THE INCIDENTAL ACQUISITION OF SPANISH

Future Tense Morphology Through Reading in a Second Language

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The present study examines the processing of Spanish future tense morphology incidentally while reading in a second language. Previous L1 and L2 reading research has demonstrated that readers can acquire new vocabulary as a result of reading, but can they also acquire formal properties of the second language grammatical system? The participants in the present study had no previous knowledge of future tense morphology such that, as they read the passage used in the study, they encountered the target form for the first time, which is an accented *á* on the end of an infinitive—for example, *dependerá* "he, she, or it will depend." Several variables were manipulated: (a) the frequency with which the target form appeared in the input passages (6, 10, or 16 exposures); (b) the learner-readers' orientation to the task (neutral, meaning oriented, or form oriented); and (c) cues to meaning (the presence or absence of future-oriented adverbials). The effects of these variables were measured on both comprehension and input processing immediately after reading, 2 weeks later, and 1 month later. Comprehension was measured with a free-written recall and a multiple-choice comprehension test. Input processing was measured with a multiple-choice form recognition test and a modified cloze-form production test. The results indicate that all three variables have some effect on comprehension and input processing.

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When readers engage a text, their primary task is to extract meaning from the text in order to comprehend it. Readers do not simply find meaning in a text; they construct it based on their individual characteristics, knowledge, and experiences. Because the interaction between reader and text is so dynamic, as well as creative, we define comprehension as the process of making or creating meaning from the propositional content in the input for the purpose of interpreting a message (Lee & VanPatten, 1995, p. 96). Reading for comprehension has more than just an informational outcome; it has linguistic outcomes as well. Research has confirmed that reading in either a first (L1) or second (L2) language has a positive impact on language development, an impact that has been referred to as the power of reading (Krashen, 1993). Whatever language development that occurs as a result of reading is said to occur incidentally (or secondarily) in that the reader's primary task is to make meaning from the text rather than learn new words or learn to spell better. Language development is an additional benefit of reading; it is the bonus that readers receive. The indisputable linguistic gain that readers receive from reading is new vocabulary, be it partial or complete knowledge of a word's meaning (for L1, see Nagy, Anderson, & Herman, 1987, and Nagy, Herman, & Anderson, 1985; for L2, see Pulido, 2000, and Rott, 1999).

L2 readers are also language learners who, by definition, possess an incomplete L2 linguistic system. The task of language learners is to continually construct, reconstruct, and add to their L2 linguistic systems. They do so by interacting with comprehensible, meaning-bearing input. By processing the meaning of the input via the forms that encode this meaning, they expand their L2 linguistic systems. We can define input processing as the process of making form-meaning connections from the linguistic data in the input for the purpose of constructing a linguistic system (Lee & VanPatten, 1995, p. 96). Words not only have meaning but also form, and form can affect meaning, as demonstrated by the differences between *walk* and *walked*, *general*, *generalize*, and *generally*, and *hablo* "I speak," *habló* "he or she spoke," and *hablará* "he or she will speak." Research has shown that L2 readers can comprehend a word's meaning correctly without formal knowledge of its form (Lee, 1987, 1998) and yet recognize the forms they were exposed to (Lee, 1998; Lee & Rodríguez, 1997). L2 readers can gain greater knowledge of known forms through reading (Leow, 1997; Shook, 1994) and can use form to infer word meaning (Lee & Wolf, 1997; Lee, 1999; Rott, 2000).

The present research builds on this data base by examining both the comprehension and acquisition of a new form that encodes a particular meaning. Early-stage language learners will read a passage containing a form that they have never learned or been exposed to, specifically, the third-person singular form of the future tense, which in Spanish is an orthographically accented *á* attached to the end of an infinitive (e.g., *dependerá* "will depend," *influirá* "will influence," *mandará* "will send"). Will L2 learner-readers construct correct future meanings? Will these learner-readers connect the accented *á* with the future meaning it encodes? How enduring are the linguistic gains?

REVIEW OF LITERATURE

Frequency of Occurrence in the Input

Word-frequency effects are well attested in the psycholinguistics literature and, indeed, children first acquire high-frequency words. The frequency with which a morpheme occurs in the input has been proposed to explain the early acquisition of certain morphemes. The early acquisition by children and adults of English *-ing* may be due to its high frequency of occurrence in the input, whereas the late acquisition of English possessive *-s* may be due to its low frequency of occurrence. (See chapter 4 of Larsen-Freeman & Long, 1991, for a review of morpheme acquisition studies and the potential effects of frequency on acquisition of morphemes.) Frequency of occurrence is a construct that has long been associated with morpheme acquisition. It has also been manipulated as a variable in several studies.

Research on incidental vocabulary gain through reading has examined the effects of varying the frequency of occurrence of a target word in the input passages. Rott (1999) found that L2 readers learned new words with as few as two exposures but learned more words after greater exposures (four and six). Research on input processing has not really investigated the frequency with which a target form occurs in the input. Leow (1997) examined text length, a factor that, in his study, influenced comprehension but not the intake (recognition) of a targeted form (Spanish imperative verb forms, e.g., *tome* "take," *pegue* "hit," *suba* "go up," and *evite* "avoid"). In manipulating text length, the long version contained 24 target items whereas the short version contained only 15. In his assessment tasks, however, he considered only the 15 items common to both text versions, thus discounting the greater number of exposures in the longer text version. In other words, he did not compare 15 versus 24 exposures to the target item but rather generalized the difference as one of text length.

In Leow (1998), the effects of a single versus double exposure to the target items were compared. Both groups received instruction on regular preterite forms and then performed a crossword puzzle that contained 10 orthographically irregular third-person preterite forms as answers (e.g., *durmieron* "they slept," *pidieron* "they asked for," and *siguieron* "they followed"). One group performed the task once, whereas the other performed a second crossword puzzle 3 weeks after the first one. The double-exposure group retained significantly more of the target forms than the single-exposure group. Although this research may lead us to consider that 20 exposures are more beneficial than 10, it is difficult to conceive of the task (completing a crossword puzzle) as the typical means through which learners are exposed to linguistic data for developing their L2 linguistic systems. The present study seeks to control learners' exposure to the targeted linguistic item and to expose learners to input via a more natural task by controlling the frequency of occurrence of an item (6, 10, or 16 exposures) and embedding them in a reading passage.

Cues to Meaning (±Adverbs)

The juxtaposition of and learners' preference for processing lexical versus grammatical cues to meaning figures prominently in VanPatten's (1996) model of input processing: "Learners prefer processing lexical items to grammatical items (e.g., morphology) for semantic information" (p. 21). This principle explains how learners utilize different aspects of the input to interpret messages with the least of these aspects being morphology. Along the same lines, Lee (1990) analyzed the recall protocols of a group of first-year language learners who read a passage on feudalism (entitled "El feudalismo"). The opening sentence referred to the years 900 and 1000, the second sentence referred to Charlemagne, and the last paragraph mentioned the year 1200. In other words, the passage contained consistently past-oriented discourse. Even though these early-stage learners had never studied the past tenses in Spanish, they reconstructed the passage (through recall) in a past temporal framework. The topic itself allowed learners to instantiate a past temporal framework and then correctly interpret the passage content consistently within this framework.

Lexical and grammatical cues have also been investigated empirically. Lee, Glass, Cadierno, and VanPatten (1997) had three groups of learners listen to one of two versions of a passage. The three groups consisted of first-, third-, and fifth-semester learners of Spanish. One version of the passage contained adverbs whereas the other did not. After listening to the passage, the learners wrote a recall of the content, which was scored for the number of correct past temporal references. Subsequent to the recall, they performed a tense-identification task for which they were provided an infinitive and asked to identify the tense in which the infinitive appeared in the passage (choices were present, past, or future). For both the recall and tense-identification tasks, language experience was a significant factor affecting performance. The fifth- and third-semester learners outperformed the first-semester learners. For the recall, the presence of adverbs significantly affected performance in that those who heard the passage with adverbs recalled more past temporal references than those who heard the passage without adverbs. For the tense-identification task, the presence of adverbs only approached a level of statistical significance.

Lee (1999) analyzed the think-aloud protocols of a group of participants using passages adapted from Lee et al. (1997). Half the participants read the passage with adverbs, and the other half read the passage without adverbs. Referring to the adverbs was a consistent behavior on the part of some readers, whereas others did so only sporadically. Some learners referred only to the adverb in establishing the temporal framework, whereas others referred to the adverb and the verb form. Learners who read the passage without adverbs relied either on their knowledge of the forms or on background knowledge to create a past temporal framework. One noteworthy finding was that those who read the passage with adverbs used a greater variety of compre-

hension and input-processing strategies than those who read the passage without adverbs.

The present study seeks, therefore, to control for cues to meaning in the passages learners read. Half the participants read a passage that contains temporal adverbs as an additional cue to future meaning, whereas the other half do not have the adverbs but only have the future tense morphology to indicate the temporal framework of the passage content.

Orientation to the Task

The way we read a magazine in a dentist's office prior to our appointment is different from the way we read popular fiction at night in bed in order to fall asleep. Both of these are different from the way we read the instruction booklet for setting up a new stereo system or from the way we read an academic article that reports the results of research that are directly relevant to our own research. The "way we read" can also be referred to as our orientation to the task, and it affects how we read and what we gain from the reading. In the dentist's office we hope to be distracted from the sounds of the drill but not necessarily to learn something new about how to grow prize-winning tomatoes. Reading the instruction booklet for the stereo directs us in our actions, but we probably do not need to retain any of the information as long as we retain (i.e., do not throw away) the instruction booklet. We read academic research articles with the idea of retaining relevant information to inform our own decision-making processes.

Research on reading in an L2 has explored the effects of various prereading treatments on comprehension. The intention of the various treatments has been to alert readers to the content of the passages so that they activate the appropriate schema that would allow them to comprehend better. The following treatments have been shown to be effective (that is, enhance comprehension), albeit under a wide variety of conditions: (a) providing readers a picture relevant to the content (Carrell, 1983; Hudson, 1982; Lee, 1986; Omaggio, 1979), (b) providing readers a vocabulary list (Hudson), and (c) providing readers prefatory statements on the main idea of a passage as well as its rhetorical organization (Lee & Riley, 1990).

Research on input processing has taken a somewhat different approach to orienting learners to the task. VanPatten (1990) provided learners secondary tasks to perform while listening to a passage. He directed groups of learners to make a checkmark every time they heard the definite article *la*, the third-person plural verb morpheme *-n*, or a key lexical item (e.g., *inflación* "inflation"). He found that when attending to the definite article or the verb morpheme, learners comprehended less of the content of the passage. Berne (2000) replicated this study but used a simplified version of the passage. Her findings mirrored VanPatten's. Greenslade, Bouden, and Sanz (1999) also replicated this research but had learners read the passage instead of listen to it. Their results were

similar. Neither of these studies examined a specific linguistic item but, rather, addressed the question of whether learners can attend to form and meaning at the same time.

Hulstijn (1989) asked learners, who were oriented to one of three tasks, to copy down interrogative sentences projected on a screen. The meaning group copied the interrogative and then commented on its meaning. The form group copied the interrogative and was then given each sentence in eight fragments from which they were to reconstruct the original sentence. The form + meaning group was told to pay attention to both the structure and meaning but was not given a secondary task to perform. All groups performed a cued recall task. The form group recalled the structure of the sentences better than the other two groups, but this group recalled the content of the sentences worse than the other two groups. Those who were oriented to the form retrieved the form but lost some of the meaning.[1] In the present study, learners are also oriented toward form or meaning to determine the effects of this orientation, not only on comprehension but also on input processing.

THE PRESENT STUDY

In the present study, I selected a morpheme of high communicative value, the third-person singular future tense; high communicative value refers to the fact that the morpheme contributes to overall sentence meaning due to its inherent semantic value (VanPatten, 1996, p. 24). Another characteristic of the third-person singular future tense is that it is perceptually salient. Note in (1a) and (1b) how difficult it would be to perceive (aurally) the past tense morpheme *-ed*.

(1) a. *I talked to John on the phone.*
     b. *He called me just to talk.*

The same has been said of the indicative and subjunctive distinction in Spanish, a morphological distinction based on a vowel alternation in an unstressed syllable. Consider also the phonetic environment in which two vowels come together, obscuring the phonetic distinctions between them, as in (2a) and (2b).

(2) a. *Josefina le habla a Juan con mucha frecuencia.*
         "Josefina talks to Juan very frequently."
     b. *Prefiero que Josefina no le hable a Juan con tanta frecuencia.*
         "I prefer that Josefina not talk to Juan so frequently."

Because the present study involves reading, I was concerned about the perceptual salience of the targeted morpheme (perceptual here meaning visual). The future-tense morphemes in Spanish should be perceptually salient in that they occur at the end of a word (rather than in the middle), and they carry a written accent mark. The *-á* on *hablará* "will speak" should, therefore, be more perceptually salient than the *-e* on *hable* "speak."

In the present study, one group of readers was directed to the meaning of

the passage by completing multiple-choice questions as a prereading exercise. They were told that when they read the passage they would find the correct answers. They were also told that these multiple-choice questions were the same ones they would have to answer after they read the passage. The number of questions corresponds to the frequency of occurrence of the morpheme in the input (6, 10, or 16). To direct a group of readers to the forms in the passage, they were told that the passage contained words that ended in *á*. They were instructed to put an "x" over each of these words as they encountered them in the passage. Finally, a third group was instructed to read the passage and was then given comprehension tasks to complete. This orientation is considered a neutral one. The exact wording of the orientations is provided in Appendix A.[2]

In the present study, the presence or absence of adverbs as a cue to meaning is manipulated. One version of the passage contained the passage title *En el futuro* "In the future" and paragraph-initial adverbial phrases such as *en la próxima década* "in the next decade," *para el año 2020* "by the year 2020," and *¿Qué nos espera en el futuro?* "What awaits us in the future?" The other version of the passage contained neither the passage title nor the adverbial phrases. The passages are provided in Appendix B.

Research Questions

The present study is guided by the following research questions:

1. Does the frequency with which learner-readers are exposed to forms in the input (6, 10, or 16) affect comprehension, input processing, or both?
2. Does the presence or absence of adverbs as a cue to meaning affect comprehension, input processing, or both?
3. Does orienting learner-readers to attend to meaning or to form, in addition to reading a text for meaning, affect comprehension, input processing, or both?
4. Do the effects of these variables endure over time?

Research Design and Methodology

Participants. The study began with 283 participants, all of whom were enrolled in either second-semester Spanish or in the review course of first-year Spanish at Indiana University. Approximately 2 weeks before gathering data, the participants performed a 24-item verb-conjugation test that was used to screen participants. They were asked to conjugate six verbs in the first-person singular form in the present indicative, preterite, subjunctive, and future. Only those participants who indicated absolutely no knowledge of the future-tense forms were included in the study. (For example, I excluded any participant who wrote even a single future form with an accent mark.) I purposefully chose not to use a form recognition test as a screening test so that I could make the claim that the participants' initial exposure to future-tense forms occurred

while reading the passage. Shook (1994) used participants who knew the forms he investigated as well as participants who did not know the forms and therefore used gain scores from pretest to posttest in his analyses. Leow (1997) also used a pretest–posttest design to measure gains in formal knowledge. Leow's and Shook's studies cannot speak to the effects of learners' initial exposure to a form.

Participants were not included in the present study for a number of reasons, including: (a) any participant in the form orientation condition who did not place an "x" over the target items, (b) any participant in the meaning orientation condition who did not complete the multiple-choice questions prior to reading, (c) any participant who skipped the recall or who did not complete all items on the recognition or production test, and (d) any participant who missed a data-gathering session. A total number of 181 participants have therefore been included in the analyses.

Materials. All participants were provided a separate information sheet regarding the study, which informed them that the research involved comprehension and L2 acquisition and that data would be gathered several times. All participants then received a packet of materials. They first encountered one of the three orientations and then encountered a version of the passage. The passage used in this study was adapted from an authentic text, *El hogar electrónico* "The electronic home," which appears in the students' regular textbook, *¿Sabías que . . . ? Beginning Spanish* (VanPatten, Lee, & Ballman, 2000). Three versions of the text were prepared such that they contained 6, 10, or 16 future-tense verb forms. The long version with the 16 targets was the first one prepared. I considered it to be of the maximum length for having participants complete all experimental tasks within one regular 50-minute class period. The 10- and 6-target form versions were then created. The presence of 16, 10, or 6 target forms originated from a desire to create coherent discourse rather than attempt to double or halve participants' exposure. Varying their exposure to target forms is confounded by varying the text they read. The long version contains the information and forms in the other two versions, but the 6-exposure version is significantly shorter than the 10- and 16-exposure versions. Owing to this factor and the differences in assessment tests (described in the section "Assessment Tasks"), separate statistical analyses were performed for each exposure condition.

For each of these three texts, two other versions were then constructed. One contained adverbs as additional cues to meaning and the other did not. In Lee et al. (1997), each of the seven target forms was accompanied by an adverb. I created a version of the 16-target forms passage that included an adverb for each of the 16 forms with the result that the passage read in a most unauthentic way; the discourse was stilted. Because Lee (1990, 1999) found that readers create a general temporal framework, I decided to place adverbs strategically throughout the passages, in particular, at the beginning of paragraphs.

Assessment Tasks. The present study assesses learner-readers' comprehension of what they read as well as their processing of the input for future-tense morphology. Samples of the assessment tasks used in the study appear in Appendix C. Three versions of each assessment task were prepared, corresponding to the three versions of the input passage. Additionally, the number of items and the highest score possible on each assessment task corresponded to the number of exposures to the target forms in the input; that is, 6, 10, or 16. This decision resulted in the creation of three different assessment tests with three different scales. I could have converted the raw scores to standard scores, but because which passage was read is also a confounding variable, I chose to analyze each exposure condition separately.

Two measures of comprehension were used: free-written recall and multiple-choice questions. Both measures of comprehension were taken in the participants' native language, English, so that their indication of the meaning of what they read would not be obfuscated by their limited L2 systems (Lee, 1987; Shohamy, 1984; Wolf, 1993) and, more importantly, so that the measures of meaning would be independent of the measures of form. Immediately after reading the passage, learner-readers were asked to write everything they could remember from the passage in English. They were encouraged to write as much as they could. Recalls were scored only for the number of target verbs correctly recalled with a future meaning. This score is not entirely an indication of global comprehension because there are many more idea units in the passages besides the ones that contain the target forms. Even a cursory glance at the passages reveals, however, that the future-tense forms dominate the inflected verb forms found in the passages. The future-tense forms convey the central information in the passages.

Following the recalls, the learner-readers completed multiple-choice questions in English. Each question had a blank in it, and underneath the sentence the learner-readers found four choices. Each blank corresponded to a target verb. The choices rendered the verb in the past, present perfect, present, or future. The correct answer to each question was the future tense of a target verb, and it should be noted that the future choice was distributed among the four choices. In other words, if learner-readers wished to employ a "same-tense" selection strategy, they would have to search for that particular tense. The same multiple-choice questions were used during all three data-gathering sessions for two reasons: First, these forms are of high communicative value, and they contained the significant information from the passages; second, and most importantly, I wanted to assess learners' comprehension of the target forms, not of extraneous passage information.

After completing the multiple-choice comprehension test, half the learner-readers then completed a form recognition test. The other half completed a form production test. The form recognition test required them to select the form of the verb that appeared in the passage they had read. They were given sentences in Spanish with the verb deleted. Underneath each sentence were four forms of the target verb: present indicative, preterite, present perfect,

and future. The forms were once again presented in varied order so that, if learner-readers wished to employ a "same-form" selection strategy, they would have to search for that particular form. The form recognition test was scored for the number of correct future-tense selections. Just as I did with the comprehension test and for the same reasons, I used the same form recognition test for all three data-gathering sessions.

The form production test consisted of a modified cloze passage in Spanish in which the target verbs were replaced with a blank line followed by the infinitive form of the verb. Learner-readers were instructed to fill in the blank with the form of the verb that appeared in the passage they had read. I used the same form production test during all three data-gathering sessions. I used an exact scoring criteria to evaluate performance on the form production test, meaning that the only acceptable response was a correct future tense form—for example, *dependerá* "will depend," not *dependá*, *dependa* (subjunctive), *dependía* (imperfect), or *dependió* (preterite).

Procedures. Packets of materials were prepared for each combination of the three independent variables ($n = 18$). One version of the packets contained the form recognition test, and a second version contained the form production test. All packets contained both comprehension assessment tasks. The packets were randomly distributed to participants in their regular classrooms during regularly scheduled classes.

RESULTS

The independent, between-group variables in all statistical analyses were input frequency (6, 10, or 16 exposures), ±adverbs, and orientation (neutral, form, or meaning). The repeated, within-group factor of Time (immediate, 2 weeks, and 1 month) was also included in all analyses. All dependent measures of comprehension and input processing were submitted to separate $3 \times 2 \times 3 \times 3$ repeated measures ANOVAs. Because the number of correct responses varied according to the number of exposures (input frequency), raw scores were converted to percentages for the statistical analyses.

Comprehension: Target Recall

The first measure of comprehension was the number of target verbs correctly recalled with future meaning. The means are presented in Table 1 and the ANOVA summary table is found in Table 2. The results of the ANOVA revealed significant main effects for input frequency, $F(2, 109) = 3.204$, $p = .0445$, ±adverbs, $F(1, 109) = 15.313$, $p = .0002$, and orientation, $F(2, 109) = 3.420$, $p = .0363$. The interaction between input frequency and orientation approached significance, $F(4, 109) = 2.399$, $p = .0544$.

Fisher's PLSD tests were used to explore these effects and interactions. The results revealed that L2 learner-readers recalled correctly a greater percentage

Table 1. Summary table of the means (raw scores), standard deviations, and standard errors for correct recall of target verbs

Variables		Time 1	Time 2	Time 3	Grand mean
Input frequency					
6 tokens (n = 42)	M = 0.690		0.190	0.167	0.349
	SD = (0.950)		(0.594)	(0.437)	(0.730)
	SE = 0.147		0.092	0.067	0.065
10 tokens (n = 48)	M = 1.500		0.625	1.083	1.069
	SD = (1.611)		(1.248)	(1.366)	(1.452)
	SE = 0.233		0.180	0.197	0.121
16 tokens (n = 37)	M = 1.270		0.622	1.432	1.108
	SD = (1.575)		(1.187)	(2.167)	(1.713)
	SE = 0.259		0.195	0.356	0.163
Adverbs					
+Adverbs (n = 63)	M = 1.619		0.667	1.032	1.106
	SD = (1.539)		(1.368)	(1.685)	(1.578)
	SE = 0.194		0.172	0.212	0.115
−Adverbs (n = 64)	M = 0.719		0.297	0.734	0.583
	SD = (1.201)		(0.609)	(1.383)	(1.127)
	SE = 0.150		0.076	0.173	0.081
Orientation					
Neutral (n = 42)	M = 0.905		0.500	0.976	0.794
	SD = (1.206)		(1.088)	(1.600)	(1.323)
	SE = 0.186		0.168	0.247	0.118
Form (n = 39)	M = 0.564		0.359	0.769	0.564
	SD = (0.940)		(0.707)	(1.347)	(1.037)
	SE = 0.151		0.113	0.216	0.096
Meaning (n = 46)	M = 1.913		0.565	0.891	1.123
	SD = (1.684)		(1.294)	(1.663)	(1.650)
	SE = 0.248		0.191	0.245	0.140
Time (N = 127)	M = 1.165		0.480	0.882	—
	SD = (1.446)		(1.068)	(1.541)	—
	SE = 0.128		0.095	0.137	—

of target verbs when they received 10 compared to 6 exposures (p = .0010) and 10 compared to 16 exposures (p = .0134). The L2 learner-readers who had adverbials as additional cues to meaning recalled a greater percentage of the target verbs than those who did not have them (p < .0001). With regard to orientation, the analyses revealed that those with the meaning orientation recalled a greater percentage of target verbs correctly than those with the form orientation (p = .0037). There were no significant differences in recall between form and neutral or neutral and meaning orientations.

The ANOVA also revealed a significant main effect for Time, $F(2, 218)$ = 17.048, p < .0001, as well as significant interactions between Time and ±adverbs, $F(2, 218)$ = 4.889, p = .0084, and Time and orientation, $F(4, 218)$ = 6.775, p < .0001. The interaction between Time and input frequency approached sig-

Table 2. ANOVA summary table for percentage of correct recall of target verbs

Source	df	SS	MS	F
Input frequency	2	1454.124	727.062	3.204*
±Adverbs	1	3475.370	3475.370	15.313***
Orientation	2	1552.492	776.246	3.420*
IF × A	2	136.733	68.367	0.301
IF × O	4	2178.145	544.536	2.399
A × O	2	108.696	54.348	0.239
IF × A × O	4	1729.462	432.365	1.905
Subject (Group)	109	24738.373	226.958	
Time	2	2863.223	1431.611	17.048****
T × IF	4	805.372	201.343	2.398
T × A	2	821.212	461.606	4.889**
T × O	4	2275.762	568.941	6.775****
T × IF × A	4	159.379	39.845	0.474
T × IF × O	8	679.901	84.988	1.012
T × A × O	4	300.498	75.125	0.895
T × IF × A × O	8	461.416	57.677	0.687
T × Subject (Group)	218	18307.044	83.977	

Note. IF = Input frequency; A = ±Adverbs; O = Orientation; T = Time.
*$p < .05$. **$p < .01$. ***$p < .001$. ****$p < .0001$.

nificance. The Fisher's PLSD test for Time revealed that the percentage of correct recall of target verbs was significantly greater at Time 1 than at Time 2 ($p < .0001$) and at Time 3 ($p = .0064$).

The Fisher's PLSD test for the interaction between Time and ±adverbs revealed that the percentage of target verbs recalled correctly was greater in the +adverb condition only at Time 1 ($p < .0001$) but not at Times 2 and 3. For the interaction between Time and orientation, the Fisher's PLSD test revealed that those with the meaning orientation recalled a greater percentage of target verbs than either the form ($p < .0001$) or neutral ($p = .0005$) orientation groups at Time 1, but there were no significant differences at Times 2 or 3. Although the interaction between Time and input frequency only approached significance, I did perform a Fisher's PLSD test, which revealed that the percentage of target verbs recalled correctly was greater for the 10-exposure group than the 16-exposure group at Time 1 ($p = .0228$). There were no significant differences between input frequencies at Time 2. At Time 3, those who received 6 exposures recalled a significantly lower percentage of target verbs than either those who received 10 ($p = .0008$) or 16 exposures ($p = .0154$).

Comprehension: Multiple-Choice Questions

The second measure of comprehension was the percentage of correct answers to multiple-choice questions with the correct answer being the future

Table 3. Summary table of the means (raw scores), standard deviations, and standard errors for multiple choice questions

Variables		Time 1	Time 2	Time 3	Grand mean
Input frequency					
6 tokens ($n = 42$)	M = 2.425		2.381	2.571	2.468
	SD = (1.756)		(1.413)	(1.516)	(1.558)
	SE = 0.271		0.218	0.234	0.139
10 tokens ($n = 48$)	M = 6.438		6.333	6.229	6.333
	SD = (2.551)		(2.225)	(2.611)	(2.452)
	SE = 0.368		0.321	0.377	0.204
16 tokens ($n = 37$)	M = 9.595		9.243	9.351	9.369
	SD = (4.106)		(4.573)	(4.698)	(4.428)
	SE = 0.675		0.752	0.772	0.420
Adverbs					
+Adverbs ($n = 63$)	M = 6.333		5.905	5.905	6.048
	SD = (3.681)		(3.897)	(3.895)	(3.798)
	SE = 0.464		0.491	0.486	0.276
−Adverbs ($n = 64$)	M = 5.750		5.844	5.933	5.849
	SD = (4.372)		(4.118)	(4.359)	(4.263)
	SE = 0.546		0.515	0.545	0.308
Orientation					
Neutral ($n = 42$)	M = 6.833		6.238	6.238	6.437
	SD = (3.702)		(4.011)	(4.287)	(3.985)
	SE = 0.571		0.619	0.662	0.355
Form ($n = 39$)	M = 5.872		6.026	6.103	6.000
	SD = (4.040)		(3.759)	(3.691)	(3.801)
	SE = 0.647		0.602	0.591	0.351
Meaning ($n = 46$)	M = 5.457		5.413	5.500	5.457
	SD = (4.239)		(4.209)	(4.309)	(4.239)
	SE = 0.633		0.621	0.635	0.361
Time ($N = 127$)	M = 6.039		5.874	5.929	—
	SD = (4.038)		(3.994)	(4.102)	—
	SE = 0.358		0.354	0.364	—

meaning of a target verb. The means are presented in Table 3, and the results of the repeated measures ANOVA are presented in Table 4. The results of the ANOVA revealed a significant main effect for input frequency, $F(2, 109) = 9.238$, $p = .0002$. There were no other significant main effects or significant interactions. A Fisher's PLSD was used to explore the main effect; those results revealed that learner-readers who received 16 exposures to future-tense verb morphology answered correctly a greater percentage of multiple-choice questions than those who received 10 exposures ($p < .0001$) and 6 exposures ($p < .0001$). There was a significant interaction between Time and ±adverbs, $F(2, 109) = 3.066$, $p = .0486$. A Fisher's PLSD revealed no cellwise significant differences.

Table 4. ANOVA summary table for percentage of correc-multiple choice questions

Source	df	SS	MS	F
Input frequency	2	30370.243	15185.122	9.238**
±Adverbs	1	1396.814	1396.814	0.850
Orientation	2	2803.226	1401.613	0.853
IF × A	2	4711.340	2355.670	1.433
IF × O	4	11913.195	2978.299	1.812
A × O	2	316.231	158.115	0.096
IF × A × O	4	6623.947	1655.987	1.007
Subject (Group)	109	179165.741	1643.722	
Time	2	196.669	98.335	0.512
T × IF	4	338.799	84.700	0.441
T × A	2	1177.781	588.890	3.066*
T × O	4	897.095	224.274	1.168
T × IF × A	4	606.932	151.733	0.790
T × IF × O	8	2020.175	252.522	1.1315
T × A × O	4	270.643	67.661	0.352
T × IF × A × O	8	1168.143	146.018	0.760
T × Subject (Group)	218	41872.441	192.075	

Note. IF = Input frequency; A = ±Adverbs; O = Orientation; T = Time.
*$p < .05$. **$p < .001$.

Input Processing: Form Recognition

The measure of input processing performed by approximately half the participants was a form recognition test for which the correct answer was the morphologically encoded Spanish future-tense form of the target verb. The means are presented in Table 5 and the ANOVA summary in Table 6. The results of the repeated measures ANOVA revealed a significant main effect for input frequency, $F(2, 51) = 5.221$, $p = .0087$. There were no other significant main effects, and the interaction between Time, ±adverbs, and orientation approached significance, $F(4, 102) = 2.235$, $p = .0704$. The Fisher's PLSD performed on input frequency revealed that those who received 6 exposures recognized correctly a significantly lower percentage of forms than those who received either 10 ($p < .0001$) or 16 exposures ($p < .0001$).

Input Processing: Form Production

Approximately half of the participants performed a form production test after completing the comprehension tasks. They were given a modified cloze version of the passage they had read; each target verb had been replaced with a blank line followed by the infinitive form of the verb in parentheses. Their task was to write the form of the verb that had appeared in the passage they read. The means for the form production task are presented in Table 7. Two points are worth noting. First, the means line up in the expected order: The means

Table 5. Summary table of means (raw scores), standard deviations, and standard errors for form recognition

Variables		Time 1	Time 2	Time 3	Grand mean
Input frequency					
6 tokens (*n* = 24)	*M* = 2.000		2.083	1.708	1.931
	SD = 1.414		1.530	1.829	1.586
	SE = 0.289		0.312	0.373	0.187
10 tokens (*n* = 26)	*M* = 5.808		5.500	6.154	5.821
	SD = 3.323		3.701	3.196	3.380
	SE = 0.652		0.726	0.627	0.383
16 tokens (*n* = 19)	*M* = 8.737		9.158	10.263	9.386
	SD = 5.576		5.718	5.285	5.460
	SE = 1.279		1.312	1.206	0.723
Adverbs					
+Adverbs (*n* = 35)	*M* = 5.029		6.000	6.086	5.705
	SD = 4.962		5.314	5.468	5.224
	SE = 0.839		0.898	0.924	0.510
−Adverbs (*n* = 34)	*M* = 5.559		4.618	5.382	5.186
	SD = 4.017		3.985	4.221	4.056
	SE = 0.689		0.683	0.724	0.402
Orientation					
Neutral (*n* = 24)	*M* = 4.333		5.375	5.542	5.083
	SD = 4.851		4.880	5.283	4.967
	SE = 0.990		0.996	1.078	0.585
Form (*n* = 22)	*M* = 8.000		6.364	4.783	7.364
	SD = 4.515		5.368	4.783	4.879
	SE = 0.963		1.144	1.020	0.601
Meaning (*n* = 23)	*M* = 3.696		4.261	4.043	4.000
	SD = 2.721		3.781	3.914	3.468
	SE = 0.567		0.788	0.816	0.418
Time (*N* = 69)	*M* = 5.290		5.319	5.739	—
	SD = 4.495		4.723	4.871	—
	SE = 0.541		0.569	0.586	—

increase with input frequency, are higher in the −adverb condition, and those with the form orientation produce the most correct forms. Second, the means are extremely low: only one form was produced correctly even after 16 exposures and providing a form orientation to the task. The results of the repeated measure ANOVA are given in Table 8 and, not surprisingly, revealed no significant main effects and no significant interactions although the effect for Time approached a level of significance, $F(2, 80) = 2.828$, $p = .0651$. In exploring further the effect for Time, it was found that learner-readers produced more correct forms at Time 1 than at Time 2, $p = .0425$, with the difference at Time 3 approaching significance, $p = .0699$. One perspective on the form production data is that given how small the means are, it appears that learner-readers do not take in the exact form of the words to which they are exposed from the

Table 6.   ANOVA summary table for percentage of correct responses on the form recognition test

Source	df	SS	MS	F
Input frequency	2	22853.998	11426.999	5.221*
±Adverbs	1	201.060	201.060	0.092
Orientation	2	7730.520	3865.260	1.766
IF × A	2	4073.552	2036.776	0.931
IF × O	4	5936.463	1484.116	0.678
A × O	2	3218.071	1609.036	0.735
IF × A × O	4	4192.982	1048.245	0.479
Subject (Group)	51	111618.207	2188.592	
Time	2	94.753	47.376	0.106
T × IF	4	1580.463	395.116	0.887
T × A	2	1989.857	994.928	2.233
T × O	4	2585.260	646.315	1.451
T × IF × A	4	756.234	189.059	0.424
T × IF × O	8	1893.358	236.670	0.531
T × A × O	4	3982.931	995.733	2.235
T × IF × A × O	8	4038.238	504.780	1.133
T × Subject (Group)	102	45447.313	445.562	

Note. IF = Input frequency; A = ±Adverbs; O = Orientation; T = Time.
*$p < .01$.

input. Another perspective on the data is to say that the means demonstrate that differences are present but that these differences do not reach a level of statistical significance.

DISCUSSION

It is important to keep in mind the context created in this investigation for processing to take place. Reading the passage represented the learner-readers' initial exposure to the target forms; their performance on the verb-form test indicated their absolute lack of prior knowledge of future-tense morphology in Spanish. Although they differed in their orientations to the task, they all read the passage for its meaning. Despite their differing orientations, the reading task would drive them to comprehend the meanings of the target verbs, and whatever knowledge they gained about Spanish future-tense morphology would be gained incidentally.

Input Frequency

Even the earliest accounts of the morpheme acquisition orders hypothesized the impact that the frequency of occurrence of a form in the input had on acquisition. Varying the frequency with which learner-readers were exposed to the target forms in reading passages emerged, in the present study, as the

Table 7. Summary table of means (raw scores), standard deviations, and standard errors for form production test

Variables		Time 1	Time 2	Time 3	Grand mean
Input frequency					
6 tokens ($n = 18$)	$M = 0.500$		0.000	0.167	0.222
	$SD = 0.1.465$		0.000	0.707	0.945
	$SE = 0.345$		0.000	0.167	0.129
10 tokens ($n = 22$)	$M = 0.773$		0.182	0.591	0.515
	$SD = 2.429$		0.853	2.197	1.939
	$SE = 0.518$		0.182	0.468	0.239
16 tokens ($n = 18$)	$M = 2.222$		0.889	0.056	1.056
	$SD = 5.219$		3.771	0.236	3.759
	$SE = 1.230$		0.889	0.056	0.512
Adverbs					
+Adverbs ($n = 28$)	$M = 0.821$		0.143	0.607	0.524
	$SD = 2.389$		0.756	2.006	1.853
	$SE = 0.451$		0.143	0.379	0.202
−Adverbs ($n = 30$)	$M = 1.433$		0.533	0.000	0.656
	$SD = 4.133$		2.921	0.000	2.950
	$SE = 0.755$		0.533	0.000	0.311
Orientation					
Neutral ($n = 18$)	$M = 0.566$		0.000	0.056	0.204
	$SD = 2.357$		0.000	0.236	1.365
	$SE = 0.556$		0.000	0.056	0.186
Form ($n = 17$)	$M = 2.294$		1.176	0.353	1.275
	$SD = 4.607$		3.941	0.996	3.567
	$SE = 1.117$		0.956	0.242	0.499
Meaning ($n = 23$)	$M = 0.739$		0.000	0.435	0.391
	$SD = 2.927$		0.000	2.085	2.067
	$SE = 0.610$		0.000	0.435	0.249
Time ($N = 58$)	$M = 1.138$		0.345	0.293	—
	$SD = 3.390$		2.157	1.414	—
	$SE = 0.445$		0.283	0.186	—

most consistent factor affecting comprehension and input processing. It significantly affected comprehension (both recall of target verbs and multiple-choice comprehension questions) and input processing (form recognition but not form production). Two general statements can be made about the findings of this study. First, 6 exposures is not as effective as 16 for either comprehending future meanings or recognizing future-tense morphology. In a cliché sense, "the more the better" is an accurate depiction of the data. On the other hand, the learner-readers' starting point for future-tense morphology was zero, which leads to the second statement. Even 6 exposures provided them the necessary opportunities to comprehend some future meanings (an average of 2 for 6 exposures for multiple choice and an average of .381 for 6 exposures for recall) and process the input for some forms (an average of 2 for 6 exposures for

Table 8. ANOVA summary table for percentage of correct responses on the form production test

Source	df	SS	MS	F
Input frequency	2	209.022	104.511	0.189
±Adverbs	1	15.615	15.615	0.028
Orientation	2	2487.677	1243.838	2.248
IF × A	2	740.589	370.295	0.669
IF × O	4	941.403	235.351	0.425
A × O	2	531.244	265.622	0.480
IF × A × O	4	2159.817	539.954	0.976
Subject (Group)	40	22128.725	553.218	
Time (T)	2	1941.007	970.504	2.828
T × IF	4	529.487	132.372	0.386
T × A	2	436.141	218.070	0.635
T × O	4	1070.049	267.512	0.779
T × IF × A	4	386.878	96.720	0.282
T × IF × O	8	2540.659	317.582	0.925
T × A × O	4	1434.427	358.607	1.045
T × IF × A × O	8	1207.897	150.987	0.440
T × Subject (Group)	80	27457.451	343.218	

Note. IF = Input frequency; A = ±Adverbs; O = Orientation; T = Time.

form recognition and an average of .222 for 6 exposures for form production). Six meaningful exposures to meaningful morphology did seem to have provided a sufficient, but not optimum, condition for processing.

Orientation to the Task

Orienting learner-readers to identify forms or focus on the meanings expressed by these forms was also a factor affecting performance. This factor significantly affected comprehension (recall only) both as a main effect and in interactions with Time. Those with the form orientation recalled correctly a lower percentage of the target verbs than those with the meaning orientation, but this effect held only at Time 1. In other words, the meaning orientation appeared to benefit learner-readers' initial comprehension of the passage, but that benefit dissipated rather quickly. There was no significant difference in recall between the form and neutral orientations, which suggests that the form orientation may not be detrimental to comprehension of meaningful morphology. This suggestion requires future research to confirm that this might actually be the case.

±Adverbs (Cues to Meaning)

The presence or absence of lexical (nonmorphological) cues to future-tense meaning also affected performance—specifically, comprehension (recall) indi-

vidually and in interaction with Time. The enhancing effect of adverbs on comprehension was found at both Times 1 and 2, though it faded by Time 3. The lack of effect of these additional cues to meaning might have been due to the way the reading passages were prepared. Whereas every target verb in Lee et al. (1997) co-occurred with an adverb, adverbs appeared in the present study only at the outset of a paragraph in order to establish a general future-oriented context. The adverbs, therefore, may not have been sufficient in number nor specific enough in their placement to aid comprehension or detract from processing the form of the target verbs. Future research should continue to explore the effects of lexical and grammatical cues to meaning.

Time

The effects of Time are most pronounced on recall. Time diminished the differences found at the first data-gathering session, which was not entirely unexpected given that learner-readers read the input passage only once and then worked from memory at Times 2 and 3. Perhaps the most significant impact of Time on recall is not visible in the data analyses, and that was the number of participants who indicated at Times 2 and 3 that they could recall nothing of the passage. All of these participants received scores of zero, which dominate the data sets at Times 2 and 3. At Time 1 everyone included in the data analyses attempted a recall of the passage, accurate or not. Time did not, however, diminish the effects of input frequency on multiple-choice comprehension and form recognition. Given those main effects, I conclude that those who received more exposures retained more than those who received fewer exposures. In a sense, then, those who had the "better" start also had the better finish.

Time had no effect on performance on the multiple-choice questions and the form production test, which can be attributed to the nature of these tasks in that one was easy and the other quite difficult. As a measure of comprehension, multiple-choice questions are among the easiest or, put another way, are most likely to yield high comprehension scores compared to other assessment tasks (Lee, 1987; Shohamy, 1984; Wolf, 1993). The free-written recalls at Times 2 and 3 offered the learner-readers no help in accessing their memory of the passage content. The multiple-choice questions were contextualized from the passage and had limited options to select from so that the question itself was a memory aid. Even those learner-readers who recalled nothing still completed all items on the multiple-choice comprehension test. The form production test, as scored, required an exact reproduction of what these early-stage language learners had been exposed to, and the task proved to be extremely difficult. None of the variables examined in this study helped the learner-readers overcome the inherent difficulty of the production task.

The final point to be made about the effects of Time on processing Spanish future-tense morphology through reading is that these learner-readers started from zero. The verb-form test used to screen participants cannot be used in a

pretest and posttest design, given all the assessment tasks used in this study. Let's informally compare the starting point of 0 with the endpoints: Time 3 recall = 0.882, Time 3 multiple choice = 5.929, Time 3 form recognition = 5.739, and Time 3 form production = 0.293. Each of these scores is greater than 0 and some of them are probably significantly so. Insofar as acquisition starts with processing and occurs incrementally, these learner-readers appear to be off to a respectable start in acquiring Spanish future-tense morphology, and they got their start as a byproduct of reading.

LIMITATIONS, FUTURE RESEARCH, AND CONCLUSIONS

All empirical investigations are subject to limitations in generalizing the findings from the particular context of the research setting and participants to other settings and participants. Although the ANOVA is a powerful analytical tool, some cells in the interactions, particularly the triple and quadruple interactions, have small sample sizes. Only one reading passage was used in the present study, so it is impossible to determine if the results are byproducts of a passage effect. Future research could incorporate more reading passages, perhaps manipulating content familiarity, hopefully to corroborate the findings of the present study. (An increase in the number of passages used, however, would bring a concomitant increase in the number of participants required.)

The present study employed a free-written recall as one of the measures of comprehension. Even though participants recalled in English, their recall scores were rather low. Future research might employ a cued recall, instead of a free-written recall, and employ not the target verbs as cues but propositions in the same sentence as the target verb. Additionally, the free-written recalls, as scored for the presence of target verbs, do not reflect learner-readers' global comprehension of the passage but only a specific and reduced subset of their comprehension. Future research might wish to address global comprehension as well as specific comprehension.

Lee et al. (1997) employed an adverb in every sentence that contained a target verb form. In the present study, adverbs were placed at the beginnings of paragraphs, thereby providing a general rather than verb-specific time frame and perhaps contributing to the lack of effects for ±adverbs. Future research might wish to follow Lee et al., although such investigations would need to be careful of how natural the passage with 16 target verbs sounded. Sixteen adverbials in such a short passage may create rather unnatural discourse.

Future research might explore the effects of single versus multiple exposures to the target forms in addition to—or instead of—investigating input frequency. For the purposes of the present study, only an exact scoring criteria was used on the form production test. Future analyses could expand the criteria to include approximative forms. For example, many learner-readers produced forms with accented terminal vowels, as in *dependá*, *dependé*, *dependió* (preterite) for *dependerá* "will depend." These forms may be an indica-

tion that the learner-readers processed some aspect of the input form. Finally, future research could explore individual variation in how learner-readers relate form and meaning. For example, in the present study there were learner-readers who correctly answered all the multiple-choice questions but then recognized not one future-tense form. These learner-readers could be classified as [–form, +meaning]. At the other extreme, there were learner-readers in the present study who correctly recognized all the future-tense forms but did not select future-tense meanings on the multiple-choice comprehension test. These learner-readers could be classified as [+form, –meaning]. What are the factors that contribute to these extreme profiles as well as to other profiles such as [+form, +meaning] and [–form, –meaning]?

In spite of the limitations, the data support the following conclusions regarding the incidental acquisition of Spanish future-tense morphology through reading. First, learner-readers can begin the acquisition process through reading. Second, the greater the number of target forms in the input, the greater the effects on comprehension and input processing. Third, a single exposure, albeit to 6, 10, or 16 forms, is insufficient for generating long-term gains. Fourth, when the form in question is of high communicative value, a form orientation enhances input processing whereas a meaning orientation enhances comprehension.

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NOTES

1. Doughty (1991) used the term "orientation" to refer to the exercise types used in her research and so this is not directly relevant to the present study. Leow (1998) manipulated several aspects of Tomlin and Villa's (1994) analysis of attention, including orientation to the target stimulus. Two groups were told that the crossword puzzles contained irregular forms, and two groups were not. Within each of the orientation conditions only one group was actually provided cues that would give them the correct irregular forms as answers. The other two groups were given cues that led them to write and accept incorrect forms. Because the participants had never been instructed on irregular forms, they had no way of detecting their error. So, although the learners may have been oriented toward irregular forms, they did not know these forms nor did the input provide them.

2. Because I did not gather online data nor did I have learners complete a debriefing questionnaire, I do not know how learners who received the form orientation carried out the task of marking accented *á*'s. They may have marked the forms as they read or they may have gone through the passage just to mark the forms (i.e., marking occurred independently of reading). My intention was to have the learners mark the forms as they encountered them. Likewise, I do not know how many times participants read the passage.

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APPENDIX A

ORIENTATIONS

Neutral

Read the following passage at your own rate. You don't need to read it through more than once. When you are done with the passage, turn the page. We have a couple of tasks for you to do. You can now turn the page and begin reading.

Form

Words that end in *á* (*a* with an accent mark) appear throughout the passage you are about to read. Each time you encounter one of these words put an X over it. When you are done reading the passage, turn the page. We have a couple of tasks for you to do. You can now turn the page and begin reading.

Meaning

Read the following questions. The answers to these questions can be found in the passage you are about to read. At this moment, even though you have not read the passage, select an answer to each question so that you get some idea of what might take place in the passage. After you answer the questions, turn the page and read the passage. When you are done with the passage, turn the page again. We have a couple of tasks for you to do. You can now turn the page and begin reading.

APPENDIX B

PASSAGES

The title and the adverbs appear in italics here but not in what learners read. These were removed from the –adverb versions. Target verbs are underlined here but not in the versions learners received.

+Adverbs (16)

En el futuro

En la próxima década, es decir, *dentro de diez años*, dicen que el 60% de la población de los países desarrollados <u>dependerá</u> de las telecomunicaciones. Por ejemplo, para en-

trar en lo que se llama la casa inteligente el propietario no *necesitará* ni llaves ni tarjeta magnética. La puerta se *abrirá* al reconocer su voz y compararla con un código grabado.

Muy pronto en el futuro se *practicará* el teletrabajo con mucha más frecuencia. El profesional liberal *participará* en videoconferencias sin salir de su casa o su oficina. *Mandará* el trabajo a cualquier parte del mundo con las tecnologías telemáticas (teléfono, computadora, fax, la red, etc.).

Dentro de diez años, en la cocina la tostadora *incluirá* un mando a distancia por infrarrojos. En el baño, la báscula *señalará* el peso actual, *recordará* también el del día anterior y *anunciará* el peso ganado o perdido de la última semana.

Para el año 2020, a través de la pantalla de alta definición, alimentada por la televisión por cable y los satélites, cada persona *recibirá* toda transmisión que quiera. *Asistirá* a clases de piano o de cerámica a distancia, por ejemplo. *Participará* en juegos de aventura por todo el mundo electrónicamente.

¿Qué nos espera en el futuro? Algunos sociólogos se preocupan porque, según ellos, todo esto *generará* aislamiento social e *influirá* en las necesidades de contacto personal. El hombre, *Homo sapiens*, se *convertirá* en el *Homo electrónicus*.

+Adverbs (10)

En el futuro

En la próxima década, es decir, *dentro de diez años*, dicen que el 60% de la población de los países desarrollados *dependerá* de las telecomunicaciones. Por ejemplo, para entrar en lo que se llama la casa inteligente el propietario no *necesitará* ni llaves ni tarjeta magnética. La puerta se *abrirá* al reconocer su voz y compararla con un código grabado.

Muy pronto en el futuro se *practicará* el teletrabajo con mucha más frecuencia. El profesional liberal *mandará* el trabajo a cualquier parte del mundo con las tecnologías telemáticas (teléfono, computadora, fax, la red, etc.).

Para el año 2020, a través de la pantalla de alta definición, alimentada por la televisión por cable y los satélites, cada persona *recibirá* toda transmisión que quiera. *Asistirá* a clases de piano o de cerámica a distancia, por ejemplo.

¿Qué nos espera en el futuro? Algunos sociólogos se preocupan porque, según ellos, todo esto *generará* aislamiento social e *influirá* en las necesidades de contacto personal. El hombre, *Homo sapiens*, se *convertirá* en el *Homo electrónicus*.

+Adverbs (6)

En el futuro

En la próxima década, es decir, *dentro de diez años*, dicen que el 60% de la población de los países desarrollados *dependerá* de las telecomunicaciones.

Muy pronto en el futuro se *practicará* el teletrabajo con mucha más frecuencia. El profesional liberal *mandará* el trabajo a cualquier parte del mundo con las tecnologías telemáticas (teléfono, computadora, fax, la red, etc.).

¿Qué nos espera en el futuro? Algunos sociólogos se preocupan porque, según ellos, todo esto *generará* aislamiento social e *influirá* en las necesidades de contacto personal. El hombre, *Homo sapiens*, se *convertirá* en el *Homo electrónicus*.

APPENDIX C

ASSESSMENT TASKS FOR THE 6-EXPOSURE PASSAGE VERSION

Recall

Recall as much of what you just read as you can. Write in English. The emphasis is on how much you can remember.

Multiple-Choice Comprehension Questions

Please answer all of the following comprehension questions by selecting the answer that was given in the passage you read.

i. Sixty percent of developed countries ____ on telecommunications.
   a. will depend   b. already depend   c. do not depend   d. used to depend
ii. Telecommuting or teleworking ____ frequently.
   a. is not   b. is already practiced c. used to be   d. will be practiced
                         practiced   practiced
iii. A professional ____ work to any part of the world using telematic technologies.
   a. already sends   b. cannot yet send   c. will send   d. has been able to
                                                                             send
iv. Some sociologists claim that these technologies ____ social isolation.
   a. generate   b. cannot generate   c. will generate   d. have already
                                                                             generated
v. Some sociologists claim that these technologies ____ the human need for personal contact.
   a. will influence b. already influence   c. cannot yet influence   d. have influenced
vi. Man, *Homo sapiens*, ____ *Homo electronicus*.
   a. is already   b. has become   c. cannot become   d. will become

Form Production Test

Conjugate the verb in parentheses in the same form as it was given in the passage.

Dicen que el 60% de la población de los países desarrollados ____ (depender) de las telecomunicaciones.

Se ____ (practicar) el teletrabajo con mucha más frecuencia. El profesional liberal ____ (mandar) el trabajo a cualquier parte del mundo con las tecnologías telemáticas (teléfono, computadora, fax, la red, etc.).

Algunos sociólogos se preocupan porque, según ellos, todo esto ____ (generar) aislamiento social e ____ (influir) en las necesidades de contacto personal. El hombre, *Homo sapiens*, se ____ (convertir) en el *Homo electrónicus*.

Form Recognition Test

Select the form of the word that appeared in the passage you read.

i. Dicen que el 60% de la población de los países desarrollados ____ de las telecomunicaciones.
   depende
   dependó
   dependerá
   ha dependido

ii. Se _____ el teletrabajo con mucha más frecuencia.
     ha practicado
     practicó
     practica
     practicará

iii. El profesional liberal _____ el trabajo a cualquier parte del mundo con las tecnologías telemáticas (teléfono, computadora, fax, la red, etc.).
     mandará
     manda
     ha mandado
     mandó

iv. Algunos sociólogos se preocupan porque, según ellos, todo esto (iv) _____ aislamiento social e (v) _____ en las necesidades de contacto personal.

     iv.   v.
     ha generado   influyó
     genera   influirá
     generará   influye
     generó   ha influido

vi. El hombre, *Homo sapiens*, se _____ en el *Homo electrónicus*.
     convertirá
     convirtió
     ha convertido
     convierte