

The Effects of Instruction on Linguistic Development in Spanish Heritage Language Speakers

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The current study compared the effects of two second language (L2) instruction types—processing instruction (VanPatten, 2004) and traditional output-based instruction—on the development of the Spanish past subjunctive among U.S. Spanish heritage language speakers and traditional L2 learners. After exposure to instruction, both the heritage learners and the L2 learners showed significant improvement on interpretation and production tasks. Only the L2 learners showed significant improvement for grammaticality judgments. Overall, the L2 learners outperformed the heritage learners. The results suggest that heritage speakers' language development may differ from that of L2 learners, although they also suggest that heritage speakers can benefit from focused grammar instruction.

Keywords heritage speakers; processing instruction; classroom research; Spanish; subjunctive

In the United States, heritage speakers are individuals who grew up in homes in which a language other than English was spoken and who have receptive and often some productive competence in the non-English (heritage) language (Valdes, 1997). Between 1990 and 2000, the U.S. Latino population grew 40% while the rest of the population increased 10%, a change that has profoundly impacted the American education system at all levels of instruction. Spanish courses designed for heritage speakers have existed since the 1970s and,

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given the growth of the Latino population in the United States, are growing in number every year. However, despite several decades of heritage-speaker courses, there has been almost no empirical research on the effects of different types of instruction in developing the heritage language systems of U.S. Latino Spanish speakers (Valdes, 2005b, p. 39) although it has been proposed (p. 25) that pedagogies used to restructure the interlanguages of second language (L2) learners may also be effective for various categories of heritage speakers.

This study draws from the strength of empirical traditions in the field of L2 acquisition by applying instructional interventions commonly used with L2 learners to U.S. heritage language Spanish speakers. Before describing our experiment, we will present a review of literature related to the grammar of heritage speakers as well as studies of the use and acquisition of the target form—the Spanish subjunctive. This will be followed by a discussion of research on processing instruction with the subjunctive among L2 learners and our justification for applying this type of instructional treatment to heritage learners.

Review of Literature

The Grammar of Heritage Speakers

Research on heritage speakers generally concludes that their grammatical systems undergo one or more processes, including incomplete acquisition, attrition, and acquisition of a contact variety. Incomplete acquisition refers to the fact that, even if raised in monolingual Spanish-speaking homes, U.S. Latinos undergo an abrupt shift to English upon beginning formal schooling at age 4 or 5. Thus, forms and functions that are normally acquired in later stages of monolingual child L1 (first language) acquisition, such as subtle pragmatic differences, are never acquired by the heritage speaker, because of both the sudden decrease in Spanish input received as well as a lack of access to formal Spanish normally found in schooling contexts. Attrition, on the other hand, refers to the process by which a form that at one time was fully acquired is subsequently lost. Naturally, it is very difficult to distinguish incomplete acquisition from attrition phenomena without longitudinal data. When speakers whose Spanish was incompletely acquired or underwent attrition begin study of their heritage language, it can be said that they are engaged in a process of acquisition or reacquisition, respectively, of particular features of that language.

Finally, some heritage speakers are raised in an environment in which the community language is a contact variety of Spanish. A contact variety is one

that has undergone one or more of several processes, including convergence, accommodation, dialect leveling, lexical and structural borrowing, and simplification (Penny, 2000). Such contact varieties evidence elements that, when compared to a normative L1 variety, appear to be different or missing. However, the linguistic systems of speakers of a contact variety have not experienced either attrition or incomplete acquisition. Rather, these individuals have fully acquired a contact variety of the language. When such speakers engage in formal study of their heritage language, it is usually said that they are engaged in a process of second dialect acquisition.

As Valdes (2005a) suggested, the process of reacquisition of an attrited form might be quite different from the process of acquisition of a previously unacquired form, both of which may be different from the acquisition of second dialect features. However, distinguishing among these three phenomena is beyond the scope of this study. In fact, it is likely that different students in the same classroom exhibit different degrees of all of these phenomena. In this study, we assume that the heritage-speaker participants' linguistic systems may be the result of any of these processes; thus, we use the term *heritage language development* to encompass all of the phenomena that may take place when heritage speakers undertake formal study of their heritage language. Before describing the one study to date on the effects of instruction with heritage speakers (Montrul & Bowles, 2009), we offer a brief summary of what is known about heritage Spanish speakers' morphosyntax and how it has been affected by incomplete acquisition and attrition (studies of heritage speakers' mood systems are presented in a later section).

Studies, including Silva-Corvalán (1994) and Montrul (2002), have showed evidence of erosion of the tense-aspect system among Spanish heritage speakers, suggesting that semantic features of functional categories can be affected by incomplete acquisition and language loss. Specifically in the study by Montrul, although the heritage speakers were almost equal to monolingual native Spanish speakers in the distribution of preterite and imperfect morphemes across lexical aspectual categories, they evidenced incomplete acquisition through their erroneous production of stative verbs in the preterite (i.e., they made errors of the type *Le puso las galletas en una mesa mientras el lobo *estuvo debajo de las cobijas* "She put the cookies on a table while the wolf *was [stative preterite] under the covers"). In addition, to a lesser degree, incomplete acquisition was evident among the bilinguals in achievement verbs in the imperfect (*Ella estaba arreglando todas las flores que ella *recogía durante su camino* "She was arranging all the flowers that she *was gathering [achievement imperfect] during her walk").

In addition, in the work of Montrul et al. (2008) it was found that bilingual speakers exhibited failure with gender assignment and agreement, either at the level of lexical assignment or during syntactic processing of agreement between the noun and other elements. The bilingual participants were more accurate on the unmarked form, the masculine, than on feminine gender agreement and more accurate with canonical ending nouns (–o masculine, –a feminine) than with exceptional ending nouns. Agreement within the determiner phrase was higher on determiners than on adjectives. However, in Montrul (2006), heritage speakers demonstrated robust knowledge of unaccusativity, albeit with slight variation from that of native monolingual Spanish speakers.

The only published study to date of which the authors are aware that has investigated the effects of instruction on heritage speaker grammars is by Montrul and Bowles (2009). These authors administered, via computer, an explicit grammatical explanation of the uses of the indirect object marker *a* with *gustar*-type verbs to 45 second-generation college heritage speakers. Instruction was followed by three practice exercises, for which participants received immediate explicit feedback, including negative evidence. Results of a pretest confirmed that heritage language learners' recognition and production of *a* with animate direct objects and dative experiencers was unsystematic when compared with a baseline group of 12 native speakers of Spanish. Posttest results revealed highly significant gains in both production and intuitions, suggesting that positive and negative evidence facilitates classroom heritage language acquisition, as it does L2 acquisition, at least in the short term. Thus, there is evidence that L2 instructional types can be beneficial for heritage speakers.

The Subjunctive Mood and Spanish Heritage Speakers

For our study, we selected the past subjunctive with indefinite referents, as in (1) and (2).

- (1) Mis padres me buscaban juguetes que *fuieran* educacionales.
“My parents looked for toys for me that *were* (3s-past-sub) educational.”
- (2) En esa tienda, no había un teléfono que *costara* menos de \$100.
“In that store, there wasn't a phone that *cost* (3s-past-sub) less than \$100.”

This choice was motivated by several factors. First, the subjunctive has been clearly identified as a form that frequently is incompletely acquired or that atrophies in the Spanish of heritage speakers (Lipski, 1993; Lynch, 1999; Martínez Mira, 2005; Montrul, 2007; Silva-Corvalán, 1994, 2003). Second, Montrul

found that heritage speakers had difficulty interpreting sentences with restrictive clauses involving indefinite referents and the present subjunctive, such as *Necesito un libro de cuentos para niños que tiene* (contradictory) / *tenga* (logical) *ilustraciones de Miró, pero no sé si hay uno* “I need a story book for children that has illustrations of Miró, but I do not know if there is one.” She concluded that heritage speakers have lost the category Mood in certain grammatical contexts and need to be taught subjunctive forms and meanings “from square one in the classroom, just like typical L1-speaking L2 learners of Spanish” (Montrul, 2007, p. 38).

Finally, we have noticed that many heritage speakers produce the imperfect indicative instead of the imperfect subjunctive in this type of context, a tendency that was confirmed in a pilot sentence completion task that we administered to a group of 14 heritage speakers of mixed Spanish proficiency. Examples (1) and (2) were taken directly from that task. Students were given the main clause + *que* and were asked to complete the sentence freely. Over half of the students used the imperfect indicative *eran* and *costaba* in these two sentences. This is a common phenomenon in Romance languages in general and particularly characteristic of contact varieties of Spanish, including Peninsular Spanish varieties (the Spanish spoken in the Basque Country prefers the past indicative) and Caribbean Spanish.

The Acquisition of the Subjunctive in Spanish

Monolingual native Spanish speakers begin producing the subjunctive in certain contexts by age 2 (López Ornat, 1994). Gili Gaya (1972) indicated that preschool children employ a lexical-cue strategy, whereby they use the subjunctive with lexical items that appear frequently with the subjunctive such as *querer que* and *para que*, whereas school-age children adopt a semantic strategy, generalizing the subjunctive to directives, volitives, and adverbial clauses with future time reference. The acquisition of the majority of subjunctive uses takes until children are 7 or 8 years old (Blake, 1983), and some variable uses even take until age 13, which Collentine (2003) noted is linked to the social pressures toward normative writing that emerge for schoolchildren at around this age. Although obligatory uses are acquired before variable uses, Pérez-Leroux (1998) has pointed out that there are cognitive factors that contribute to the acquisition of subjunctive as well, specifically children’s ability to entertain false beliefs. The distribution of the subjunctive in the input that children receive also appears to play a role in its development (Blake; Gili Gaya). The important point here is that even among monolingual Spanish-speaking children who receive home and institutional support for their Spanish development,

some of the more nuanced uses of the subjunctive are acquired relatively late.

Given that the acquisition of the subjunctive in monolingual children spans so many years, it is not surprising that the full spectrum of uses of subjunctive fails to develop in heritage speakers, who receive far less input in Spanish and use the language more infrequently and for a more reduced set of functions than monolingual children. Among adult second- and third-generation Spanish heritage speakers, a variety of studies have documented the loss of or simplification of the subjunctive mood system (Lipski, 1993; Lynch, 1999; Martínez Mira, 2005; Silva-Corvalán, 1994, 2003). In Silva Corvalán's (1994) extensive corpus, second- and third-generation speakers often used present indicative where monolingual Spanish speakers would categorically use the present subjunctive. Bilinguals also used only the indicative in variable contexts that permitted either option for monolingual speakers.

Two studies of note were longitudinal in nature, revealing more details about the loss of the subjunctive among heritage Spanish-speaking children. Merino (1983) studied 41 bilingual children between 5 and 10 years of age. She found steady improvement in the children's English comprehension and production with each increasing school grade level but a significant decline in Spanish comprehension by the third and fourth grades. Among older children, Spanish comprehension remained stable, but production dropped dramatically. The fourth graders' subjunctive production was at the same level as that of the kindergarten students, indicating stagnation or loss of linguistic abilities in this area. A second study conducted 2 years later with children from the original sample also showed that performance in English continued to improve, but half of the children showed loss of some sort in Spanish.

More recently, Silva-Corvalán (2003) examined the Spanish production of seven preschool children (ages 5;1 to 5;11) who acquired Spanish from birth. The author noted that the children's degree of exposure to Spanish was correlated with their production of verbal morphology. The two children from Spanish-only homes used preterite, imperfect, and present subjunctive morphology similarly to an adult monolingual, and they were also beginning to produce the imperfect subjunctive. In contrast, the children from bilingual and English-only homes did not produce the imperfect subjunctive, and the two children from an English-only home did not use the present subjunctive at all. To determine whether these were cases of incomplete acquisition or attrition, the author then examined longitudinal data collected from two of the children who were studied from age 2;10 through 5;6. She found that the children's

tense-mood-aspect system at age 5;6 was less developed than it had been at age 3;0, leading her to conclude that these were cases of attrition.

Montrul (2007) has argued that simplification of mood morphology in heritage speakers' production may also manifest itself in their receptive skills, at the level of recognition and interpretation. This hypothesis was based in part on the findings of Montrul and Slabakova (2002) in which L2 Spanish learners produced and recognized the preterite/imperfect contrast yet had difficulty understanding subtle meaning differences between these two past forms in interpretation tasks. Montrul conducted an experiment in which she tested 14 college-level heritage speakers' interpretation of subjunctive sentences. Specifically, the participants were given a meaning judgment task in which they had to indicate whether sentences like (3a) and (3b) were logical.

- (3) a. Cada año, Ana se alegra cuando le *aumentan* el sueldo. (logical)
 b. Cada año, Ana se alegra cuando le *aumenten* el sueldo. (contradictory)
 "Every year, Ana is happy when her salary is increased."

There were three types of subjunctive contexts: *cuando*, *de manera que*, and restrictive clauses with indefinite referents such as "Necesito un libro de cuentos para niños que *tiene* (contradictory) / *tenga* (logical) ilustraciones de Miró, pero no sé si hay uno."

Montrul (2007) found that, contrary to Silva-Corvalán's (1994) impression that heritage speakers understand mood morphology despite inaccurate production, second-generation speakers do not necessarily have the ability to discriminate semantically between subjunctive and indicative in variable contexts when there is a subtle meaning difference. The heritage speakers in her study showed a statistically significant difference between interpreting subjunctive and indicative in sentences with *cuando*—meaning that the students discriminated semantically between the two forms—but there was no difference whatsoever in sentences with *de manera que* or restrictive relatives.¹

Because Montrul (2007) did not intend to identify whether these findings were the result of incomplete acquisition or attrition—which is indeed a nearly impossible task in the absence of longitudinal data—the author concluded that both could be possible: The adult heritage speakers she studied either had not fully acquired the subjunctive in childhood or whatever had been acquired at an early age was subsequently lost as a result of reduced input and language disuse. She also proposed the pedagogical implication that, because heritage speakers "seem to have entirely lost the category Mood from their grammars," they have to learn the subjunctive forms and meanings from zero in the classroom, as do L2 learners of Spanish. The conclusion that the heritage speakers had

“entirely” lost mood from their grammars is overstated, given that even the lower Spanish proficiency group scored 67% accurately on the subjunctive interpretation items. Nor would it be accurate to extend Montrul’s conclusion and assume loss of subjunctive forms to all heritage-speaker populations, given the documented wide range of abilities in Spanish among heritage speakers. Her study, however, does provide important insight on heritage-speaker adults’ reduced ability to interpret meanings encoded by subjunctive morphology.

The subjunctive mood is also known to present a challenge in adult L2 acquisition. Collentine (2003) noted that subjunctive forms are difficult for L2 learners to detect during the initial stages of acquisition, given that most present subjunctive forms differ from their present indicative counterparts only in the final vowel and, in fact, exhibit inflections that learners already associate with the present indicative. This is because *-er* verbs like *beber* “to drink” are inflected with *-e* in the indicative and *-a* in the subjunctive (e. g., *bebe* [third person singular, present indicative] and *beba* [third person singular, present subjunctive]), whereas the opposite is true for *-ar* verbs like *cantar* “to sing,” which are inflected with *-a* in the indicative and *-e* in the subjunctive (e. g., *canta* [third person singular, present indicative] and *cante* [third person singular, present subjunctive]). Thus, there is no unambiguous link between verb inflections and the mood they encode. Furthermore, he noted that the ability to interpret the semantic nuances of the subjunctive is not critical to most learners up through the intermediate level of instruction, who are primarily concerned with extracting lexical meaning from the input. He summarized almost 30 years of research on L2 acquisition of the subjunctive as follows: (a) Learners do not acquire the knowledge for this construct in isolation of other aspects of their interlanguage development, such as syntactic development and abilities to process long-distance dependencies in short-term memory, and (b) The effects of instruction on subjunctive development are still not clearly understood. He suspected that educators’ efforts to promote subjunctive use usually occur too soon in learners’ development.

Studies of Processing Instruction

Given that acquisition of the subjunctive is difficult for L2 learners, researchers have explored the effectiveness of instructional methodologies aimed at improving L2 learners’ command of this structure. One methodology in particular that has been utilized is processing instruction (PI). Before reviewing PI studies that have targeted the subjunctive, we will briefly review what exactly is meant by PI. PI is a method of teaching grammatical form to L2 learners based on VanPatten’s (1996, 2004, 2007) model of how learners process input. A brief

review of this input processing model is as follows. To process input means to make a connection between a form and its meaning. For example, if a learner hears the preterite ending *-ó* on the verb *habló* “spoke” and knows that it denotes the past, the learner has made a form-meaning connection. VanPatten’s (2007) input processing model proposes a series of strategies—nine principles in the most recent version—that learners use when processing L2 input for meaning. To illustrate, the Lexical Preference Principle states that learners process lexical items for meaning before they process grammatical items for meaning when both communicate the same information. As a result, they will, for example, rely on content words such as *yesterday* before they will process a verb ending such as *-ó* in the above example. The First Noun Principle asserts that learners tend to process the first noun or pronoun they encounter as the subject, such that *Lo busca la niña* “The girl looks for him” is often misinterpreted as “He looks for the girl.” In this case, the learner has made an incorrect form-meaning connection and has misprocessed the input, which in turn inhibits acquisition of the structure.

Processing instruction considers these and other input processing principles in guiding learners to make correct form-meaning connections. First, a PI treatment briefly explains the relevant structure and tells learners how it is often misprocessed. Then learners are guided through a series of structured input activities that push them to process the structure correctly. For example, learners may listen to a series of sentences and decide whether each one happened yesterday or today. The sentences do not contain any temporal adverbs like *yesterday* or *today*, forcing learners to attend to the verbal morphology to extract the temporal meaning. The input in a PI treatment begins with referential activities that have a right or wrong answer and then moves to affective activities that require learners to express an opinion or belief. At no time during PI do learners produce the target structure, because PI is concerned with input processing. In sum, learners who would likely either miss or misinterpret the target form in the input are taught to process the target form in a way that enriches their grammatical intake.

Processing instruction was first shown to be a successful method for L2 grammar instruction in teaching word order and object pronouns to L2 learners of Spanish (VanPatten & Cadierno, 1993a, 1993b). In these studies, PI was compared to a traditional, output-oriented instructional treatment (TI, or traditional instruction). Results from both studies showed that only the PI group showed a significant gain on the sentence interpretation task. For the production task, the results varied. In VanPatten and Cadierno (1993a), both the PI and the TI groups showed significant improvement on sentence production tasks, even

though the PI group never actually produced the target form during instruction. In VanPatten and Cadierno (1993b), although there were no statistical differences between PI and TI, only the TI group improved relative to a control group. Based on this set of results for interpretation and production, the authors concluded that PI was more effective than TI because it enhances the way learners process input during interpretation tasks, which in turn feeds their developing grammatical competence, whereas TI only develops skill in producing output.

Since the initial PI studies, other studies have documented that PI groups showed larger gains on interpretation tasks than TI groups and that both groups showed comparable improvement on production tasks, such as the study by Benati (2001) with the future tense in Italian and by VanPatten and Wong (2004) with the causative in French. It is worth noting that the results of these two more recent studies differ slightly from those of the original VanPatten and Cadierno (1993a) study in that although the PI groups showed greater improvement on interpretation than did the TI groups, the TI groups did, in fact, show significant growth on interpretation measures. Additional research has both corroborated VanPatten and Cadierno (see VanPatten, 2002, 2004, for reviews) and modified and expanded upon the original PI study to address issues beyond the processing of input by L2 learners, such as the role of explicit grammar explanation in instructed language learning (Benati, 2004; Fernández, 2005; Sanz, 2004; Sanz & Morgan-Short, 2004; VanPatten & Oikennon, 1996; Wong, 2004b).

A number of researchers, however, have questioned the primacy of the role of input, particularly in the development of production skill and with more abstract and syntactically complex target forms (e. g., subjunctive mood; Collentine, 2003) and have also questioned the generalizability of the benefits of PI to different linguistic structures and L2s (DeKeyser, Salaberry, Robinson, & Harrington, 2002). Some studies have concluded that TI or other output-oriented methods can lead to similar or greater gains on measures of production than PI. These include the study by DeKeyser and Sokalski (2001) for object pronouns and the conditional in Spanish, the study by Allen (2000) for the French causative, and the study by Morgan-Short and Bowden (2006) for Spanish object pronouns. On measures of interpretation in such research, however, PI was found to lead to improvement that was greater than (DeKeyser & Sokalski) or similar to (Allen; Morgan-Short & Bowden; Toth, 2006) those brought about by output-based methods.²

Focusing now on the target form for the present investigation, several studies have been published on the effectiveness of PI as compared to other instructional methods for teaching the subjunctive mood (e. g., Benati, 2006;

Collentine, 1998; Farley, 2001a, 2001b, 2004a, 2004b). Collentine compared the effectiveness of PI with an output-oriented instruction for the development of the Spanish subjunctive in adjectival clauses in 54 students enrolled in a second-semester university Spanish course. On comprehension and production tasks, both groups outperformed a control group, but neither experimental group outperformed each other on either task. The author attributed the results to the fact that there was high communicative value in both PI and the output-oriented instruction.

The effectiveness of PI for teaching the subjunctive of doubt has also been compared to that of an instructional type called meaning-based output instruction (MOI) (Benati, 2006; Farley, 2001a, 2001b). MOI was described as different from traditional output activities in that MOI activities contain no mechanical component. This method focuses on meaning-based production and requires learners to use both meaning and form at some level. Results on interpretation measures in these studies have been mixed. In one study (Farley, 2001b), the PI group showed greater improvement in interpretation skill than the MOI group, although in a second study (Farley, 2001a), both the PI and MOI treatment groups improved equally on interpretation tasks. However, production showed no difference between the two treatments. Farley (2001a) concluded that the similarity of the effects obtained with the PI and MOI was due to the fact that they both focus on meaning and that MOI, despite its focus on output, can provide learners with incidental input. The hypothesis that the MOI treatment resulted in incidental input was corroborated by Benati, who compared the effects of computerized PI and MOI on subjunctive development in learners of L2 Italian. Unlike Farley (2001a), Benati found that PI led to greater gains on interpretation than MOI. Benati concluded that the different outcomes can be accounted for by the presence of incidental input in the noncomputerized Farley (2001a) study, which was eliminated by the computerized format for instruction in the Benati experiment. Methodological differences, such as time on task and the number of target items, could also account for some of the different outcomes in studies of PI with the subjunctive mood. These studies targeting forms of the subjunctive, some of their key differences, and their results are summarized in Table 1.

To summarize, PI is a specific, theory-based method for grammar instruction that has been researched quite extensively over many years. Some of the conclusions regarding PI have been ambiguous. However, research with L2 learners has shown that PI is an effective instructional method that consistently leads to improved performance on measures of both interpretation and production and that PI leads to gains in interpretation of linguistic structures that are

Table 1 L2 research on processing instruction and the subjunctive mood

Study	N	Participant Level	Target form	Instructional treatment	Participant groups	Assessments	Results
Collentine (1998)	54	Second-semester university Spanish	Spanish subjunctive in adjectival clauses	Two 50-min sessions	PI output C	Interpretation Production	PI and output > C PI and output > C
Farley (2001a)	50	Fourth-semester university Spanish	Spanish subjunctive of doubt	Two sessions Ten activities	PI MOI	Interpretation Production	PI = MOI PI = MOI
Farley (2001b)	29	Fourth-semester university Spanish	Spanish subjunctive of doubt	Two sessions, 90 min total 8 activities	PI MOI	Interpretation Production	PI > MOI PI = MOI
Benati (2006)	28	Second-semester university Italian	Italian subjunctive of doubt	Two 2-hr sessions Twenty activities Via computer	PI MOI	Interpretation Production	PI > MOI PI = MOI

Note. PI = processing instruction; C = control; MOI = meaning-based output instruction. Significant differences are noted by the > sign. Nonsignificant differences are noted by the = sign.

typically greater than gains resulting from output-based instruction, at least for traditional output-based instruction.

In the present study, our primary purpose is to determine if instructional methodologies such as PI can foster linguistic development in heritage speakers and to compare the effectiveness of such instruction for heritage speakers to its effectiveness for L2 learners. A secondary purpose of the current experiment is to explore whether PI can lead to greater linguistic development than traditional output-based instruction (TI) that is commonly included in textbooks for heritage speakers (Roca, 2004; Valdes & Teschner, 2002). More specifically, the study is designed to address the following research questions:

- 1a. For heritage Spanish speakers, does grammatical instruction bring about improvement in performance on sentence-level *interpretation* tasks containing obligatory past subjunctive contexts with indefinite referents?
- 1b. Does improvement differ from that seen in L2 learners on sentence-level *interpretation* tasks?
- 1c. Is improvement on sentence-level *interpretation* tasks affected differentially by different types of instruction?
- 2a. For heritage Spanish speakers, does grammatical instruction bring about improvement in performance on sentence-level *production* tasks containing obligatory past subjunctive contexts with indefinite referents?
- 2b. Does improvement differ from that seen in L2 learners on sentence-level *production* tasks?
- 2c. Is improvement on sentence-level *production* tasks affected differentially by different types of instruction?
- 3a. For heritage Spanish speakers, does grammatical instruction bring about improvement in performance on *grammaticality judgments* containing obligatory past subjunctive contexts with indefinite referents?
- 3b. Does improvement differ from that seen in L2 learners on *grammaticality judgments*?
- 3c. Is improvement on *grammaticality judgments* affected differentially by different types of instruction?

Methodology

Participants

The heritage-speaker participants were 127 students, with an average age of approximately 20, in introductory- or intermediate-level university Spanish courses designed for heritage speakers. To be placed in the heritage-speaker

program utilized for the present study, students had to have grown up in homes where Spanish was spoken and have both receptive and productive competence in Spanish. They also had to pass the heritage-speaker placement exam. At the Chicago university in question, 80% of the heritage speakers are what are referred to in the sociolinguistic literature as second-generation speakers; that is, they are the United States-born children of parents who immigrated to the United States as adults from Spanish-speaking countries. In our case, 90% of the students' parents came from Mexico. Some of the students had also taken high school Spanish courses.

Thirteen intact course sections from the heritage-speaker program were randomly assigned to either PI or TI treatment groups or a control group.³ Students had not received any explicit instruction or homework assignments on the subjunctive before the experiment in their current course or in previous courses at this university. We also tested a small subgroup ($n = 22$) of L2 students for two reasons: to assess whether our instructional intervention would lead to the same findings as in past PI studies, all of which have been conducted with L2 learners, and to compare the results of the heritage speakers to those of L2 learners.

Materials

Processing Instruction Treatment

The PI treatment was designed according to five guidelines originally put forth by Lee and VanPatten (2003) and further elaborated by Farley (2005), Lee and Benati (2007a, 2007b), and Wong (2004a).

First, only one component of grammar was presented at a time. Specifically, the target form was the Spanish subjunctive mood, only in the past tense, only as it is specifically used with indefinite or nonexistent antecedents, and only as triggered by the main clause verbs *no había* "there was not," *no tenía* "did not have," and *buscaba* "was looking for." Verb forms were presented only in the third person, plural or singular. Second, input was delivered both aurally and in written form, to accommodate individual differences among participants who may learn better through one mode or the other. Of nine total PI activities, two involved subjects listening to structured input and seven required them to read printed input. Third, meaning was a focus of all PI activities. Each exercise or series of exercises was contextualized around a single theme (e. g., childhood or urban history).

Fourth, the input was structured to direct learners away from two natural processing tendencies that can prevent them from making the critical connection between subjunctive mood forms and their respective meaning. These two

processing strategies are taken from VanPatten's (2007) most recent articulation of the Input Processing model.

The Preference for Nonredundancy Principle: Learners are more likely to process nonredundant meaningful grammatical markers before they process redundant meaningful grammatical markers. (p. 119)

Subjunctive verbal morphology, as used with indefinite referents, is redundant in its coding of uncertain existence because the main clause verbs that precede it also code uncertainty. To minimize this redundancy, instructional input was structured such that the two redundant forms were either physically separated, in the case of written input, or temporally separated, in the case of aural input.

The Sentence Location Principle: Learners tend to process items in sentence initial position before those in final position and those in medial position. (p. 125)

The subjunctive morphemes in question cannot appear in sentence-initial position because they occur only in embedded clauses; thus, they may tend to be overlooked. The input for the PI treatment was designed so that the target form appeared in the more salient sentence-initial position.

- (4) Cuando hacía mi horario para este semestre, *buscaba* una clase que . . .
— . . . **empezara** a las 8:00.

Example (4) shows how the input design separated the two redundant forms (in italics here but not in the instructional packets), placed the target form (in boldface both here and in the instructional packets) at the beginning of the phrase, and enhanced the target form with boldface type.

Finally, all PI activities required that learners respond in some way to the input. Affective activities, such as (4), sought the subjects' personal preferences and were open answer questions. Referential activities like (5), on the other hand, had only one correct answer that was determined through correct interpretation of the target form. Complete examples of referential and affective PI activities as well as the number of each type of activity and numbers of target items are given in Appendixes A, B, and C.

- (5) [. . . *políticos que fueran honestos.*]
 El año pasado, **no había** . . .
 El año pasado, **había** . . .

Traditional Instruction Treatment

The TI treatment was modeled after the mainly form-oriented activities that are found in most of the textbooks of heritage Spanish that include a grammar component (e. g., Roca, 2004; Valdes & Teschner, 2002). Like the PI group, the TI group completed nine activities as well: two oral and seven written. All activities elicited output with the target form and proceeded from mechanical, to meaningful, and, finally, to communicative, as illustrated in (6), (7), and (8), respectively. Complete examples of TI activities as well as a breakdown of the number of each type of activity and numbers of target items are given in Appendices D, E, F, and G.

- (6) El año pasado, no había políticos que _____(ser) honestos.
 (7) Alfredo buscaba . . . unas botas que _____.
 (8) De niño/a, yo no tenía . . . muchos juguetes que _____.

Both PI and TI treatments contained identical subject matter, vocabulary, and total number of tokens. Some PI activities were created first and then used as a model for the TI activities, and in other cases, the TI activities were written first and then expanded into PI activities. Feedback for both groups was designed to be as similar as possible. For referential PI and mechanical TI activities, feedback consisted of the provision of the correct answer. For affective PI activities as well as for meaningful and communicative TI activities, feedback consisted of both providing the correct answer and responding to the content students produced. Both types of instructions contained explicit information about how the past subjunctive is formed, where it is located within a sentence, and when it is used (only uses with indeterminate past referents). After the same explanations given to the TI group, the PI group received an additional explanation of how the past subjunctive is often misprocessed due to its redundancy and to its nonsalient location, typically in the middle of a sentence, and how to process it correctly.

The control group took the pretest and posttest on the same days as the treatment groups (i.e., 3 days apart), but they received no instructional treatment for the target form. Instead, these participants continued their regularly scheduled class lessons during the two class sessions in which the experimental groups were exposed to either PI or TI methods.

Assessments

The pretest and posttest contained six target and six distractor interpretation items, six target and six distractor grammaticality judgment items, and eight target and four distractor production items. In all cases, half of the target

items required interpretation or production of the subjunctive and half required interpretation or production of the indicative. Three versions of the test were used;⁴ these were structured to contain similar sentence structure, length, and vocabulary and were administered via computer. The different versions were given in each possible pretest-posttest permutation (i.e., A-B, A-C, B-A, etc.) to counterbalance any ordering effects.

In the interpretation task, the proctor read aloud a clause containing either the past subjunctive or the past indicative. Learners had to select which choice of two sentence beginnings could precede the clause they just heard. Examples (9) and (10) illustrate items from this section. Additional items are provided in Appendix H.

- | | | |
|------|---------------------------------------|--|
| (9) | [Proctor reads:]
[Learners select] | “... nadaba en el mar.”
<input type="checkbox"/> “Había mucha gente que . . .”
<input type="checkbox"/> “No había mucha gente que . . .” |
| (10) | [Proctor reads:]
[Learners select] | “... anduviera sin dueño.”
<input type="checkbox"/> “Había un perro que . . .”
<input type="checkbox"/> “No había un perro que . . .” |

For the distractor listening items, the correct answer was a logical beginning to the sentence rather than a subjunctive or indicative trigger, such as “El salvavidas era un hombre que / El salvavidas salvó a una niña que . . . tenía cuatro años.” All of the distractors and target items in this section belonged to a single storyline—in this case, “A day at the beach.”

In the grammaticality judgment task, target items were either correct or incorrect depending on verbal mood. Examples (11) and (12) illustrate target items from this section. Additional items are provided in Appendix J.

- | | | |
|------|--|---|
| (11) | [Learners read:]

[Learners select:] | “En esa empresa, no había ningún abogado que tenía licencia para trabajar en Indiana.”
<input type="checkbox"/> No tiene ningún error, me suena bien.
<input type="checkbox"/> Tiene un error, me suena mal. |
| (12) | [Learners read:]

[Learners select:] | “Mi amigo buscaba un carro Lexus que costara menos de \$20000, pero no encontró ninguno.”
<input type="checkbox"/> No tiene ningún error, me suena bien.
<input type="checkbox"/> Tiene un error, me suena mal. |

Distractor items in the grammaticality judgment section had errors that did not involve the subjunctive, such as “Llegaremos al café a las 9:15 de la noche,

pero ya estaba cerrado,” or were well-formed sentences such as “En el invierno hay que manejar con cuidado porque a veces hay hielo en la calle.” In several items we used the prompt “quería” (instead of “buscaba”), a form that was not used during instruction, in order to avoid learners’ reliance on lexical items like “no había” or “no tenía” as subjunctive triggers.

In the production section, participants were instructed to type 2 to 10 words in order to complete sentence prompts according to their own experiences and opinions. Target items required responses in either past subjunctive or indicative, as in “Anoche María tuvo que lavar porque ya no tenía ropa que . . .” or “Manuel fue a la biblioteca porque sabía que tenían un libro que . . .” (See Appendix I for examples). Distractor items were random short-sentence completions such as “Los estudiantes que usan sus teléfonos celulares en clase . . .” Participants were given 40 min to complete the three tasks.

Procedure

All experimentation took place during the participants’ regular class period. On the days of the pretest and the posttest, the classes met in a computer lab. The proficiency test and the pretest were administered on day 1. Students were randomly assigned either Version A, B, or C of the test. Instructional treatments took place on days 2 and 3 and were administered by two of the researchers (who were not the instructors of the courses). All instructional treatment handouts were collected after instruction each day. On day 4, participants took the posttest, also randomly assigned and a different version than the pretest.

Scoring and Analysis

Target items requiring the use of subjunctive were scored for accuracy. For interpretation and for the grammaticality judgment task, each correct answer received a score of 1 and each incorrect, nontarget, or blank response received a score of 0. On the production portion of the test, the imperfect subjunctive received a score of 1, whereas all other answers received a score of 0, with no partial credit. Spelling errors (such as “b” instead of “v”) were ignored if the form was clearly an imperfect subjunctive.⁵ Once results were tabulated, they were submitted to global repeated-measures ANOVAs, with Group (HL, L2) and Instruction (PI, TI) included as the between-subjects factors and Time (Pre, Post) included as the within-subjects factor, for each assessment. Scores from the control group of heritage speakers were not included in these global ANOVAs because this would have created an imbalance in the design of the repeated-measures ANOVA; that is, there would have been an empty cell for Control-L2, which would have invalidated any statistical interactions. Instead,

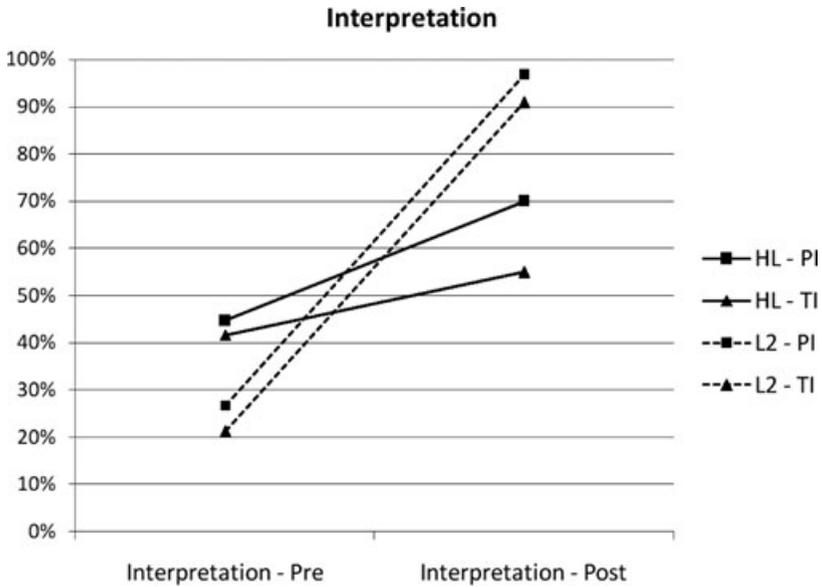


Figure 1 Interpretation, percent scores.

when main effects were evidenced in the global ANOVA, step-down repeated-measures ANOVAs were performed for the experimental groups as well as for the control group. The purpose of these analyses was to confirm that effects were indeed significant in each group.⁶

Results

Data from participants who had the potential for linguistic development—more specifically, those who scored 67% or lower on the interpretation pretest—were included in all analyses.⁷ This cutoff yielded a total of 101 (HL = 69, HControl = 10, L2 = 22) of the original 149 (HL = 114, HControl = 13, L2 = 22) participants. The significance value was set at *p* < .05 for all analyses. The following convention was used for interpreting effect sizes: 0–0.1, weak; 0.1–0.3, modest; 0.3–0.5, moderate; and >0.5, strong (Muijs, 2004).

The results of learners’ performance on the interpretation task at the pretests and posttests are depicted in Figure 1. A repeated-measures 2 × 2 ANOVA with Group (HL, L2) and Instruction (PI, TI) as the between-subjects factors and Time (Pre, Post) as the within-subjects factor was conducted for interpretation. The analysis revealed a significant main effect for Time, which was of moderate

Table 2 Interpretation: Repeated-measures ANOVA

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	η_p^2	Power
Time	1	53.10	53.10	78.87**	<.01	.48	1.00
Instruction	1	1.58	1.58	2.73	.10	.03	0.37
Group	1	1.15	1.15	1.99	.16	.02	0.29
Instruction \times Group	1	0.05	0.05	0.09	.76	.00	0.06
Time \times Instruction	1	0.07	0.07	0.11	.74	.00	0.06
Time \times Group	1	15.82	15.82	23.49**	<.01	.21	1.00
Time \times Instruction \times Group	1	0.62	0.62	0.34	.34	.01	0.16
Error	87	58.57	0.67				

** $p < .01$.

to strong effect size, and a significant Time \times Group interaction, which was of modest effect size. No other main effects or interactions reached significance, but note that statistical power for factors other than Time (i.e., Group and Instruction) was low and may not have been sufficient to detect other potential main effects or interactions (see Table 2). In order to confirm that the effect for Time held for each group and whether it was also evident in heritage control subjects, separate one-way repeated-measures ANOVAs with Time as the within-subjects factor were performed. Results confirmed a significant main effect for Time for both the heritage speakers, $F(1, 67) = 12.98$, $p = .001$, where there was a modest effect size ($\eta_p^2 = .16$), and the L2 learners, $F(1, 20) = 111.26$, $p < .001$, where the effect size was strong ($\eta_p^2 = .85$), but not for the control group of heritage speakers, $F(1, 9) = 2.25$, $p = .17$. Thus, for interpretation of the past subjunctive with indefinite referents, a main effect for Time shows that the instructional treatments led to linguistic development in heritage learners. The heritage learner development, however, was not as great as that evidenced by L2 learners. It is worth noting that this difference in growth was independent of the apparent preexperimental difference between the two participant groups (see Figure 1), as the interaction between Time and Group in repeated-measures designs takes into account any group differences in pretest scores (Rutherford, 2001).

The results of learners' performance on the written production task at the pretests and posttests are depicted in Figure 2. A 2×2 repeated-measures ANOVA with Group (HL, L2) and Instruction (PI, TI) as the between-subjects factors and Time (Pre, Post) as the within-subjects factor was conducted in order to address research question 2. As was the case for interpretation, the

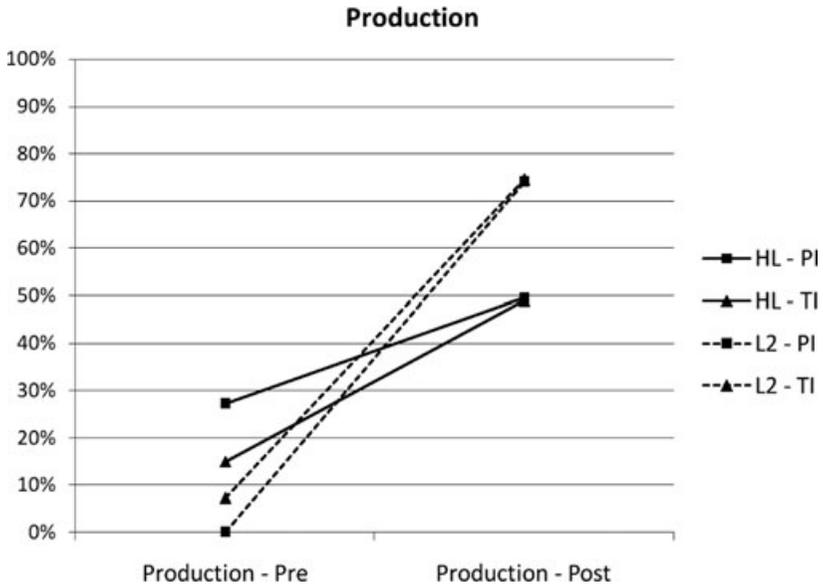


Figure 2 Production, percent scores for subjunctive items.

Table 3 Production: Repeated-measures ANOVA

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	η_p^2	Power
Time	1	195.18	195.18	169.56**	<.01	.66	1.00
Instruction	1	0.23	0.23	0.06	.81	.00	0.06
Group	1	1.58	1.58	0.39	.53	.00	0.10
Instruction × Group	1	1.57	1.57	0.39	.54	.00	0.10
Time × Instruction	1	0.08	0.08	0.07	.79	.00	0.06
Time × Group	1	39.10	39.10	33.96**	<.01	.28	1.00
Time × Instruction × Group	1	2.46	2.46	2.14	.15	.02	0.30
Error	87	100.15	1.15				

***p* < .01.

analysis yielded a significant main effect for Time, which was of strong effect size, and a significant Time × Group interaction, which was of modest effect size. No other significant main effect or interaction was evidenced, although again, statistical power was low for factors other than Time (see Table 3). In order to confirm that there was significant development for each experimental

group and to probe whether heritage control subjects showed such development, independent one-way ANOVAs with Time as the within-subjects factor were carried out for each group. Results confirmed that indeed both the heritage speakers, $F(1, 67) = 45.21, p < .001$, and the L2 learners, $F(1, 20) = 134.50, p < .001$, showed significant development, whereas the control group did not, $F(1, 9) = 0, p = 1.00$. The effect for Time was moderate for the heritage language group ($\eta_p^2 = .40$) and strong for the L2 group ($\eta_p^2 = .87$). Thus, for written production of the past subjunctive with indefinite referents, the analysis indicates that the instructional treatments led to linguistic development in heritage learners. Again, this linguistic development was not as great as that evidenced by L2 learners, as shown by the Time \times Group interaction in the 2×2 repeated-measures ANOVA.

A potential concern with the posttreatment improvement in production of the subjunctive is whether the subjects ended up overproducing the form (i.e., using the subjunctive mood in all contexts, even those that require the indicative mood). If this were the case, then an improvement in scores on subjunctive test items would be accompanied by a decline in scores on indicative test items. To test for this possibility, the indicative items on the production pretests and posttests were also scored; the results can be seen in Figure 3. The scores were then submitted to a 2×2 ANOVA with repeated measures, with Group (HL, L2) and Instruction (PI, TI) as between-subjects factors and Time (Pre, Post) as the within-subjects factor. This analysis revealed significant main effects for Time, $F(1, 87) = 16.05, p < .001$, and Group, $F(1, 87) = 9.78, p = .002$, and no other effects or interactions, although statistical power was likely too low to detect any effect for Instruction ($\alpha = .21$). Thus, the main effect for Time indicates that the slight decline, which can be seen in Figure 3, is indeed statistically significant overall; the effect for Group simply reflects the fact that the HL group scored higher both before and after treatment. Independent one-way ANOVAs with Time as the within-subjects factor were also carried out for the L2, heritage learners and heritage control groups in order to determine whether the main effect for Time held for each group. These analyses confirmed a main effect for Time, $F(1, 67) = 11.07, p = .001$, for the HL group, for which the effect was modest ($\eta_p^2 = .15$), and an effect that approached significance for the L2 group, $F(1, 20) = 3.92, p = .06$, which was also modest ($\eta_p^2 = .16$). However, the effect for Time was not significant for the heritage control group, $F(1, 8) = 1.33, p = .28$. To summarize then, the decrease in performance on indicative production evident in Figure 3 is significant for the heritage learner group, approaches significance for the L2 group, and is not significant for the heritage control group. Thus, the slight decline for indicative items over

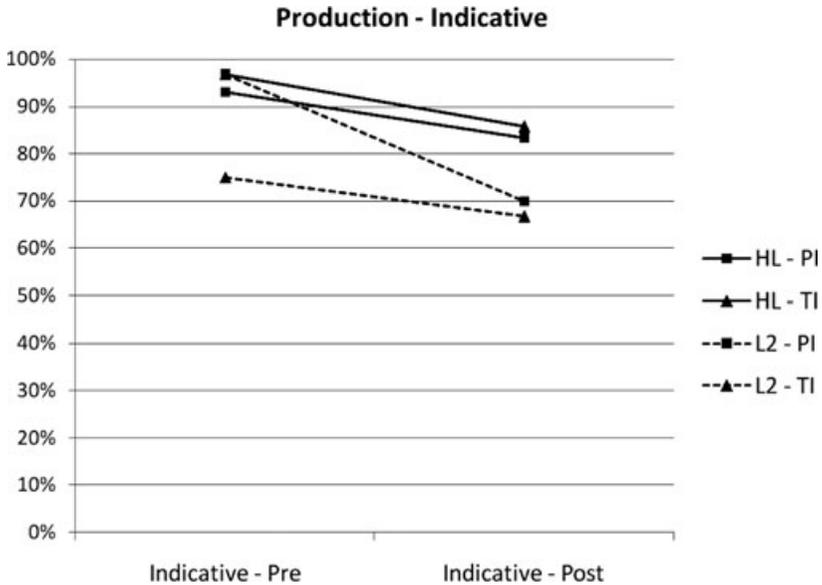


Figure 3 Production, percent scores for indicative items.

time appears to have been the result of instructional treatment, possibly due to overproduction of the target subjunctive form.

Finally, the results of learners' performance on the written grammaticality judgment task at the pretests and posttests are depicted in Figure 4. In order to address research question 3, a 2×2 ANOVA of repeated-measures design was performed with Group (HL, L2) and Instruction (PI, TI) as the between-subjects factors and Time (Pre, Post) as the within-subjects factor. As with interpretation and production, there was a significant main effect for Time, although of weak effect size, and a significant Time \times Group interaction, which was of modest effect size (see Table 4). One-way repeated-measures ANOVAs with Time as the within-subjects factor were performed for the experimental and control groups. The analysis for L2 learners yielded a significant main effect for Time, $F(1, 20) = 20.99, p < .001$, which was of strong effect size ($\eta_p^2 = .51$). Unlike with the interpretation and production tasks, however, the main effect for Time did not hold for the heritage language speakers, $F(1, 67) = 1.35, p = .25$, so this participant group did not improve significantly on the GJT after treatment.⁸ There was also no main effect for Time among the heritage speaker control group, $F(1, 9) = 1.98, p = .19$.

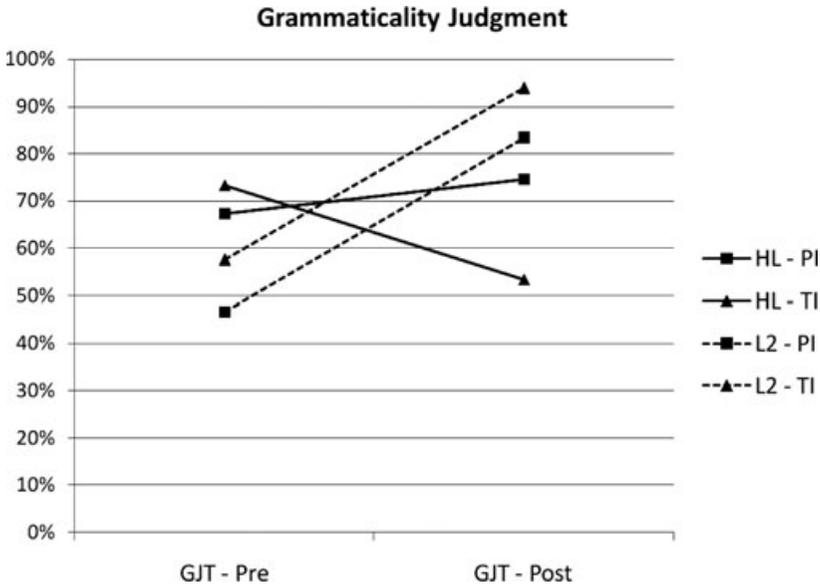


Figure 4 Grammaticality judgment, percent scores.

Table 4 Grammaticality judgment: Repeated-measures ANOVA

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	η_p^2	Power
Time	1	5.83	5.83	8.30*	.01	.09	0.81
Instruction	1	0.06	0.06	0.08	.77	.00	0.06
Group	1	0.30	0.30	0.43	.51	.01	0.10
Instruction \times Group	1	2.41	2.41	3.48	.07	.04	0.45
Time \times Instruction	1	1.07	1.07	1.52	.22	.02	0.23
Time \times Group	1	12.06	12.06	17.17**	<.01	.17	0.98
Time \times Instruction \times Group	1	1.66	1.66	2.36	.13	.03	0.33
Error	87	61.12	0.70				

**p* < .05.

***p* < .01.

To summarize, analyses of the results demonstrated that both the heritage language and the L2 subjects improved significantly on the interpretation and production measures after instructional treatment, whereas only the L2 learners showed postinstruction growth on the grammaticality judgment task. Heritage control subjects did not demonstrate improvement on any assessment. The L2 participants also exhibited greater net gains than the heritage language

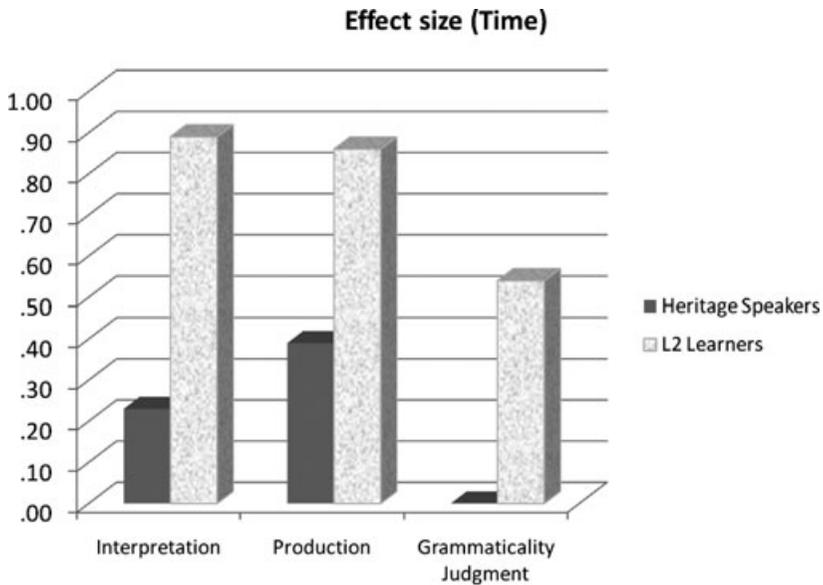


Figure 5 Improvement over time, effect size.

group on all three measures, as evidenced in the Time \times Group interactions. Additionally, statistical power was insufficient to detect potential effects for Instruction. Thus, it would seem that heritage speakers can benefit from focused grammar instruction but that such instruction may not have as large of an effect on heritage language learners as on L2 learners (see Figure 5).

Discussion

The primary focus of the study's research questions was whether instruction would bring about improvement in performance on *interpretation*, *production*, and *grammaticality judgment* tasks containing obligatory past subjunctive contexts with indefinite referents among heritage Spanish speakers. Analysis demonstrated that the heritage Spanish speakers did show modest linguistic improvement on interpretation and moderate linguistic improvement on production but no statistical improvement on the grammaticality judgment task. The second focus of the research questions was whether linguistic improvement in heritage Spanish speakers would be similar to that evidenced by L2 learners. Analysis demonstrated that heritage Spanish speakers' improvement was different from that of L2 learners given that the L2 learners evidenced

greater linguistic development on all tasks. In fact, not only did they show a steeper growth incline, but they also ended up at a higher overall level of accuracy after treatment, as reflected by posttest scores that were consistently higher than those of heritage learners.

These findings contribute supporting evidence to claims made by Montrul (2005) and Montrul et al. (2007) that heritage learners are in some ways significantly different from L2 learners. Montrul (2005) found that when comparing heritage speakers and L2 learners at the low proficiency level, the heritage speakers discriminated syntactically between two verb classes in sentences with postverbal subjects (the participial absolutive construction and postverbal bare plural subjects), but the L2 learners rated the two verb classes statistically alike in all constructions, showing no type of discrimination. Montrul et al. (2007) found that even when matched on a proficiency measure, heritage speakers were superior on an oral measure but less accurate on two written measures than L2 learners on tasks involving gender. Thus, although these two types of learners exhibit some similarities in their underlying systems (Montrul, 2002), there are also significant differences between them. Our findings suggest further differences between heritage speakers and L2 learners—in this case, regarding their linguistic development as a result of classroom instruction.

However, the finding that heritage Spanish speakers did not improve as much as L2 learners after instruction in the current study does not support other claims by Montrul (2007). With regard to heritage Spanish speakers' learning, Montrul concluded that heritage speakers need to learn "certain" subjunctive forms and meanings "from square one in the classroom, just like typical L1-speaking L2 learners of Spanish." Based on the results from the present study, the past subjunctive with indefinite referents does not appear to be one of these forms, at least regarding the potential benefit of PI or TI. At first glance, one might attribute greater gains in the L2 learners as compared to heritage learners to the fact that the heritage learners had higher accuracy scores on pretests—on average 20 percentage points higher—than the L2 learners and thus had less room for growth. However, the heritage learners included in this study had a mean of below 50% accuracy on the interpretation pretest and below 30% on the production pretest, so indeed there was room for instructional effect on these two tasks.

What, then, may account for the result that L2 learners benefited more than heritage learners on these types of instructions? First, it may be the case that the L2 learners are more accustomed to the type of tasks provided in the

instructional treatments. In our case, the L2 learners had spent, on average, five college semesters in courses that exposed them to input, grammatical terminology, and activities of the type administered in our study. The heritage learners, in contrast, were in their first, second, or third semester of college Spanish study and their courses, unlike L2 courses, focused almost exclusively on reading and writing development. The grammar instruction they had received prior to this study consisted of explanations followed by output practice, not of a series of structured activities. Thus, it is possible that the L2 learners were able to take greater advantage of the activities due to their previous classroom experience. Differences between heritage speakers and L2 learners in mode of acquisition were mentioned by Montrul et al. (2007), who pointed out that L2 learners typically acquire the language in a classroom setting with consistent exposure to written Spanish and emphasis on metalinguistic knowledge. Heritage learners, on the other hand, typically have little experience with Spanish reading, writing, or metalinguistic knowledge. Their knowledge of the language tends to come exclusively through informal oral interactions with family members about a restricted variety of topics.

A second possible explanation for the difference in gains for the two subject populations may be that these two types of learners were engaging in very different processes regarding this form. When presented with a context requiring the use of the past subjunctive (e. g., “No había jugadores que — buenos.” *There were no players who — good*) prior to instruction, L2 learners may have utilized the imperfect indicative “eran” (*were*) but, due to their status as novice learners of the language, may have been unsure about whether it was correct. Heritage learners, on the other hand, had likely heard and produced the imperfect indicative in numerous similar contexts during naturalistic exchanges; that is, for heritage learners, the imperfect indicative may constitute a competing form if it had ever fulfilled communicative needs in the past. There is evidence that in some dialects of Spanish the past subjunctive is a competing form in contexts that would require the past subjunctive in standard varieties of Spanish (Lynch, 1999; Silva-Corvalán, 1994). A different type of instruction may be required to oust a competing form versus adding a previously nonexistent form. In other words, the heritage language system, through years of interaction with friends and family, would likely have developed some grammar component that corresponds to the past subjunctive in standard, academic Spanish. It could be that restructuring this component of the heritage grammatical system takes more time or effort than the addition of a new form to the comparatively clean

slate of the L2 system (as the L1 in this case does not have past subjunctive verb inflections). By way of comparison, L2 learners of English, when exposed to the present tense verb paradigm, may respond better to instruction that pushes them to interpret and produce the third person singular *-s* than do native speakers of African American Vernacular English who regularly omit third person singular *-s*.

If this is the case, then L2 instructional methods, although potentially beneficial for linguistic development, may not be the most effective type of instruction for heritage learners. Let us return to the example of the omission of third person singular *-s* in African American Vernacular English. Contrastive analysis has been found to be beneficial with speakers of African American Vernacular English in increasing the written production of various mainstream U.S. English features, including third person singular *-s* (Taylor, 1989). It may be that contrastive analysis is also useful in the teaching of certain features to heritage Spanish speakers, given that this approach explicitly and repeatedly compares the two varieties. Although the treatment in our study did explain that the past subjunctive with indefinite referents is often redundant and nonsaliently located, heritage speakers may benefit more from seeing the indicative and the subjunctive side by side, bringing their attention to the difference between the two forms. Future research should further explore heritage language processing and what instructional methods may be best for development of heritage speakers' linguistic systems.

The final focus of the research questions was whether the improvement brought about by PI was similar to that brought about by TI. Based on (a) the significant linguistic development evidenced for both heritage learners and L2 learners on interpretation and production and (b) the descriptive results as displayed in Figures 1, 2, and 4, we conclude that our results are consistent with previous research that has shown the effectiveness of PI for the Spanish subjunctive (Collentine, 1998; Farley, 2001a, 2001b) as well as for other linguistic structures in Spanish, in other languages (Allen, 2000; Morgan-Short & Bowden, 2006; VanPatten & Cadierno, 1993a) and for different tasks (Marsden, 2006; VanPatten & Sanz, 1995). Further, the fact that L2 learners also showed improvement on a grammaticality judgment task is consistent with previous findings (Toth, 2006). It should be emphasized, however, that the experimental power for distinguishing between PI and TI was potentially too low to detect any differential effects, which limits the usefulness of the current study in comparing the effects of different types of instruction on language development in heritage speakers.

The lack of statistical power leads us to some additional methodological limitations of the current study that should be considered. The low number of target items on the tasks, especially the grammaticality judgment tasks, may have limited experimental power and the ability to detect treatment effects of a weaker magnitude. Second, the control group did not receive exposure to the target form. Thus, we can argue that instruction was more beneficial than no instruction, but it cannot be argued that instruction was more beneficial than exposure to the target form. Another limitation of the study is that our conclusions are based on observed short-term effects but leave open the possibility that such effects may diminish in the long term. In addition, judging the grammaticality of isolated sentences may not tap into whether students are aware of the different meanings that mood options convey. Future research could elicit heritage learners' perceptions and explanations of their choices and compare them to those of highly proficient Spanish-English bilinguals (instead of Spanish monolinguals). Finally, the study has not been able to address the cognitive processes that underlie linguistic development. Although the finding that L2 learners benefit more from these two types of instructions than heritage learners is novel and interesting, it would be more revealing to better understand whether the underlying processes that support linguistic development are similar or different in the two populations.

Conclusions

The results of the current study found that after exposure to PI or TI, both heritage learners and L2 learners showed significant improvement on interpretation and production tasks. Only the L2 learners, however, showed significant improvement for grammaticality judgments, and, in general, the L2 learners evidenced greater gains than the heritage learners. The results suggest that heritage speakers' language development may differ from that of L2 learners, although they also suggest that heritage speakers can benefit from focused grammar instruction. The finding that heritage speakers respond differently than L2 learners to PI and TI instructional treatments draws attention to the need for future research with heritage learners to determine what specialized types of instruction may be most beneficial for heritage learner language development, as well as to understand the cognitive processes that underlie such development.

Revised version accepted 7 August 2008

Notes

- 1 Based on our interactions with heritage speakers, we suspect that the adverbial clause *de manera que* used in Montrul (2007)—such as in the example “El profesor siempre explica ese teorema de manera que todos los estudiantes lo entienden (contradictory) /*entiendan* (logical), pero unos pocos estudiantes no lo entienden”—may have resulted in low accuracy scores because it was unfamiliar or confusing to students. Future studies should first establish that students understand the items intended to trigger the subjunctive.
- 2 It is important to note that some studies may have employed instructional treatments that did not follow the tenets of PI, as articulated in Lee and VanPatten (2003) and elsewhere. Allen (2000), for instance, was conceptually replicated on these grounds by VanPatten and Wong (2004), who obtained different results.
- 3 The decision was made to include a single control group comprised entirely of heritage learners. The HL control group was crucial to our design because L2 methods for grammar instruction had not previously been tested with this population. The inclusion of an additional L2 control group, on the other hand, would have been superfluous because the only purpose of the L2 experimental group in the present study was as a comparison group for the HL group. Our goal was not to independently test the effectiveness of instructional treatment with L2 learners, as this had previously been accomplished in a wide body of existing L2 research.
- 4 In order to establish that all three test versions were of similar difficulty, a one-way ANOVA with version as the independent variable was conducted on the pretest and posttest scores. Results showed no significant effect for version ($p > .05$), suggesting that the three versions were indeed comparable.
- 5 An analysis of 200 responses to production pretest and posttest items was conducted to determine whether the assignment of partial credit was necessary for accurate scoring of responses that were correct with regard to mood (subjunctive vs. indicative) but incorrect in some other regard, such as tense or number agreement. The results of this analysis revealed that the only partially correct responses that occurred were in the present subjunctive, and these accounted for only 1.5% of the responses analyzed. Given that the target form of the study was the past subjunctive, no partial credit was given in scoring.
- 6 A statistical consultant confirmed that this procedure would not lead to undue Type 1 errors because multiple *comparisons* are not being performed on the same data.
- 7 In the original study of PI with L2 learners, VanPatten & Cadierno (1993a) set the cutoff for inclusion in the analyses at 80% on the interpretation pretest. Many subsequent PI investigations (see, e. g., Cadierno, 1995; Farley, 2001b; Sanz &

Morgan-Short, 2004), however, have limited interpretation pretest scores to 60%, reasoning that a higher pretest score leaves little room for improvement. For the present study, the cutoff was set at 67% because the specific population—heritage learners—is more likely to have had previous exposure to the target form.

- 8 Interestingly, the heritage group exposed to TI actually decreased on the GJ measure over time (see Figure 4). However, because there was no main effect or significant interaction for instruction, step-down analyses of this subgroup are not warranted.

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Appendix A

PI Treatment

Session/activity	Type	Subjunctive items	Indicative items
1A	Referential	5	3
1B	Referential	5	3
1C	Referential	5	3
1D	Referential	4	4
2A	Referential	10	0
2B	Affective	4	2
2C	Affective	5	3
2D	Affective	8	0
2E	Affective	3	3
Total items		49/70	21/70

Appendix B

PI Treatment, Referential Activity

Actividad 1D: ¿Qué se va a poner Alfredo?

Alfredo quería comprar ropa nueva para ir a la fiesta de su amigo Pedro. Fue a la Tienda Jiménez para ver lo que vendían. Al día siguiente, regresó a la tienda buscando varios artículos que quería comprar. Lee la lista abajo y para cada artículo decide si Alfredo lo había visto el día anterior o no.

Modelo:

Alfredo buscaba unos guantes que **fuera**n brillosos.

- Las había visto antes en esa tienda.
 No sabía si las vendían en esa tienda.

Alfredo buscaba . . .

1. . . unas botas que **eran** azules.

- Las había visto antes en esa tienda.
 — No sabía si las vendían en esa tienda.

2. . . una corbata que **fuera** de verde claro.

- La había visto antes en esa tienda.
 — No sabía si la vendían en esa tienda.

3. . . unos pantalones que **le quedaran** apretados.

- Los había visto antes en esa tienda.
 — No sabía si los vendían en esa tienda.

4. . . . un cinturón que **era** de cocodrilo. — Lo había visto antes en esa tienda.
 — No sabía si lo vendían en esa tienda.
5. . . . un sombrero que **era** enorme. — Lo había visto antes en esa tienda.
 — No sabía si lo vendían en esa tienda.
6. . . . unos lentes que **fuera**n blancos. — Los había visto antes en esa tienda.
 — No sabía si los vendían en esa tienda.
7. . . . una camisa que **tuviera** botones amarillos. — La había visto antes en esa tienda.
 — No sabía si la vendían en esa tienda.
8. . . . un abrigo que **era** de los años 70. — Lo había visto antes en esa tienda.
 — No sabía si lo vendían en esa tienda.

En tu opinión, ¿tiene Alberto buen gusto para la ropa? Sí No

PI Treatment, Referential Activity (Translation)

Activity 1D: What is Alfredo going to wear?

Alfredo wanted to buy new clothes to wear to his friend Pedro’s party. He went to Jimenez’ Store to see what they had. The following day, he returned to the store looking for several items that he wanted to buy. Read the list below and for each item decide whether or not Alfredo had seen it the day before.

Model:

Alfredo was looking for some gloves that **were**[SUB] shiny.

- He had previously seen them in the store.
X He didn’t know if they sold them at that store.

Alfredo was looking for . . .

1. . . . some boots that **were**[IND] blue. — He had previously seen them in the store.
 — He didn’t know if they sold them at that store.
2. . . . a tie that **was**[SUB] light green. — He had previously seen it in the store.
 — He didn’t know if they sold it at that store.
3. . . . some pants that **were**[SUB] tight on him. — He had previously seen them in the store.
 — He didn’t know if they sold them at that store.
4. . . . a belt that **was**[IND] made of alligator. — He had previously seen it in the store.
 — He didn’t know if they sold it at that store.

5. . . . a hat that **was**[IND] huge. — He had previously seen it in the store.
 — He didn't know if they sold it at that store.
6. . . . some glasses that **were**[SUB] white. — He had previously seen them in the store.
 — He didn't know if they sold them at that store.
7. . . . a shirt that **had**[SUB] yellow buttons. — He had previously seen it in the store.
 — He didn't know if they sold it at that store.
8. . . . a jacket that **was**[IND] from the 1970s. — He had previously seen it in the store.
 — He didn't know if they sold it at that store.

In your opinion, does Alfredo have good taste in clothes? Yes No

Appendix C

PI Treatment, Affective Activity

Actividad 2D: ¿Cómo escogiste tu horario?

Piensa en cuando escogías las clases que ibas a tomar este semestre. Indica cuáles de las siguientes descripciones se te aplican.

Cuando hacía mi horario para este semestre, buscaba una clase que . . .

- 1. . . . **empezara** a las 8:00.
- 2. . . . **fuera** de mi especialización.
- 3. . . . **tuviera** un trabajo final en vez de un examen.
- 4. . . . **fuera** enseñada por una profesora muy inteligente.
- 5. . . . se **diera** por internet.
- 6. . . . **fuera** un solo día a la semana.
- 7. . . . **quedara** cerca de la residencia estudiantil.
- 8. . . . **acabara** antes de las 2:00.

¿Encontraste todas las clases que deseabas? Sí No

PI Treatment, Affective Activity (Translation)

Activity 2D: How did you choose your schedule?

Think of when you were selecting the classes that you would take this semester. Indicate which of the following descriptions apply to you.

When I was making my schedule for this semester, I was looking for a class that . . .

- 1. . . . **started**[SUB] at 8:00.
- 2. . . . **was**[SUB] for my major.
- 3. . . . **had**[SUB] a final paper instead of an exam.

- 4. . . . **was**[SUB] taught by a very intelligent professor.
- 5. . . . **was**[SUB] taught online.
- 6. . . . **met**[SUB] just one day a week.
- 7. . . . **was**[SUB] close to the student residence hall.
- 8. . . . **would be**[SUB] over before 2:00.

Did you find all of the classes that you wanted? Yes No

Appendix D

TI Treatment

Session/activity	Type	Subjunctive items	Indicative items
1A	Mechanical	8	0
1B	Mechanical	5	3
1C	Mechanical	5	3
1D	Meaningful	8	0
2A	Mechanical	10	0
2B	Communicative	3	3
2C	Communicative	4	4
2D	Communicative	8	0
2E	Communicative	6	0
Total items		57/70	13/70

Appendix E

TI Treatment, Mechanical Activity

Actividad 1A: ¿Cuál es la forma correcta?

Lee las oraciones siguientes sobre la ciudad de Chicago y llena el espacio en blanco con la forma correcta del verbo en paréntesis.

Modelo: En 2001, la ciudad no tenía un problema económico que fuera (ser) muy serio.

1. El año pasado, no había políticos que _____(ser) honestos.
2. En los años setenta, la ciudad no tenía un alcalde que _____(ser) afroamericano.
3. Hace unos años, el alcalde Daley buscaba un lugar que _____(ser) ideal para Millennium Park.
4. En 1900, no había casas que _____ (tener) televisores.
5. El verano pasado, no había conciertos en Grant Park que _____(ser) gratis.

6. En 1980, Chicago no tenía un restaurante que _____(tener) cuatro estrellas.
7. En 1950, Chicago no tenía un alcalde que _____(llamarse) Richard Daley.
8. En 2003, los Cubs buscaban otro equipo a que _____(poder) derrotar en la Serie Mundial.

TI Treatment, Mechanical Activity (Translation)

Activity 1A: What is the correct form?

Read the following sentences about the city of Chicago and fill in the blank with the correct form of the verb in parenthesis.

Model:

In 2001, the city did not have an economic problem that was [SUB] (to be) very serious.

1. Last year, there were no politicians who _____ (to be) honest.
2. In the nineteen seventies, the city did not have a mayor who _____ (to be) African American.
3. A few years ago, Mayor Daley was looking for a place that _____ (to be) ideal for Millennium Park.
4. In 1900, there were no houses that _____ (to have) televisions.
5. Last summer, there were no concerts in Grant Park that _____ (to be) free.
6. In 1980, Chicago did not have a restaurant that _____ (to have) four stars.
7. In 1950, Chicago did not have a mayor that _____ (to be named) Richard Daley.
8. In 2003, the Cubs were looking for another team that they _____ (to be able to) beat in the World Series.

Appendix F

TI Treatment, Meaningful Activity

Actividad 1D: ¿Qué se va a poner Alfredo?

Alfredo tiene un gusto *horrible* para la ropa. Decidió comprar ropa nueva para ir a la fiesta de su amigo Pedro. Completa la lista abajo con la ropa que él buscaba, usando el pasado del subjuntivo.

Modelo: Alfredo buscaba unos guantes que fuieran brillosos .
Alfredo buscaba . . .

1. . . . unas botas que _____.
2. . . . una corbata que _____.
3. . . . unos pantalones que _____.
4. . . . un cinturón que _____.
5. . . . un sombrero que _____.
6. . . . unos lentes que _____.
7. . . . una camisa que _____.
8. . . . un abrigo que _____.

TI Treatment, Meaningful Activity (Translation)

Activity 1D: What is Alfredo going to wear?

Alfredo has terrible taste in clothes. He decided to buy new clothes to wear to his friend Pedro’s party. Complete the list below with the items that he was looking for, using the past subjunctive.

Model: Alfredo was looking for gloves that were[SUB] shiny _____.

Alfredo was looking for . . .

1. . . . boots that _____.
2. . . . a tie that _____.
3. . . . pants that _____.
4. . . . a belt that _____.
5. . . . a hat that _____.
6. . . . glasses that _____.
7. . . . a shirt that _____.
8. . . . a coat that _____.

Appendix G

TI Treatment, Communicative Activity

Actividad 2D: ¿Cómo escogiste tu horario?

Piensa en cuando pensabas en las clases que ibas a tomar este semestre. Usa el pasado del subjuntivo para describir ocho de los factores que considerabas.

Cuando hacía mi horario para este semestre, buscaba una clase/clases que . . .

Modelo: . . . (no) empezara a las 8:00

1. . . . _____.
2. . . . _____.
3. . . . _____.
4. . . . _____.
5. . . . _____.

6. ... _____.
7. ... _____.
8. ... _____.

TI Treatment, Communicative Activity (Translation)

Activity 2D: How did you choose your schedule?

Think of when you were thinking about the classes that you would take this semester. Use the past subjunctive to describe eight of the factors that you considered.

When I was making my schedule for this semester, I was looking for a class/classes that . . .

Model: . . . — *started*[SUB] (*didn't start*[SUB]) at 8:00_ .

1. ... _____.
2. ... _____.
3. ... _____.
4. ... _____.
5. ... _____.
6. ... _____.
7. ... _____.
8. ... _____.

Appendix H

Sample Interpretation Test Items

1. [... *estuviera cerca de los columpios.*]
 - La mamá encontró un lugar para sentarse que . . .
 - La mamá quería un lugar para sentarse que . . .
2. [... *estuviera llorando.*]
 - No había ningún niño que . . .
 - Había un niño que . . .
3. [... *fuera muy grande.*]
 - El parque tenía una resbaladilla (*slide*) que . . .
 - El parque no tenía ninguna resbaladilla (*slide*) que . . .

Sample Interpretation Test Items (Translation)

1. [... *was*[SUB] *close to the swings.*]
 - The mom found a place to sit that . . .
 - The mom wanted a place to sit that . . .
2. [... *was*[SUB] *crying.*]
 - There was no child that . . .

- There was a child that . . .
- 3. [. . . *was*[SUB] *very large*.]
 - The park had a slide that . . .
 - The park did not have a slide that . . .

Appendix I

Sample Production Test Items

1. Cuando Paula se iba de la casa de sus padres, buscaba un apartamento que . . .
2. Querían un CD de música japonesa, pero en esa discoteca no había música que . . .
3. Anoche María tuvo que lavar porque ya no tenía ropa que . . .
4. Samuel es vegetariano, y no comió nada en la fiesta porque no había comida que . . .
5. El fin de semana pasado, Elena y sus amigas buscaban una fiesta que . . .

Sample Production Test Items (Translation)

1. When Paula was leaving her parents house, she was looking for an apartment that . . .
2. They wanted a CD with Japanese music, but in that store there was no music that . . .
3. Last night Maria had to do laundry because she didn't have any clothes that . . .

4. Samuel is a vegetarian, and he didn't eat anything at the party because there wasn't any food that . . .

5. Last weekend, Elena and her friends were looking for a party that . . .

Appendix J

Sample Grammaticality Judgment Test Items

- Aunque su ropero estaba lleno, Alejandro no tenía ni un solo traje que le quedara bien.
 - No tiene ningún error, me suena bien.
 - Tiene un error, me suena mal.
- Cuando Pablo se registró en la universidad este semestre, buscaba clases que empezaran después de las 10 de la mañana, pero no encontró ninguna.
 - No tiene ningún error, me suena bien.
 - Tiene un error, me suena mal.
- Mi papá tenía que ir al partido en carro porque no había ningún tren que pasara cerca de mi casa.
 - No tiene ningún error, me suena bien.
 - Tiene un error, me suena mal.

Sample Grammaticality Judgment Test Items (Translation)

- Although his closet was full, Alejandro didn't have a single suit that looked[SUB] good on him.
 - This has no mistakes; it sounds good to me.
 - This has a mistake; it sounds bad to me.
- When Pablo registered at the university this semester, he was looking for classes that started[SUB] after 10 o'clock in the morning, but he didn't find any.
 - This has no mistakes; it sounds good to me.
 - This has a mistake; it sounds bad to me.
- My dad had to drive to the game because there was no train that would go[SUB] by our house.
 - This has no mistakes; it sounds good to me.
 - This has a mistake; it sounds bad to me.