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FORM-MEANING CONNECTIONS AND THE FRENCH CAUSATIVE

An Experiment in Processing Instruction

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This study examines the generalizability of VanPatten and Cadierno (1993b) by investigating the relative effect of two types of explicit grammar instruction on learners' ability to interpret and produce sentences containing the French causative. Nine classes of 179 fourth-semester French students were assigned to three groups: (a) processing instruction, (b) traditional instruction, and (c) no instruction. The results indicate that processing instruction is as effective as traditional instruction in enabling learners to interpret the French causative and that traditional instruction is more effective in enabling learners to produce the French causative.

Explicit grammar instruction (EGI) appears to have beneficial effects on second language acquisition (SLA) processes, the ultimate level of acquisition achieved, and, especially, the rate of acquisition. (For comprehensive reviews of research, see Larsen-Freeman & Long, 1991, chap. 8; *Studies in Second Language Acquisition, 15 (2)*, 1993; Eckman, Highland, Lee, Mileham, & Weber, 1995; and for EGI and rate of SLA, see Doughty, 1991; Long, 1988, 1991; Sharwood Smith, 1991, 1993; Ellis, 1993). Within the last few years, investigations have been made on the relative effects of two different types of EGI: that which focuses on the learners' processing strategies followed by input-based practice and that which focuses on traditional grammar explanation followed

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by output-based practice. The first of these studies (VanPatten & Cadierno, 1993b) compared the effects of the two types of EGI (processing instruction vs. traditional instruction) on learners' ability to comprehend and produce sentences containing Spanish clitic object pronouns. The results revealed an interesting phenomenon. The processing group not only did significantly better than the traditional group on comprehension tasks, but there appeared to be a transfer of learning. Even though the processing group never produced the structure, they performed just as well as the traditional group on production tasks. Given the time constraints in many second language classrooms, EGI that not only leads to better comprehension but also simultaneously enables learners to produce the language would certainly be welcome. However, before rushing to adopt a processing EGI approach, it is appropriate and necessary to conduct replication studies in order, as Polio and Gass (1997) put it, "to distinguish the spurious from the real" (p. 500). The present study is a conceptual replication of the VanPatten and Cadierno (1993b) study, and it tests the generalizability of the findings to a different grammatical structure, the French causative.

BACKGROUND

The theory upon which processing instruction (PI) is based maintains that SLA occurs through a series of processes. (see Lee & VanPatten, 1995, chap. 5 & 6; VanPatten, 1996; and VanPatten & Cadierno, 1993b, for theoretical background and detailed description of PI.) The first of these processes occurs as learners derive intake from input. PI attempts to alter learners' inefficient input processing strategies so that they may make better form-meaning connections. One processing strategy that native speakers of English rely on is the first-noun strategy—that is, the tendency to assign subject or actor status to the first noun appearing in the sentence (Ervin-Tripp, 1974; Heilenman & McDonald, 1993; LoCoco, 1987; MacWhinney, Bates, & Kliegl, 1984; McDonald & Heilenman, 1992; VanPatten, 1984). VanPatten and Cadierno (1993b) attempted to alter the learners' reliance upon the first-noun strategy when processing input containing Spanish clitic object pronouns. (See VanPatten & Cadierno, 1993b, p. 47, for discussion of word order and Spanish clitic object pronouns.)

Several PI studies subsequent to VanPatten and Cadierno (1993b) have been conducted. Three of these studies, VanPatten and Cadierno (1993a), DeKeyser and Sokalski (1996), and Salaberry (1997), are particularly relevant to the present study because each compares the relative effects of PI versus traditional instruction on a structure that involves the first-noun strategy.[1] Whereas VanPatten and Cadierno (1993a), which differed from VanPatten and Cadierno (1993b) only in the number of subjects per treatment group, found results similar to VanPatten and Cadierno (1993b), DeKeyser and Sokalski (1996) and Salaberry (1997) found no significant differences between the in-

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put-practice group and the output-practice group on either the comprehension tasks or the production tasks.

DeKeyser and Sokalski (1996) hypothesized that the relative complexity of the structure itself affects the degree to which input and output practice are useful. To test this hypothesis, they chose two structures for their study: one that is easy to produce but difficult to perceive (the Spanish clitic object pronoun), and one that is difficult to produce but easy to perceive (the Spanish conditional). Although their hypothesis seems plausible and worthy of investigation, two problems arise with their choice of structures. First, in order to determine the impact that PI has on learners' input processing strategies, the instruction must attempt to alter a specific processing strategy. As stated previously, there is evidence that learners rely on the first-noun strategy in processing input containing Spanish clitic object pronouns. However, DeKeyser and Sokalski did not identify the processing strategy that the instruction on the Spanish conditional attempted to alter. Second, DeKeyser and Sokalski did not provide theoretical or empirical support that the Spanish conditional is difficult to produce but easy to perceive or that Spanish clitic object pronouns are easy to produce but difficult to perceive. In a study investigating the relative complexity of structures, Robinson (1996) acknowledged that no clear criteria for distinguishing the complexity of L2 rules have been established (p. 30). Ultimately, DeKeyser and Sokalski did not find support for their hypothesis.[2] In regard to learners' ability to comprehend and produce language containing Spanish clitic object pronouns, they found no differences between the output-practice and the input-practice groups.

Salaberry (1997), like VanPatten and Cadierno (1993b), was concerned with Spanish clitic object pronouns. In addition to the comprehension and production tasks, Salaberry, following Sanz (1994), added a narration task. Results of the study indicated no statistical differences between the input-practice and output-practice groups for any of the three tasks.

Both DeKeyser and Sokalski (1996) and Salaberry (1997) suggested that the results of the VanPatten and Cadierno (1993b) study may have been affected by two problems of internal validity: (a) The EGI provided to the PI group was quantitatively and qualitatively different from that provided to the traditional group and (b) the treatment differed in that the practice activities for the PI group focused on meaning whereas those for the traditional group focused on form. In controlling for the first perceived problem, DeKeyser and Sokalski ensured that both groups received the same EGI by providing them with identical grammar explanation handouts. For the output-practice group, Salaberry made "necessary alterations [to the input-practice group packet] to generate production of the L2 instead of relying on input processing" (p. 431). DeKeyser and Sokalski and Salaberry overlooked the fact that the very nature of PI is qualitatively and quantitatively different from traditional EGI and that PI includes both EGI and input-based practice. The different EGI is as much a part of the treatment as the different types of practice; together they make up

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the independent variable. Traditional EGI followed by input-based practice is not PI, at least as it was defined by VanPatten and Cadierno.

In addressing the second perceived problem, DeKeyser and Sokalski (1996) and Salaberry (1997) designed their practice activities so that the need to attend to meaning was as similar as possible for the two groups. According to DeKeyser and Sokalski, "If an exercise did not require a certain level of attention to meaning for the output group, then neither did the corresponding version for the input-practice group" (1996, p. 625). In making this methodological decision, DeKeyser and Sokalski and Salaberry created a lack of "treatment fidelity" (Gall, Borg, & Gall, 1996, p. 481) in their research design in that neither of the groups in either study received PI as defined by VanPatten and Cadierno (1993b). Recall that the goal of PI, as defined by VanPatten and Cadierno, is to alter learners' inefficient processing strategies: "If meaning is absent or if learners do not have to pay attention to meaning to complete the activity, then there is no enhancement of input processing" (VanPatten, 1996, p. 68). It is not apparent from the sample input-practice exercises from DeKeyser and Sokalski (p. 640), or from the comprehension assessment task and the sample exercises from the input processing instruction packet from Salaberry (pp. 448–450) that their input practice was the same as the input-practice part of PI in VanPatten and Cadierno. In fact, DeKeyser and Sokalski's and Salaberry's input-practice activities actually required learners to help create the input.[3]

In summary, even though DeKeyser and Sokalski (1996) and Salaberry (1997) purported to be replications of VanPatten and Cadierno (1993b), because their research design changed the instructional treatment by providing the same EGI to both groups, because they operationalized PI differently, and because no specific processing strategy was targeted for instruction on the Spanish conditional, neither study is a true replication of VanPatten and Cadierno.

The present study is a conceptual replication of the VanPatten and Cadierno (1993b) study. According to Polio and Gass (1997):

> Conceptual replications alter various features of the original study and serve the purpose of confirming the generalizability or external validity of the research. Researchers will attempt replication to see if the results hold for a different population, in a different setting, or for a different modality. (p. 502)

The research design of the present study maintains treatment fidelity to VanPatten and Cadierno and the PI provided in the treatment is consistent with PI as defined in that study. The study differs from VanPatten and Cadierno in three ways: the grammatical structure, the open-ended production task, and a much larger sample size (*N*).

The French causative was chosen for investigation in this study because there is evidence to indicate that native speakers of English also use the first-noun strategy when processing input containing the French causative (Heilen-

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man & McDonald, 1993; McDonald & Heilenman, 1992). For example, in the sentence, *Andrée fait promener le chien à son père* ("Andrée gets her father to walk the dog"), the tendency would be to interpret that it is Andrée, and not her father, who is walking the dog. Likewise, in a sentence such as *Mon professeur me fait ouvrir le livre* ("My teacher has me open the book"), native speakers of English would tend to interpret the sentence as "My teacher opens the book."[4]

Whereas the format of the production assessment task in VanPatten and Cadierno (1993b) was sentence completion, in which learners had to supply only an object pronoun and a verb, the production task used in the present study was open-ended. The controlled nature of the task in VanPatten and Cadierno may not have provided learners the opportunities, as described in the output hypothesis (Swain, 1993, 1995; Swain & Lapkin, 1995), to make use of their own output. According to the output hypothesis, even without external feedback, learners may notice a gap in their knowledge or a linguistic problem in their production and attempt to modify their output. As illustrated by Swain (1993, p. 160), production at the sentence level is sufficient to cause learners to question and modify their production.

Finally, the sample size in the present study was large enough to detect a medium effect size with statistical power at .7 and an alpha level of $< .05$. The results of VanPatten and Cadierno (1993b), as well as DeKeyser and Sokalski (1996) and Salaberry (1997), may have been affected by a lack of statistical power due to a sample size (*N*) that was too small to detect a difference in the groups' scores. According to guidelines for conducting educational research (Gall, Borg, & Gall, 1996, p. 189), an *N* of between 81 and 126 is needed when a medium effect size is anticipated. Polio and Gass (1997) maintained, "In the field of SLA, a lack of attention to replication is particularly striking when one considers that many published studies base generalizations on relatively few subjects" (p. 504). Accordingly, this study addressed the following questions:

1. Will there be any statistical differences in how learners who receive processing instruction, learners who receive traditional instruction, and learners who receive no instruction on the French causative interpret sentences containing the French causative?
2. Will there be any statistical differences in how learners who receive processing instruction, learners who receive traditional instruction, and learners who receive no instruction on the French causative produce sentences containing the French causative?
3. If an effect for instruction is found, will it hold one week after instruction? One month after instruction?

METHOD

Participants

Participants were 179 high school students enrolled in nine intact fourth-semester French classes in three high schools within a large school district in

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a metropolitan city in the Midwest. The students had not previously been introduced to the causative construction, but they had studied the verb *faire* ("to do" or "to make"), which is used in the French causative. Following VanPatten and Cadierno (1993b), the nine classes were assigned to one of three treatment groups: traditional instruction ($n = 61$, made up of one class at school C and two classes at school S), processing instruction ($n = 64$, made up of one class at school W and one class each at schools C and S), and no instruction ($n = 54$, made up of one class at school W and one class each at schools C and S). The assignment of class to group was made so that, where possible, one class of each group was at each school and the initial number of students per group was nearly equal. (The *n* reflects the total number of students whose data were submitted to analysis. Data from 38 students who were not present for both days of the instructional treatment and one student who scored above the arbitrarily set cut-off score of 60% on the pretest were eliminated before submitting the data to analysis.)

Materials

Instructional Treatment. Separate instructional packets for the processing and traditional groups were designed and balanced in regard to: (a) vocabulary, (b) total amount of EGI versus practice time, and (c) total number of practice activities. The vocabulary used in the instructional packets had been previously studied and included: (a) 13 expressions with *faire* (e.g., *faire un voyage* "to take a trip," *faire du ski nautique* "to water ski," *faire du vélo* "to ride a bicycle"), (b) 10 expressions associated with household chores (e.g., *balayer la chambre* "to sweep the bedroom," *passer l'aspirateur* "to vacuum," *travailler dans le jardin* "to work in the yard"), and (c) 10 expressions associated with classroom tasks (e.g., *répéter le vocabulaire* "to repeat vocabulary," *parler français* "to speak French," *étudier le verbe être* "to study the verb *to be*"). Each packet included six activities. In order to observe treatment fidelity, the processing instruction activities were designed based on the guidelines in Lee and VanPatten (1995, p. 104), and, following VanPatten and Cadierno (1993b), the traditional instruction activities involved some mechanical, meaningful, and communicative practice.

The first day, after completion of the pretest, instruction for both groups began with a review of the 13 expressions with *faire*. Each expression was illustrated on an 11 × 14-in. card (e.g., a picture of someone water skiing). In both groups the instructor held up each card and students called out the expressions. The instructor then called two students to the front of the room and asked their names (e.g., Eric and Paul). The instructor handed a card (e.g., the picture of someone shopping) to Eric and said, *Eric n'aime pas faire les courses. Donc, Eric fait faire les courses à Paul* ("Eric doesn't like to go shopping. So, Eric gets Paul to do the shopping"). Eric then passed the card to Paul and the instructor wrote the sentence on the board. The same procedure was

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followed for the remaining 12 pictures. There were two differences between treatment groups:

(a) In the traditional group the students began producing the French causative immediately with the second card, both by saying the sentence and by writing the sentence on the board. In the processing group the students listened silently as the instructor produced the sentences orally and in writing.

(b) In the processing group the instructor specifically pointed out the word order, and nothing about word order was specifically mentioned to the traditional group.

After creating causative sentences for the 13 cards, the groups completed activities A and B, in which the traditional group practiced producing the structure and the processing group listened to sentences and chose equivalent English sentences. (As in VanPatten & Cadierno, 1993b, the directions for the activities were given in English. See examples of activities in the Appendix.) In accordance with the guidelines for PI (Lee & VanPatten, 1995, p. 102), at no time during the instructional treatment or during the practice activities did students in the processing group produce the French causative.

The instruction continued in like manner with the next 10 sentences associated with household chores. Each time, students in the traditional group produced the sentences, whereas students in the processing group listened as the instructor produced the sentences. Students then completed activity C. The traditional group wrote sentences by combining given elements. The processing group listened to the instructor read sentences containing the French causative and then chose who was doing the action from their answer sheets. The first day of instruction ended with the completion of activity C.

Following PI guidelines to present one thing at a time (Lee & VanPatten, 1995, p. 104), the EGI was delivered in two stages. Thus, the second day of instruction focused on the causative construction that uses the preverbal pronoun *me* ("me"). The instructor put seven sample sentences of this type on the overhead projector. Next, the instructor previewed the vocabulary needed for the lesson by putting two sets of 10 expressions on the overheard (e.g., *écouter les cassettes* "to listen to cassette tapes," *laver la voiture* "to wash the car," *lire les dialogues* "to read dialogues"). Students then completed activities D and E in which the traditional group, given elements of the sentences, wrote complete causative sentences for both activities. The processing group silently read causative sentences and checked the sentences that applied to them. The final activity (F) involved a letter to Patrice in which Marcel describes three places where his family sometimes goes on Sundays. For both the traditional and the processing groups, the teacher read the letter aloud. Students listened but were not allowed to take notes. After reading the letter, the instructor gave the students a cloze activity in which they were asked to recall certain parts of the letter. The activity for both groups included a word bank that students were to draw from in completing the activity. The traditional group had to complete the activity with verbs in the causative form.

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The processing group completed the activity with nouns; the verbs were already written on their worksheet. The second day of instruction ended with the completion of activity F. The students then took the first posttest.

Pre- and Posttests. One pretest and three posttests were administered. All four tests consisted of an interpretation task, a distracter task, and a production task. The interpretation task was very similar to that of VanPatten and Cadierno (1993b) and consisted of 15 sentences and 15 corresponding pairs of pictures on overhead transparencies. The verbs in 10 of the sentences were in the causative form. The remaining 5 sentences served as distracters and were composed of present-tense expressions with the verb *faire*. As each sentence was read, the corresponding pair of pictures was revealed. For example, as the sentence, *Mme Duval fait faire la valise à M. Duval* ("Mrs. Duval has Mr. Duval pack the suitcase") was read, the pair of pictures—(a) Mme Duval packing a suitcase and (b) M. Duval packing a suitcase—were projected on the screen. The same set of 15 sentences and visuals was used in all four tests. However, the sentences were slightly changed for each test in that the object and the subject were alternated. For example, for the pretest and the second posttest the sentence was *Mme Duval fait faire la valise à M. Duval*, and for the first and third posttests, the sentence was *M. Duval fait faire la valise à Mme Duval*. Thus, students had to attend to meaning each time. In order to minimize the influence of the interpretation task on the production task, the distracter task required students to answer three short questions that were unrelated to the causative. The production task was an open-ended activity in which students were asked to write five complete sentences in French saying what their parents have them do at home or what their teachers have them do at school. Based on the number of scratch-outs and scribbled-over words on the students' posttests, the design was such that it did allow students to question and modify their output.

Procedures

Data Collection. In order to control for teacher variables, the researcher delivered the EGI and practice activities as detailed in the instructional packets and administered all assessment measures. Following VanPatten and Cadierno (1993b), all instruction and assessment took place in the students' regular classrooms during their regularly scheduled class times. Administration of the pretest, the instructional treatment, and the first posttest lasted two consecutive 50-minute class periods. As in VanPatten and Cadierno, the second posttest was administered one week after the first posttest and the third posttest was administered one month after the first posttest. Students in the no-instruction group took the same pretest and posttests as the traditional and processing groups; however, they did not receive any instruction or practice on the French causative. None of the groups were assigned homework during the two days in which the experiment was conducted and, during

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the intervals between the posttests, no review of the French causative was provided.

Scoring Procedures. The interpretation task in each test was worth 10 points. One point was assigned for each correct response; incorrect responses received a score of zero. The five distracter responses were ignored in the scoring procedure. The production task was worth a total of 15 points, 3 points for each of the five sentences learners wrote. One point in each sentence was assigned for each of three criteria: (a) one and only one conjugated form of *faire*, (b) one and only one infinitive verb form, and (c) inclusion and correct position of the pronoun *me*. An example of a sentence receiving three points is: *Mes parents me*[3] *font*[1] *débarrasser*[2] *la table après le dîner* ("My parents have me clear the table after dinner"). The sentence contains each criterion as indicated by the superscripts. Sentences receiving 2 points failed to meet one criterion; sentences receiving 1 point failed to meet two criteria; and sentences that did not meet any of the criteria did not receive any points. The decision to assign 3 points per sentence was made in order to reveal intermediate effects of instruction (as in VanPatten and Cadierno, 1993b). Some students at this point may have, for example, made a form-meaning connection between the conjugated form of *faire* followed by an infinitive and the French causative but may not yet have included the pronoun *me* in their mental representation of the structure.

Data Analysis. Raw scores from the pretest were submitted to a one-way analysis of variance (ANOVA). Raw scores from the three posttests were also submitted to an ANOVA.[5] When significant differences were found, a post hoc multiple comparison procedure, the Tukey HSD, was performed to establish the source of the differences.

RESULTS

The ANOVA performed on the scores from the interpretation task and the production task on the pretest revealed no significant differences among the three groups before the EGI on the French causative ($p = .415$ for the interpretation task; $p = .690$ for the production task). These results lend support to the conclusion that any differences among groups on the posttests were not due to prior knowledge of the structure.

The results of the ANOVA performed on the scores from the first posttest revealed a significant difference in how the three groups interpreted and produced sentences containing the French causative. Post hoc Tukey HSD tests indicated that processing instruction and traditional instruction were better than no instruction for both the interpretation and the production tasks, $p < .0005$ for all comparisons. For the interpretation task, no significant difference was found between how the processing-instruction group and the traditional-instruction group interpreted sentences containing the French causative. For the production task, learners in the traditional group performed significantly

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Table 1. Descriptive statistics and results of ANOVA for interpretation tasks

	No instruction			Traditional			Processing			ANOVA
Test	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*F*
Pretest	2.81	0.78	54	3.02	0.94	61	3.00	0.94	64	0.883
Posttest 1	2.46	1.83	54	8.46	1.32	61	8.11	1.73	64	239.216*
Posttest 2	3.41	2.07	54	8.87	1.38	61	8.67	1.44	64	202.215*
Posttest 3	3.81	1.35	54	7.98	1.37	61	7.95	1.54	64	159.898*

Note. *$p < .05$.

Table 2. Descriptive statistics and results of ANOVA for production tasks

	No instruction			Traditional			Processing			ANOVA
Test	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*F*
Pretest	1.93	2.10	54	2.16	2.25	61	1.83	2.30	64	0.372
Posttest 1	2.33	2.15	54	13.59	3.07	61	10.17	4.72	64	150.110*
Posttest 2	2.17	2.70	54	8.61	3.81	61	7.31	4.07	64	50.119*
Posttest 3	2.41	2.37	54	8.28	3.55	61	6.75	3.85	64	46.517*

Note. *$p < .05$.

Table 3. Results of the post hoc Tukey HSD

Task	Comparison	*p* value
Interpretation		
Posttest 1	traditional = processing	.456
Posttest 2	traditional = processing	.780
Posttest 3	traditional = processing	.992
Production		
Posttest 1	traditional > processing	.000
Posttest 2	traditional = processing	.112
Posttest 3	traditional > processing	.030

better than learners in the processing group. Table 1 presents the descriptive statistics and the results of the data analysis for the interpretation tasks. Table 2 provides the same information for the production tasks. The results of the Tukey HSD are summarized in Table 3.

In regard to the question of durability of the effect of instruction, the analyses of the interpretation tasks from posttest 2 and 3 revealed no significant differences between processing and traditional instruction. For the production tasks, traditional instruction was significantly better than processing instruction on posttest 3. However, there was no significant difference between the two groups on posttest 2.

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DISCUSSION

The results of the interpretation task indicate that both types of instruction—processing and traditional—were equally effective in altering learners' reliance on the first-noun strategy when interpreting sentences containing the French causative. These results are different from those in VanPatten and Cadierno (1993b), which showed processing instruction to be better than traditional instruction in enabling learners to interpret sentences containing the target structure. The EGI in both this study and in VanPatten and Cadierno included examples of the target structure for both groups of learners. In both studies, the practice activities provided to learners in the traditional group followed a mechanical, meaningful, communicative sequence. Also, in both studies, interpretation tasks in the pre- and posttests could have served as a source of additional input. It appears that, in this study, the instruction alone, regardless of the subsequent practice, was enough to cause learners to abandon their reliance on the first-noun strategy in interpreting sentences containing the French causative.

The results of the production task indicate that traditional instruction was better than processing instruction in enabling learners to produce sentences containing the French causative. These results are also different from those of VanPatten and Cadierno (1993b), in which learners in both groups performed equally well on the production tasks. Recall, however, that the production tasks in both studies differed: In VanPatten and Cadierno, the task was sentence completion; in this study, learners wrote original sentences. An examination of the type of mistakes learners made in the production task in this study may be insightful. Most of the mistakes involved either the omission of the pronoun *me* as in example (1a), the misplacement of *me* as in (2a), or the incorrect use of *à moi* instead of *me* as in (3a).

(1) a. *Mon prof fait aller au tableau.* (incorrect)
b. *Mon prof me fait aller au tableau.* (correct)
"My teacher has me go to the blackboard."

(2) a. *Mon prof fait me sortir une feuille de papier.* (incorrect)
b. *Mon prof me fait sortir une feuille de papier.* (correct)
"My teacher has me get out a sheet of paper."

(3) a. *Mes parents font faire la vaisselle à moi.* (incorrect)
b. *Mes parents me font faire la vaisselle.* (correct)
"My parents have me do the dishes."

Recall that causative sentences where *me* is the actor were presented on the second day of instruction and that sentences of this type did not appear in the interpretation tasks. Therefore, it may be possible that learners did not receive sufficient comprehensible input to make form-meaning connections about the pronoun *me* in causative sentences and therefore relied on the connections they had made with the type of sentences presented on the first day of instruction. In the absence of adequate input, output practice may have

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been more beneficial than input practice in enabling learners to produce sentences with *me*.

The third research question addressed the durability of the effect for instruction one week and one month after instruction. It is interesting to note that the mean scores for all three groups, including the no-instruction group, were higher on the second interpretation posttest. This result may lend support to the supposition that the pretest and the first posttest served as additional input. Given this input, even without EGI, the no-instruction group may have figured out the pattern used in the French causative. Another possible explanation is that the increase may have been due to test familiarity. Given the limited amount of vocabulary learners knew and the number of sentences that could be constructed in the causative using that vocabulary, the same sentences, with object and subject reversed, were used in both tests. A third possible explanation is that the novelty of having the researcher as their teacher and the stimulation of working on something different may have had a subtle influence on the learners, thus causing a Hawthorne effect (Gall, Borg, & Gall, 1996, p. 475), a phenomenon not uncommon in educational research. Whereas the mean score for the no-instruction group was even higher on the third interpretation posttest, the mean scores for the two treatment groups fell.

For the production tasks in the posttests, durability of the effect for instruction steadily decreased over time for the two treatment groups. Furthermore, even though the score on the third posttest for the no-instruction group was higher than for the pretest and the first and second posttests, the differences were not significant.[6] These results are different from those of VanPatten and Cadierno (1993b), who found that the mean scores on posttest 2 and posttest 3 were lower than those of posttest 1 for traditional instruction, and the mean scores on the first and third posttests were the same for processing instruction.

In conclusion, this study found that the results of VanPatten and Cadierno (1993b) are not generalizable to the French causative even though the instruction in both studies attempted to alter the same input processing strategy. For this particular grammatical structure, the French causative, processing instruction is equally effective as traditional instruction for interpretation tasks but less effective for production tasks. It may be that processing instruction is effective only for certain grammatical structures. Replication studies on other structures should be conducted in order to determine the usefulness of processing instruction in second language classrooms.

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NOTES

1. For a detailed review of other PI studies, see VanPatten, 1996, chap. 4.
2. The discussion section in DeKeyser and Sokalski (1996, pp. 633–635) refers to the descriptive

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statistics, not to the results of the statistical analyses (R. M. DeKeyser, personal communication, November 19, 1998).

3. In a response to Salaberry (1997), Sanz and VanPatten (1998) stated that Salaberry has "misunderstood the nature of what has now come to be called 'processing instruction'" (p. 263).

4. Results of the pretest in the present study provide further support for learners' reliance on the first-noun strategy in processing sentences containing the French causative.

5. One anonymous reviewer expressed concern over the use of ANOVA with scores from intact groups when statistical tests of normality of distribution have not been conducted. Gall, Borg, and Gall (1996, p. 490) suggested that the internal validity of an experiment in which intact groups are used can be maintained if there is more than one classroom per experimental treatment and the classrooms are randomly assigned to the experimental and control groups. Moore and McCabe (1989, p. 732) maintained, "The ANOVA *F* test is relatively insensitive to moderate nonnormality and unequal variances."

6. Results of paired *t*-tests on the no-instruction group scores revealed no significant differences (pre–post 1, $p = .208$; pre–post 2, $p = .527$; pre–post 3, $p = .120$; post 1–post 2, $p = .669$; post 1–post 3, $p = .812$; post 2–post 3, $p = .454$).

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APPENDIX

SAMPLE ITEMS FROM THE PRACTICE ACTIVITIES USED IN BOTH INSTRUCTIONAL TREATMENT GROUPS

Activity A, Processing Instruction

Select the correct interpretation of the sentence. Circle a or b.

Tom fait faire les valises à Marc. a. Tom packs the bags. b. Marc packs the bags.

Activity A, Traditional Instruction

Change each sentence to the *faire causatif* form by supplying the correct form of *faire* in each blank.

Tom _____ faire les valises à Marc.

Activity B, Processing Instruction

Match each sentence you hear with one of the statements below. Circle a or b.

(Students hear, "John fait faire les courses à sa soeur.")

a. John has his sister do the shopping. b. John goes shopping.

Activity B, Traditional Instruction

Guy gets his friend Marc involved in a lot of activities. For each picture below, write a sentence saying that Guy gets Marc to do each of the activities. Use the *faire causatif* form.

(The pictures are of people biking, doing the dishes, doing homework, snow skiing and water skiing.)

Activity C, Processing Instruction

In this exercise, you will decide who is doing a particular activity. Circle who is doing the activity.

(Students hear, "Nous faisons balayer la chambre.") a. nous b. someone else

Activity C, Traditional Instruction

Combine the the following elements to make sentences in the *faire causatif*.

Le professeur/ses élèves étudient le verbe *être*.

Activity D, Processing Instruction

Read each statement below and put a check in front of the things that your French teacher sometimes has you do.

Mon professeur de français . . .

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_____ me fait écouter les cassettes. (The list continues with nine more items.)

Activity D, Traditional Instruction

Write statements saying that your French teacher has you do each of the following activities.

Mon prof/écouter les cassettes.

Activity E, Processing Instruction

Read each statement below and put a check in front of the things that your parents sometimes have you do at home.

_____ me font laver la voiture.

Activity E, Traditional Instruction

Write statements saying that your parents have you do each of the following activities.

Mes parents/laver la voiture.

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