Reexamining the role of explicit information in processing instruction. *Studies in Second Language Acquisition*, 30, 277-305.
- Gudmestad, A. (2006). L2 variation and the Spanish subjunctive: Linguistic features predicting use. In C. Klee, & T. Face (Eds.), *Selected papers of the 7th conference on the acquisition of Spanish and Portuguese as first and second languages* (pp. 170-184). Somerville, MA: Cascadia Press.
- Henry, N., Culman, H., & VanPatten, B. (2009). More on the effects of explicit information in structured SLA: A partial replication and a response to Fernández (2008). *Studies in Second Language Acquisition*, 31, 559-575.
- Henshaw, F. (2011). How effective are affective activities? Relative benefits of two types of structured input activities as part of a computer-delivered lesson on the Spanish subjunctive. *Language Teaching Research*, 16(3) 393-414.
- Houston, T. (2010). Affective structured input online: How authentic are learner responses? *Hispania*, 93(2), 218-234.
- Lee, J. F., & Benati, A. (2007a). *Delivering processing instruction in classrooms and virtual contexts: Research and practice*. London: Equinox.
- Lee, J. F., & Benati, A. (2007b). *Second language processing: An analysis of theory, problems and solutions*. London: Continuum.

- Lee, J. F., Benati, A., Aguilar-Sánchez, J., & McNulty, E. M. (2007). Comparing three modes of delivering processing instruction on preterite/imperfect distinction and negative informal commands in Spanish. In J. F. Lee, & A. Benati (Eds.) *Delivering processing instruction in classrooms and virtual contexts: Research and practice* (pp. 73-98). London: Equinox.
- Lee, J. F., & McNulty, E. M. (2013). The effects of language background on the results of processing instruction on the Spanish subjunctive/indicative contrast after the adverb *cuando*. In J. F. Lee, & A. Benati (Eds.), *Individual differences and processing instruction*, (pp. 49-81). London: Equinox.
- Lee, J. F., & VanPatten, B. (1995). *Making communicative language teaching happen*. New York, NY: McGraw-Hill.
- Lubbers Quesada, M. (1998). L2 acquisition of the Spanish subjunctive mood and prototype schema development. *Spanish Applied Linguistics*, 2(1), 1-23.
- McNulty, E. M. (2012). *On activity types and activity order in the processing instruction of Spanish cuando plus subjunctive/indicative* (doctoral dissertation). Indiana University, Bloomington, Indiana.
- Morgan-Short, K., & Bowden, H. W. (2006). Processing instruction and meaningful output-based instruction: Effects on second language development. *Studies in Second Language Acquisition*, 28, 31-65.
- Sanz, C. (2004). Computer delivered implicit versus explicit feedback in processing instruction. In B. VanPatten (Ed.), *Processing instruction: Theory, research, and commentary* (pp. 241-255). Mahwah, NJ: Erlbaum.
- Toth, P. (2006). Processing instruction and a role for output in second language acquisition. *Language Learning*, 56(2), 319-385.
- Travis, C. (2003). The semantics of the Spanish subjunctive: Its use in the natural semantic metalanguage. *Cognitive Linguistics*, 14(1), 47-69.
- VanPatten, B. (1996). *Input processing and grammar instruction: Theory and research*. Norwood, NJ: Ablex.
- VanPatten, B. (2007). Input processing in adult second language acquisition. In B. VanPatten, and J. Williams (Eds.), *Theories in second language acquisition*, (pp. 115-135). Mahwah, NJ: Erlbaum.
- VanPatten, B., & Cadierno, T. (1993). Explicit instruction and input processing. *Studies in Second Language Acquisition*, 15, 225-243.
- VanPatten, B., & Oikennon, S. (1996). Explanation vs. structured input in processing instruction. *Studies in Second Language Acquisition*, 18, 495-510.
- VanPatten, B., & Wong, W. (2004). Processing instruction and the French causative: Another replication. In B. VanPatten (Ed.), *Processing instruction: Theory, research, and commentary* (pp. 97-118). Mahwah, NJ: Erlbaum.

- Wong, W. (2004). Processing instruction in French: The roles of explicit information and structured input. In B. VanPatten (Ed.), *Processing instruction: Theory, research, and commentary* (pp. 187-205). Mahwah, NJ: Erlbaum.

APPENDIX A

Processing Instruction's Explicit Information

Quando: Subjunctive or Indicative?

What is tricky about the time conjunction, *cuando* (when), is that it can be used with both indicative and subjunctive verb forms. Some other conjunctions of time work in the same way.

en cuanto	as soon as
hasta que	until
tan pronto como	as soon as

Today, however, we will focus only on *cuando*.

Subjunctive...when we are not certain of the outcome

We use the present subjunctive with *cuando* when we want to refer to something that hasn't happened yet or is anticipated. It can also be used when it refers to something that you aren't sure when or even if it will happen.

Actually, when a sentence contains a future reference, by its very nature, uncertain -- the verb following *cuando* will be in the subjunctive! Keep in mind that future can be expressed in a number of ways in Spanish, just like English. You have already learned two different ways of expressing the future in Spanish.

Spanish uses the periphrastic future (*ir + a + infinitive*) to express the future:

CUANDO + Subjunctive	FUTURE reference
Cuando le toque la lotería,	va a comprar una casa.
When he wins the lottery, he is going to buy a house.	

Does he know **when** he will win the lottery? Better yet, does he even know **if** he will win the lottery? Of course not! Spanish uses the subjunctive mood to emphasize the uncertainty of the event.

The simple present tense can also express the future, especially with adverbs (tomorrow, next week, this Friday, etc.):

FUTURE reference	CUANDO + Subjunctive
Mañana Jorge descansa	cuando termine su trabajo.
Tomorrow Jorge (will) rest	when he finishes his work.

Will Jorge rest at 9:00 am? 2:00 pm? We don't know. We only know that it will be tomorrow, but we are uncertain of the time. The event of finishing his work hasn't happened yet. The subjunctive indicates that

******OJO****** *Did you notice that cuando can come at the beginning or in the middle of a sentence?*

the event hasn't taken place yet.

Indicative...when we are certain of the outcome

In contrast, we use the indicative with *cuando* when the sentence refers to something that habitually happens or something that happened in the past.

For the next example, we will focus on when the present tense encodes something that happens habitually. Just like English, adverbs (like generally, always etc.) are sometimes used with the present tense to indicate a habitual action. Notice how the following example in the present tense shows a habitual action.

HABITUAL reference

Siempre David me llama
David always calls me

CUANDO + Indicative (present)

cuando necesita algo.
when he needs something.

When does David call me? ...when he needs something. He has the habit of calling me each and every time he needs something.

What are the subjunctive forms?

So, how do we recognize the subjunctive when we hear it or see it? To form the subjunctive:

1. start with the *yo* form of the verb in the present tense;
2. take off the *-o* or *-oy*; and
3. change the endings. Ø
 1. *-ar* verbs take *-er/-ir* verb endings, and
 2. *-er/-ir* verbs take *-ar* verb endings

-ar verbs

As the following examples show with *-ar* verbs, the third person singular indicative (present) form ends in an *-a*, whereas the third person subjunctive form ends in an *-e*.

Take, for example *hablar*. Following the steps listed above,

1. hablo (*yo* form of *hablar*)
2. habl- (taking off the *-o*)
3. hable (adding the *-er/-ir* verb ending)

Infinitive	Indicative	Subjunctive
visitar	visita	visite
nadar	nada	nade

¡OJO!



What is challenging about these subjunctive forms is that the difference between an *-a* and an *-e* may be difficult to detect (or perceive). Detecting the difference is even more difficult because the stressed syllable is not the one where the *-a* or *-e* is located! Native speakers of English have to train their ears to detect this difference. We want you to learn to detect that the *-e* at the end of an *-ar* verb when it follows *cuando* refers to an unspecified time: the subjunctive.

In the practice activities that follow, we are going to focus only on *-ar* verbs, meaning that you will be learning to detect a sound at the end of the verb: the *-e* of the subjunctive and the *-a* of the indicative.

The *-e* of the subjunctive will tell you that the time an event takes place is uncertain or that it hasn't happened yet.

The *-a* of the indicative will tell you that an event occurs regularly or habitually.

APPENDIX B

Examples of Referential Activities

Choose the correct interpretation for each sentence. Remember, the form of the verb clues you into whether the time is uncertain or not. Since all the verbs are *-ar* verbs, an *-e* signals uncertainty whereas an *-a* signals certainty.

1. Cuando Juan toca la guitarra...
 - a. We don't know when Juan will play the guitar.
 - b. Juan plays the guitar all the time.

2. Cuando Rosa cante con música...
 - a. We don't know when Rosa will sing with music.
 - b. Rosa always sings with music.

Similar to the previous activity, you will now hear part of a sentence. Choose the correct interpretation for each sentence. Remember, the form of the verb clues you in to whether the time is uncertain or not. Since all the verbs are *-ar* verbs, an *-e* signals uncertainty whereas an *-a* signals certainty.

1. Cuando el profesor explica la tarea...
 - a. We don't know when the professor will explain the homework.
 - b. The professor normally explains the homework.

2. Cuando el estudiante ande por el campus...
 - a. We don't know when the student will walk on campus.
 - b. The student walks on campus all the time.

For each item indicate whether it is uncertain when the action mentioned will take place or if it takes place habitually. As all the verbs are *-ar* verbs, uncertainty is signaled with an *-e* and habitual action with an *-a*.

- | | uncertain | habitual |
|---------------------------------------|--------------------------|--------------------------|
| 1. Cuando Eli baila salsa,... | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Cuando Paco llame a sus padres,... | <input type="checkbox"/> | <input type="checkbox"/> |

Similar to the previous activity, you will now hear part of a sentence. For each item indicate whether it is uncertain when the action mentioned is going to take place or if it takes place habitually. As all the verbs are *-ar* verbs, uncertainty is signaled with an *-e* and habitual action with an *-a*.

- | | uncertain | habitual |
|---|--------------------------|--------------------------|
| 1. Cuando Virginia baja del autobús,... | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Cuando Lidia compre mucho,... | <input type="checkbox"/> | <input type="checkbox"/> |

Complete the sentence by choosing the appropriate ending. Keep in mind, that all the verbs used with *cuando* are *-ar* verbs.

Remember, uncertain conditions have a verb with a future orientation and are signaled with a verb ending in an *-e*. Habitual conditions, on the other hand, have verbs in the present tense, usually with an adverb and the verbs end in an *-a*.

1. Cuando Marta cocine bien,
 - a. va a comer sano.
 - b. come sano.

2. Cuando Diego practica el deporte, normalmente
 - a. va a conocer más gente.
 - b. conoce más gente.

Just like the activity you just completed, you will hear the first part of a sentence. Complete the sentence by choosing the appropriate ending. Keep in mind that all the verbs used with *cuando* are *-ar* verbs.

Remember, uncertain conditions have a verb with a future orientation and are signaled with a verb ending in an *-e*. Habitual conditions, on the other hand, have verbs in the present tense, usually with an adverb, and the verbs end in an *-a*.

1. Cuando Marta estudie mucho,
 - a. va a salir bien en el examen.
 - b. sale bien en el examen.

2. Cuando Diego espera para el autobús, generalmente
 - a. va a leer un libro.
 - b. lee un libro.

APPENDIX C

Examples of Affective Activities

Indicate whether, in your opinion, your instructor will do the following things. Keep in mind that the form of the verbs following *cuando* in 1-6 encodes the uncertainty of the time. sí no

1. Cuando esté de vacaciones, tu instructor(a) va a tener más tiempo.
2. Cuando compre zapatos deportivos nuevos, tu instructor(a) va a hacer más ejercicio.

Similar to the previous activity, you will now hear sentences. Indicate whether, in your opinion, your instructor will do the following things. Keep in mind that the form of the verbs following *cuando* in 1-6 encodes the uncertainty of the time. sí no

1. Cuando llame por teléfono, tu instructor(a) va a charlar con su hermana.
2. Cuando cocine algo elegante, tu instructor(a) va a tener invitados.

Indicate whether, in your opinion, your instructor regularly does the following things. Keep in mind that the form of the verbs following *cuando* in 13-24 encodes the habitualness of the action. sí no

1. Cuando está de vacaciones, normalmente tu instructor(a) tiene más tiempo.
2. Cuando compra zapatos deportivos nuevos, normalmente tu instructor(a) hace más ejercicio.

Similar to the previous activity, you will now hear sentences. Indicate whether, in your opinion, your instructor regularly does the following things. Keep in mind that the form of the verbs following *cuando* in 13-24 encodes the habitualness of the action.

1. Cuando llama por teléfono, normalmente tu instructor(a) charla con su hermana.
2. Cuando cocina algo elegante, normalmente tu instructor(a) tiene invitados.

Indicate whether, in your opinion, it is true (verdad) or false (falso) that a typical university student will do the following things. Keep in mind that the form of the verbs following *cuando* in 1- 6 encodes the uncertainty of the time.

1. _____ Cuando empiece el verano, va a ir a la Florida.
2. _____ Cuando se levante por la mañana, va a ir al gimnasio.

Similar to the previous activity, you will now hear sentences. Indicate whether, in your opinion, it is true (verdad) or false (falso) that a typical university student will do the following things. Keep in mind that the form of the verbs following *cuando* in 1- 6 encodes the uncertainty of the time.

1. _____ Cuando regrese a la casa de sus padres, va a recibir muchos regalos.
2. _____ Cuando estudie, va a sacar buenas notas (grades).

Indicate whether, in your opinion, it is true (verdad) or false (falso) that a typical university student regularly does the following things. Keep in mind that the form of the verbs following *cuando* in 1-6 encodes the habitualness of the action.

1. _____ Cuando empieza el verano, normalmente va a la Florida.
2. _____ Cuando se levanta por la mañana, generalmente va al gimnasio.

Similar to the previous activity, you will now hear sentences. Indicate whether, in your opinion, it is true (verdad) or false (falso) that a typical university student regularly does the following things. Keep in mind that the form of the verbs following *cuando* in 1-6 encodes the habitualness of the action.

1. _____ Cuando regresa a la casa de sus padres, normalmente recibe muchos regalos.
2. _____ Cuando estudia, generalmente saca buenas notas (grades).

APPENDIX D**Examples of Assessment Tasks**

Assessment I - You will hear the first part of a sentence. Listen carefully and select the appropriate phrase that correctly completes each sentence.

1. Cuando Carmen anda por la ciudad...
 - a. se pierde (gets lost).
 - b. va a perderse (gets lost).
2. Cuando Pilar termine su lectura...
 - a. da un paseo
 - b. va a dar un paseo.

Assessment II - You will hear the beginning of a sentence. Please write your ending to the sentence using the verb provided.

1. Mi madre normalmente le ayuda cuando...Jorge (regresar)_____.
2. Juan va a sacar el perro cuando...él (escuchar)_____.

Assessment III - Select the appropriate phrase that correctly completes each sentence.

1. Cuando el niño esté enfermo ...
 - a. llora.
 - b. va a llorar.
2. Cuando Clara lleve su pesada mochila (*backpack*)...
 - a. la espalda (back) le duele.
 - b. la espalda (back) va a dolerle.

Assessment IV - Conjugate the verb in parenthesis to correctly complete the sentence.

1. David va a ganar mucho dinero cuando _____ (trabajar) allí.
2. Cuando Carla _____ (tomar) mucho café, generalmente no puede dormir bien.

AUTHOR

Erin McNulty Diaz, Ph.D., Assistant Professor, Department of Spanish and Portuguese, Dickinson College.