EFFECTS OF THREE TYPES OF PRACTICE AFTER EXPLICIT EXPLANATION

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ABSTRACT

50 university students of beginning Japanese randomly assigned to one of four groups received different types of grammar instruction on specific lexical and sociolinguistic rules: explicit explanation (EE) only, EE plus mechanical output practice (MOP), EE plus structure-based communicative output practice (SOP), and EE plus structure-based communicative input practice (SIP). Results from sentence-level production and interpretation tests (a pretest, immediate, and delayed posttests) suggest that: (a) SIP plus EE is more effective than EE in improving both immediate and delayed performance on interpretation, and (b) MOP plus EE is more effective than EE in improving immediate, but not delayed, performance on interpretation. No other comparison proved statistically significant. This article suggests that, as for the ways learners process input, the conversion from input to intake may not require SIP, but the accommodation of intake into the learners' long-term memory seems to help it.

A central issue discussed extensively in the recent second language acquisition (SLA) literature on communicative second language teaching is how to attend to form in meaning-based or task-based curricula (e.g., Celce-Murcia, 1991; Celce-Murcia, Dörnyei, & Thurrell, 1997; Doughty & Williams, 1998; R. Ellis, 1993, 1998; N. Ellis & Laporte, 1997; Fotos, 1994; Fotos & R. Ellis, 1991; Long & Crookes, 1992; Loschky & Bley-Vroman, 1993; Nunan, 1989; VanPatten, 1993; Williams, 1995; Savignon, 1991; Spada, 1997; Terrell, 1991). One recent debate concerning grammar instruction methodology in meaning-based curricula centers on whether one type of practice is more effective than another. Specifically, VanPatten and his associates argue that "processing instruction," which enables learners to practice correct form-meaning connections via *interpretation* practice, contributes more to interlanguage development than traditional production practice that requires learners exclusively and prematurely to produce the target grammar (Cadierno, 1995; Lee & VanPatten, 1995; Sanz & VanPatten, 1998; VanPatten, 1996, 1998; VanPatten & Cadierno, 1993). In their view, output-oriented practice may be useful for enhancing the fluency and accuracy of using that target

Second Language Studies, 19(1), Fall 2000, pp. 99-125.

grammar which is already part of the interlanguage, but "it is not responsible for getting the grammar into the learners' head" (Lee & VanPatten, 1995, p. 95).

VanPatten's argument has posed an immediate and important pedagogical issue for many second/foreign language teachers whose grammar instruction in their communicative classrooms may typically involve a combination of explanation, output practice (e.g., mechanical, meaningful, and/or communicative oral practice), and feedback.

The present experimental study, first of all, further investigated if the instructional effects of practice given as a follow-up to explicit explanation would be influenced by the type of practice (i.e., input vs. output practice) in teaching the same lexical and sociolinguistic rules of Japanese verbs of giving and receiving. Secondly, if output practice plays little role in acquisition or a change in knowledge about the target grammar, as VanPatten and his associates claim, it may follow that, when output-oriented practice is given exclusively as follow-up practice to explicit explanation, the type of output practice (i.e., communicative/meaningful tasks vs. mechanical drills) may not make a difference in learners' knowledge about the target grammar. This study also examined if this would be the case.

THEORETICAL BACKGROUND AND PREVIOUS RESEARCH: COMPARATIVE EFFECTS OF INPUT VS. OUTPUT PRACTICE

Swain's (1985, 1993) comprehensible output hypothesis predicts that production practice which pushes learners to make use of their linguistic abilities as an effort to make themselves precisely and appropriately understood is necessary for acquisition. She argues that production practice that encourages learners to produce comprehensible output to their interlocutors push the learners to (a) "try out means of expression and see if they work" and (b) "move from semantic processing to syntactic processing" (Swain, 1985, p. 249, see also Swain & Lapkin, 1995). Swain further claims that, through the very process of reaching successful negotiation of intended meaning through producing comprehensible output, learners recognize the limits of their existing knowledge and pay attention to not-yet acquired linguistic knowledge, which is critical to the acquisition process.

Although Swain's output hypothesis has received considerable recognition, it is not yet clear whether pushed output is necessary for acquisition (R. Ellis, 1994, p. 284). Some researchers believe that production may facilitate acquisition but that it is not necessary (e.g., Krashen, 1985; Long, 1996). In recent years, Swain's comprehensible output hypothesis has been further reexamined by VanPatten and Cadierno (Cadierno,

1995; VanPatten, 1996; VanPatten & Cadierno, 1993), who suggest that "processing instruction (PI)," which pushes learners to practice correct form-meaning connections via interpretation practice, offers more instructional benefits than traditional output-oriented practice. In VanPatten's (1996) SLA model, learning processes are described as operating at three stages. Stage 1 involves the learning process of converting the comprehensible input into intake. This process is what VanPatten calls "input processing," which necessarily involves "form-meaning connections" through interpretation. At Stage 2, the intake data are subject to further processing ("accommodation") that can lead to restructuring of the learners' developing system or interlanguage. Lastly, at Stage 3, learners "access" grammatical knowledge in their developing system through productive use of language in communicative contexts.

Thus, in VanPatten's SLA model, a coherent system of grammar instruction, involves moving from manipulated input practice, which contributes to the restructuring of the developing system, to output practice, which helps learners access the grammatical knowledge in the system. The manipulated input-oriented practice that optimizes input processing is called "structured input" practice (SIP). With SIP, students are actively engaged in processing both oral and written input in meaningful/communicative contexts without producing the target grammar. With the parallel concept of "structured output" practice (SOP), learners produce the target grammatical rules in meaningful/ communicative contexts. Thus, VanPatten and his associates do not advocate a communicative curriculum without student opportunities to produce; they suggest that SIP is a critical component of a communicative curriculum and that it must precede SOP where students have an opportunity to use the target grammar knowledge for successful communication (Lee & VanPatten, 1995; VanPatten, 1996, 1998; VanPatten & Cadierno, 1993).

As a related issue, while VanPatten and his associates advocate the instructional benefits based on psycholinguistic factors, Loschky and Bley-Vroman (1993) have suggested the superior instructional benefits of comprehension-based instruction based on methodological considerations. They suggest that, given the variety of processing and communication strategies that learners may use to make up for their lack of target grammar knowledge, learners' output is harder to control and therefore the "essentialness" of accurate use of target grammar for task completion is harder to manipulate. Loschky and Bley-Vroman claim that learners' input, on the other hand, is easier to control and the "essentialness" of accurate use of target grammar is more easily manipulated as well.

Table 1 summarizes previous research that has investigated the relative effects of input vs. output practice. The table shows that, first, this line of research was mostly

conducted within the context of teaching specific syntactic and morphological rules in Spanish. An exception was Nagata's (1998) study, which examined the relative effects of computer-assisted input vs. output practice in teaching complex morphosyntactic and sociolinguistic rules of Japanese honorifics.

The table also shows that, on one hand, VanPatten and Cadierno's past studies (1993, 1995) mainly investigate the relative benefits of PI in comparison to traditional output practice where students were engaged in mechanical production practice for a substantial time. These studies indicate that (a) performance on highly controlled production tests was as good for the students who received PI as for those who received traditional output-oriented instruction, and (b) the former outperformed the latter on highly controlled interpretation tests (Cadierno, 1995; VanPatten & Cadierno, 1993). In a follow-up study, VanPatten and Oikkenon (1996) claim that, although PI is a combination of explicit explanation and SIP, the beneficial effects of PI are due to SIP and not to the explicit explanation, based on their study which investigated the comparative immediate instructional effects (i.e., no delayed tests) among the regular PI, PI without explanation, and explanation only. Furthermore, although VanPatten and Cadierno's studies (1993, 1995) adopted only highly controlled sentence-level written production and aural interpretation tests, VanPatten and Sanz's (1995) follow-up study provided evidence to suggest that PI may also help learners improve on less controlled and more communicative production tasks (i.e., structured interview & video narration), at least when these tasks are given immediately after the treatment (i.e., no delayed tests). This study also suggests that the mode and amount of production tests may influence the research findings: learners in both the control and experimental groups were more accurate on the written test than they were on the oral test; they were also more accurate on the sentence-completion test than on the video-narration test (See also Sanz, 1996).

Other empirical studies which compared the relative instructional effects of input vs. output practice, on the other hand, have failed to demonstrate the beneficial effects of input practice over output practice (e.g., DeKeyser & Sokalski, 1996; Nagata, 1998; Salaberry, 1997). It has been pointed out that the superior instructional effects of PI (explicit explanation + SIP) over traditional output-oriented practice (explicit explanation + predominantly mechanical drills) resulted in VanPatten and Cadierno's studies (1993, 1995) partly because different treatments were given to the input and output groups; they differ in the amount of attention to meaning required for task completion and the amount of explanation about the target grammar given prior to practice (DeKeyser & Sokalski,

Table 1
Summary of Studies on the Effects of Input vs. Interpretation/Comprehension Practice

Study	Type of study	Target grammar	Class level (*N* of participants)	Independent variable	Method of assessment	Findings
VanPatten & Cadierno (1993)	Quasi-exp (Non-equivalent control group design)	Spanish object pronouns	University students of second-year Spanish (*N* = 80)	Type of practice (Traditional output practice [TOP] vs. Processing instruction [PI])	• Pretest/posttests (immediate, 1 wk later, & 1 mh later) • All discrete items • All sentence-level • Aural interpretation & written production	• PI group outperformed TOP group on interpretation (PI> control; TOP=control; PI>TOP). • Both PI group & TOP group made equivalent significant gains on production (PI>control; TOP>control; PI=TOP). • Results were maintained a month later.
Cadierno (1995)	Quasi-exp (Non-equivalent control group design)	Spanish past tense verb	University students of third semester Spanish (*N* = 61)	Type of practice (TOP vs. PI)	• Pretest/posttests (immediate, 1 wk later, & 1 mh later) • All discrete items • All sentence-level • Aural interpretation & written production	• PI group outperformed TOP group on interpretation (PI> control; TOP=control; PI>TOP) • Both PI group & TOP group made equivalent significant gains on production (PI>control; TOP>control; PI=TOP). • Results were maintained a month later.
VanPatten & Sanz (1995)	Quasi-exp (Non-equivalent control group design)	Spanish object pronouns	University students of third semester Spanish (*N* = 59)	• Type of tests • Modes (oral vs. written)	•Pretest/posttest (immediate) • A sentence-level aural interpretation & a sentence-level (sentence completion) and two suprasentential-level production tests (structured interview & video narration) in two modes (oral and written)	• PI group made significant gains on both aural interpretation & oral and written production, except oral free narration.
VanPatten & Oikkenon (1996)	Quasi-exp (Non-equivalent control group design)	Spanish object pronouns	Senior high school students of fourth semester Spanish (*N* = 59)	Grammatical explanation in PI (Regular PI, explanation only, PI w/o explanation)	• Pretest/posttest (immediate) • All discrete items • All sentence-level • Aural interpretation & production	• On interpretation regular PI group & PI w/o explanation group significantly outperformed explanation only group; no significant difference between the two. • On production, regular PI group significantly outperformed explanation only group; no significant difference between PI group & PI w/o explanation group.
DeKeyser & Sokalski (1996)	Quasi-exp (Non-equivalent control group design)	Spanish object pronouns and conditionals	University students of first year Spanish (*N* = 82)	• Type of practice (input vs. output practice)	• Pretest/posttests (4th day of instruction, 1 wk later from the first posttest) • All discrete items • All sentence-	• For object pronouns, on the first posttest, input group made a significant gain on comprehension (input> control; output=control; input=output), and output group on production (input=control;

	level • Aural and reading comprehension & written production	output>control; input=output). On the second posttest, significant differences among the groups disappeared. • For the conditional, on the first posttest, only output group made a significant gain on comprehension (input=control; output>control; input=output); both input and output groups made a significant gain on production (input> control; output=control; input=output). On the second posttest, significant difference among the groups disappeared.

[a]Salaberry (1997, p. 433) acknowledges the lack of improvement on the production test was due to the fact that "this task does not pose major difficulties for these students," therefore, there existed little room for improvement. A follow-up study (Salaberry 1996) indicated that both input and output processing groups significantly improved on the production test.

1996; Salaberry, 1997). In VanPatten and Cadierno's studies, all the input group tasks required the learners to attend to meaning, but a substantial part of the output group tasks were mechanical output practice (MOP), which required attention only to form. It has also been pointed out that the input group in VanPatten and Cadierno's studies was in all cases further advantaged by receiving more useful information for processing the target grammar. Therefore, in recent studies which contradict VanPatten and Cadierno's findings (e.g., DeKeyser & Sokalski, 1996; Nagata, 1998; Salaberry, 1997), researchers note that variables such as the degree of attention to meaning required to task completion and the amount of explicit explanation were carefully controlled between the input and output groups.

In addition to the methodological problems that threaten the internal validity of VanPatten and Cadierno's studies, Dekeyser and Sokalski (1996) argue that the degree of complexity of the target grammar could also influence the results of studies that compare the relative effects of input-oriented vs. output-oriented practice. They conclude that the results of VanPatten and Cadierno's studies (1993, 1995) may not be generalizable to other grammatical rules. Thus, the past studies reviewed in this paper suggest that at least the following four variables potentially influence the results of studies on relative instructional effects of input vs. output practice:

Variable 1: Amount of attention to meaning required for task completion

Variable 2: Amount of explicit explanation given prior to practice

Variable 3: Degree of complexity of the target grammar

Variable 4: Type of tests (e.g., the amount and mode of tests)

Purpose

The present study investigated, first of all, whether, given the same explicit explanation prior to practice and the same amount of attention to meaning required for task completion, the type of practice (i.e., SIP vs. SOP) influences the learners' performance demonstrated on sentence-level written production and aural interpretation tests in teaching complex lexical and sociolinguistic rules of Japanese verbs of giving and receiving. As discussed earlier, in VanPatten and Cadierno's studies which, were performed in the context of teaching morphosyntactic rules in Spanish, they claim that interpretation-oriented practice is better than output-oriented practice at enhancing learners' interpretation abilities demonstrated at the sentence-level discourse and is as good as output practice for developing production abilities at the same level of discourse. The present study, which carefully controlled such factors as amount of explicit explanation prior to practice and the attention to meaning required for task completion, investigated whether similar outcomes would result in the context of teaching complex lexical and sociolinguistic rules in Japanese. Furthermore, in VanPatten's SLA model, the role of output practice is to *access* the grammatical knowledge that is already in the developing system rather than to restructure the system. If this model is valid, it may follow that, as long as practice given as an immediate follow-up to explanation is exclusively output-oriented, whether the output practice is mechanical or meaningful/communicative should not make any difference in learners' knowledge of the target grammar.

In pursuing these research purposes, this study investigated the instructional effects of three types of practice, namely SIP (structured input practice), SOP (structured output practice), and MOP (mechanical output practice), given as follow-up practice to explicit explanation. The following research questions and hypotheses guided this study.

Research questions. In teaching the lexical and sociolinguistic rules of Japanese verbs of giving and receiving:

1. Does the type of practice (input vs. output) given as an immediate follow-up to explicit explanation significantly affect learners' abilities to interpret and produce these verbs?
2. When output-oriented practice is given as an immediate follow-up to explicit explanation, does the type of output practice (mechanical vs. meaningful/ communicative) influence learners' abilities to interpret and produce these verbs?

Research hypotheses. In teaching the lexical and sociolinguistic rules of Japanese verbs of giving and receiving:

1. As an immediate follow-up to explicit explanation, SIP that encourages the learners to achieve form-meaning connections through interpretation is more effective than SOP that encourages such connections through production at enhancing learners' abilities to interpret the target verbs in a sentence-level discourse; additionally, the former is as effective as the latter in enhancing learners' abilities to produce these verbs in the same level of discourse (an application of Cadierno, 1995; VanPatten & Cadierno, 1993).
2. When output-oriented practice is given as an immediate follow-up to explicit explanation, the type of output practice (mechanical vs. meaningful/ communicative) does not significantly influence learners' performance on sentence-level aural interpretation and written production tests (an extension of VanPatten's SLA model).

METHOD

Target Grammar: Japanese Verbs of Giving and Receiving

Teaching how to use Japanese verbs of giving (*ageru*, *kureru*, *sashiageru, kudasaru*) and receiving (*morau*, *itadaku*) can be as complex because the proper use of these verbs requires the processing of multiple lexical and sociolinguistic rules, which involves:

1. The speaker's judgment of in-group/out-group boundaries and hierarchical distinctions in terms of age, affiliation, rank, and intimacy,
2. The speaker's distinctions in viewpoints from which the action is described (i.e., the giver's viewpoint or the receiver's), and
3. Whether or not the giver or the receiver of the action addressed is the speaker himself/herself or someone s/he empathizes with (e.g., family members) (see Makino & Tsutsui, 1986).

In order to avoid potential confusion among the student participants, the treatment in this study focused on verbs of giving/receiving within contexts wherein the addressee is the giver or the receiver of the action addressed. The following are the target lexical and sociolinguistic rules of this study:

Rule 1: *ageru* [give], *kureru* [give], and *morau* [receive] are used when the speaker gives/receives something to/from the in-group (e.g., the speaker's family members, friends, subordinates, etc.).

Rule 2: *sashiagreu* [give], *kudasaru* [give], and *itadaku* [receive] are used when the speaker gives/receives something to/from the out-group (e.g., the speaker's teachers, boss, guests, etc.).

Rule 3: When the speaker describes an event in which s/he is involved, s/he normally

describes the event from his/her own viewpoint rather than from others.

Rule 4: *ageru* and *sashiageru* require the giver's viewpoint.

Rule 5: *kureru* and *kudasaru* require the receiver's viewpoint.

Rule 6: *morau* and *itadaku* also require the receiver's viewpoint.

Participants

At the beginning of spring 1999, memos for recruiting research participants were distributed to *all* 165 students who were enrolled in one of the 15 second-semester Japanese (JPN 102) classes at the University of Hawaii at Manoa (hereafter UHM). The researcher, who was teaching one section of JPN 102 then, sought other Japanese 102 teachers' cooperation in distributing the memos to all JPN 102 students. Initially, 93 students responded that they would participate in the research, and they were randomly assigned to one of the following four groups with different treatments.

Group 1 (control): explanation + no practice

Group 2 (experimental 1): explanation + mechanical output practice (MOP)

Group 3 (experimental 2): explanation + structured output practice (SOP)

Group 4 (experimental 3): explanation + structured input practice (SIP)

On the day of the experiment, however, only 64 students showed up. They were paid $15.00 upon the completion of their research participation. Among those who cooperated in the experiment, 14 students' test scores were excluded because they (a) demonstrated 80% accuracy on either the production or interpretation pretest, (b) reported that they had known how to use all/most of Japanese verbs of giving and receiving before the experiment, (c) missed either the pretest or delayed posttest, (d) left more than 20% of written tasks uncompleted, and/or (e) made uncorrected errors which were more than 15% of the total number of responses on the written tasks.[1] The remaining participants totaled 50 (see Table 2 for the distribution of participants in four groups).

Table 2
Distribution of Participants

Treatment	Number of Participants
Explanation only (Control group)	9
Explanation + Mechanical Output	17

[1] An attempt was made to control the degree of task completion and accuracy as potential intervening variables influencing the treatment effect. An analysis of their performance on written tasks indicates that (a) there were two students who left more than 20% of written tasks uncompleted, and (b) instances of more than 15% of uncorrected errors were observed from two students.

Explanation + Structured Output	12
Explanation + Structured Input	12
Total	50

JPN 102 students were chosen as research participants because the target lexical and sociolinguistic rules are introduced in third-semester Japanese (JPN 201). Thus, JPN 102 students have typically learned how to construct a sentence using two of the six target verbs—*ageru* and *kureru*—early in their first-semester of Japanese (JPN 100/101). However, it is not until they take Japanese 201 that they explicitly learn the target lexical and sociolinguistic rules (i.e., the speaker's hierarchical judgments and viewpoint distinctions). In order to avoid extraneous variables of prior knowledge that could affect research results and to ensure that the participants lacked informal exposure to these rules between immediate and delayed tests, a brief background questionnaire was administered after the delayed test.

Instructional Packets

A two-page grammar explanation handout and four kinds of instructional practice packets (with teacher's versions) were prepared. During the practice session, students in all experimental groups could refer to the grammar explanation handouts. As mentioned earlier, instruction in this study was limited to the context where the speaker is the giver or the receiver of the action addressed. The explanation handout emphasized the following three points:

1. *ageru*,, *kureru*, and *morau* are used when the speaker gives/receives something to/from the in-group, whereas *sashiagreu*, *kudasaru*, and *itadakau* are used when the speaker gives/receives something to/from the out-group.
2. In the context where the speaker is the giver or the receiver, s/he normally describes the event from his/her own viewpoint rather than from others.
3. In the context the speaker is the giver or the receiver, *ageru* and *sashiageru* may be used only when the speaker is the giver, whereas *kureru, morau*, *kudasaru,* and *itadaku* may be used only when the speaker is the receiver.

Instructional practice packets for experimental groups reflected three types of follow-up practice to explicit explanation, namely, SIP, SOP, and MOP. Each instructional packet consisted of three tasks.[2] Practice verbs in all experimental groups were the same;

[2] For the MOP group, an additional oral-drill task, which was similar to Task 3 in content, was prepared because there was a possibility that students might finish the mechanical drills faster than the tasks for the SOP and SIP groups. However, it turned out that, within the 50 minutes, students in the MOP group completed only the first three tasks.

only verbs of giving and receiving were used. Nouns used for practice in these groups were almost the same; most of the nouns were ones that the students had encountered in first-semester Japanese and/or *katakana* words borrowed from English words. Any nouns that the students had not studied in first-semester Japanese were glossed. The grammatical complexity of each experimental group's practice was made as similar as possible.

Table 3 summarizes the characteristics of the three tasks used for each group in terms of (a) target verbs, (b) whether they are referential (REF) or learner-centered (LC), (c) whether they are individual or paired activities, and (d) mode of input/production tasks (i.e., written or aural/oral). Students in the SIP and SOP groups were motivated either to interpret or produce the target verbs in order to complete tasks while keeping meaning in focus. The difference was that, while students in the SOP group were consistently encouraged to produce target verbs right from the beginning, students in the SIP group were not required to produce them at any time. Students in the MOP group practiced mechanical drills, which did not require the learners to attend to meaning at any time. All three treatment groups were videotaped. A review of the videotapes showed no problematic student behaviors. The instructional practice packet for the control group included practice of Japanese regular and irregular honorific forms; verbs of giving and receiving did not appear in the packet.

Table 3
Tasks Used for SIP, SOP, and MOP

	Task 1	Task 2	Task 3
Target verbs	ageru, sashiageru morau, itadaku	kureru, kudasaru morau, itadaku	All target verbs
Referential or learner-centered [SIP & SOP only]	Referential & learner-centered	Referential	Learner-centered
Individual or in pair	Individual	Individual (SIP & MOP) or in pair (SOP)	Individual (MOP) or Individual & in pair (SIP & SOP)
Main mode of input/production	Written	Aural (SIP) or oral (SOP & MOP)	Written & aural (SIP) or written & oral (SOP & MOP)

Instructors

Four full-time UHM instructors of Japanese were randomly assigned to teach one of the four groups receiving different treatments. All instructors were female native speakers of Japanese in their 30's or early 40's who had taught Japanese for several

years. Prior to the study, the experimental group instructors were given the following directions.

1. Total instruction time will be exactly 50 minutes.
2. The instructors must follow as closely as possible the content and procedures of the instruction package for the assigned group.
3. The instructor of the SIP group must avoid interactions that would generate output of the target verbs from the students.
4. Metalinguistic information must not be given during the instruction time. When a student makes an error, the teacher may simply correct the error without giving any grammar explanation.

As mentioned earlier, all three treatment groups were videotaped. A review of the videotapes showed that all teachers followed the procedures listed above. Also, in terms of frequency of teacher feedback to the students, there seems to have been no critical differences among the experimental groups.[3]

Tests

All tests consisted of a written production test (sentence completion) and a listening interpretation test (sentence level). Six tests (for three testing times and two types of tests [production and interpretation]) were created. All tests were hand-scored by the researcher. Scoring for the production tests as well as the interpretation tests was straightforward: 1 point for correct answers, 0 for incorrect answers.

Production test. The production tests required participants to fill in the blanks with appropriate verbs, according to the English cues provided. Six minutes were allowed to complete the production test. An example of a production test is as follows:

[3] The amount and quality of feedback as a potential intervening variable is one area that was not carefully controlled in previous studies, although it is important to the validity of all such studies. In the present study, all three experimental groups were videotaped and audio-recorded and therefore, the potential feedback effects on the present findings can and should be explored. In teacher-student interactions in both the SIP or SOP groups, only one instance of teacher feedback was observed. In each group, it occurred when a students was performing Task 1. When the teacher noticed an error in the student's speech, she corrected the error by simply giving the correct answer. In the MOP group, no feedback was observed in teacher-student interactions. No instance of uncorrected error was observed in teacher-student interactions in any group.

Complete the following sentences by filling in each blank with the most proper Japanese verb using English cues provided. If you do not know the answer, just skip the question.

1. Your mother GAVE you money. Haha ga okane o _____ -mashita.
   mother/SUBJ/money/OBJ/_____-PAST
   "(My) mother _____ (me) money."

The production tests each consisted of 17 questions, but five of them required subjects to produce verbs other than verbs of giving and receiving (thus these items served as distractors). The following lists six types of questions included in the production tests; each test included two questions of each type:

(**A** = family member or friend; **B** = teacher or middle-age guest; **G** = gift item).

Type 1: **A** *gave* you **G.** (*kureru*)
Type 2: You *gave* **G** to **A.** (*ageru*)
Type 3: You *got* **G** from **A.** (*morau*)
Type 4: You *gave* **G** to **B.** (*sashiageru*)
Type 5: You *got* **G** from **B.** (*itadaku*)
Type 6: **B** *gave* you **G.** (kudasaru)

The internal consistency reliability of the immediate and delayed productions tests (estimated using Kuder-Richardson formula 20, K-R20) indicated that both tests had relatively high internal-consistency reliability (using the Fisher *Z* transformation, 0.735 on average across three forms of the immediate test; 0.835 on average across three forms of the delayed test).

Interpretation Test. The interpretation tests required participants to choose an answer from three choices (i.e., correct answer, distractor, and "no idea") after listening to each sentence recorded on tape. Seven minutes were allowed to complete the interpretation test. An example of the interpretation test is as follows:

Yoko, your Japanese classmate, will tell you what she did or what happened to her last week. After you hear a sentence, choose A, B, or C. If she did not obviously mention the item in question, choose B. If you have no idea, choose C.

Listen: Tomodachi ni kukkii o morai-mashita.

Friend/DIR/cookies/OBJ/receive-PAST

"(I) received/got cookies from (my) friend."

Question: What did she get from her friend?

(a) Cookie (b) Did not mention (c) No idea

In the above example, first of all, the speaker (Yoko) describes an event in which she is involved, and therefore, she is describing the event from her own viewpoint. Second, the verb *morai mashita* (received/got) is the past tense of *morau* (receive), an informal verb which requires the receiver's view point. However, when beginning students hear this sentence, it is possible that they identify the meaning of all lexical items—*tomodachi* (friend), *kukkii* (cookie), and *morai mashita* (received/got)—in the order they hear them, but wrongly interpret the sentence as "(My) friend received/got cookies (from me)." If the students recall rule #3 (when the speaker describes an event in which s/he is involved, s/he normally describes the event from his/her own viewpoint) and rule #4 (*morau* requires the receiver's viewpoint), they would not make this type of mistake. In fact, when the researcher had previously taught the verbs of giving and receiving to beginning Japanese students, this was one of the most frequent aural interpretation errors.

The interpretation tests each consisted of 21 questions, but six of them required subjects to understand verbs other than verbs of giving and receiving (hence, these items serve as distractors). The rest of the 15 questions consisted of the following 15 types of questions.

Sentences Students Hear	*Sentences Students Read*	*Expected Answer*
Type 1: (I) gave G to A. (*ageru*)	What did she get from her A?	Not mentioned
Type 2: (I) gave G to A. (*ageru*)	What did her A give her?	Not mentioned
Type 3: (I) gave G to A. (*ageru*)	What did she give her A?	G
Type 4: (I) got G from A. (*morau*)	What did she give her A?	Not mentioned
Type 5: (I) got G from A. (*morau*)	What did her A give her?	G
Type 6: (I) got G from A. (*morau*)	What did she get from A?	G
Type 7: A gave (me) G. (*kureru*)	What did she give her A?	Not mentioned
Type 8: A gave (me) G. (*kureru*)	What did her A give her?	G

Type 9: (I) got G from B. (*itadaku*)	What did B get?	Not mentioned
Type 10: (I) got G from B. (*itadaku*)	What did she get from B?	G
Type 11: B gave (me) G. (*kudasaru*)	What did she get from B?	G
Type 12: B gave (me) G. (*kudasaru*)	What did B give her?	G
Type 13: B gave (me) G. (*kudasaru*)	What did she give B?	Not mentioned
Type 14: (I) gave G to B. (sashiageru)	What did she get from B?	Not mentioned
Type 15: (I) gave G to B. *(Sashiageru)*	What did she give B?	G

The internal consistency reliability of the immediate and delayed interpretation tests (estimated using K-R20) indicated that both tests had lower internal-consistency reliability than that for the production tests, especially the immediate interpretation test (using the Fisher *Z* transformation, 0.440 on average across three forms of the immediate test; 0.625 on average across three forms of the delayed test). This difference may have occurred because all the students scored relatively high on the immediate interpretation test, thus creating a restriction in the range of scores (see Brown, 1996, pp. 248-249).

Procedures

The experiment took place on February 6, 1999, four weeks after the Spring semester began. Since the three tests used in this study may not necessarily be of exactly the same difficulty, they were administered in a counterbalanced manner as follows:

1. For the pretest, students received their tests in three different rooms. One third of students in each of the four groups received Test A, the second third received Test B, and the last third received Test C.
2. After the pretest, all students went to the same room and received 15-minutes of explicit instruction on the target grammatical rules given by the researcher.
3. Then, the students went to one of the four classrooms where they received no practice, MOP, SOP, or SIP with the target verbs. Practice sessions of experimental groups were videotaped and audio-recorded.
4. After the instruction, students took an immediate posttest in three different rooms. Students who received Test A as the pretest took Test B, those who received Test B took Test C, and those who received version C took Test A.
5. The second posttest was conducted 12-13 days later to investigate the delayed effects, and also required shuffling of the tests so that each participant eventually took all three tests.
6. Shortly after the second posttest, a brief questionnaire was administered to check the students' knowledge of the target verbs prior to the experiment and their exposure to the verbs during the experiment.

RESULTS

The production tests had a possible score of 12 and the interpretation tests had a possible of 15. Means and standard deviations for the pretest and posttest scores on each appear in Table 4. Two ANOVAs were conducted on the pretest scores: one on the scores for the production test and one on the scores for the interpretation test. The analyses revealed no significant differences among the four groups before the treatment on either the production test ($F = 0.25$, $p = 0.858$) or the interpretation test ($F = 0.33$, $p = 0.804$). However, as shown in Table 4, some fairly large non-significant differences did exist among the means, and therefore, the posttest production and interpretation results were statistically analyzed by means of analysis of covariance (ANCOVA) procedures with pretest scores (i.e., prior knowledge) as the covariate. Since a total of two overall two-way analysis of covariance procedures were performed in this study, an approximate Bonferroni adjustment was made to correct the alpha level; the alpha level (0.05) was divided by the number of procedures (two), and all subsequent statistical tests were made at that level of significance (=0.025) to maintain (at least approximately) an experiment-wise alpha level of 0.05.

Table 4
Pretest and Posttest Means and Standard Deviations

	Explanation Only		Explanation + Mechanical Output		Explanation + Structured Output		Explanation + Structured Input	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Pretest								
Production	3.00	1.225	3.18	1.425	3.17	1.642	2.75	1.288
Interpretation	8.00	2.179	7.18	1.976	7.67	2.015	7.50	2.276
Immediate Post								
Production	7.33	3.742	9.12	2.446	10.33	1.723	9.75	2.701
Interpretation	10.44	2.404	12.71	1.572	12.33	2.348	13.00	1.706
Delayed Post								
Production	5.33	3.279	6.88	3.689	7.00	3.490	7.00	3.219
Interpretation	9.44	2.068	10.77	2.751	12.00	2.335	12.17	2.125

The Production Test

Table 5 summarizes the results of the overall two-way ANCOVA conducted on the immediate and delayed *production* posttests as repeated measures, which revealed no significant main effect for Treatment Group (as one independent variable) ($F = 1.48$, $p = 0.232$), a significant main effect for Time (Immediate vs. Delayed posttest—another independent variable)($F = 9.70$, $p = 0.003$), and no significant interaction between Treatment Group and Time ($F = 0.51$, $p = 0.676$). Adjusted means and standard errors for

the production pretest and posttest scores appear in Table 6. A visual representation of the adjusted means of the production tests is shown in Figure 1. Since the overall two-way ANCOVA conducted on the immediate and delayed *production* posttests as repeated measures did not reveal a significant main effect for Treatment Group, no follow-up one-way ANCOVA was conducted.

Table 5
Summary Table for Two-Way repeated Measures ANCOVA Using Pretest as the Covariate on the Immediate and Delayed PRODUCTION Posttests

Source of Variation	*df*	*SS*	*MS*	*F*	*p*
BETWEEN SUBJECTS					
Treatment Group	3	63.94	12.31	1.48	.232
Residual	45	646.07	14.36		
WITHIN SUBJECTS					
Time	1	38.56	38.56	9.70	.003
Treatment x Time	3	6.11	2.04	0.51	.676
Residual	45	178.91	3.98		

Table 6
Adjusted Means and Standard Errors for the PRODUCTION Pretest and Posttests

	Explanation Only		Explanation + Mechanical Output		Explanation + Structured Output		Explanation + Structured Input	
	M	*SE*	*M*	*SE*	*M*	*SE*	*M*	*SE*
Pretest	3.04		3.04		3.04		3.04	
Immediate Post	7.35	.866	9.06	.631	10.28	.751	9.87	.754
Delayed Post	5.36	1.134	6.80	.827	6.93	.983	7.17	.988

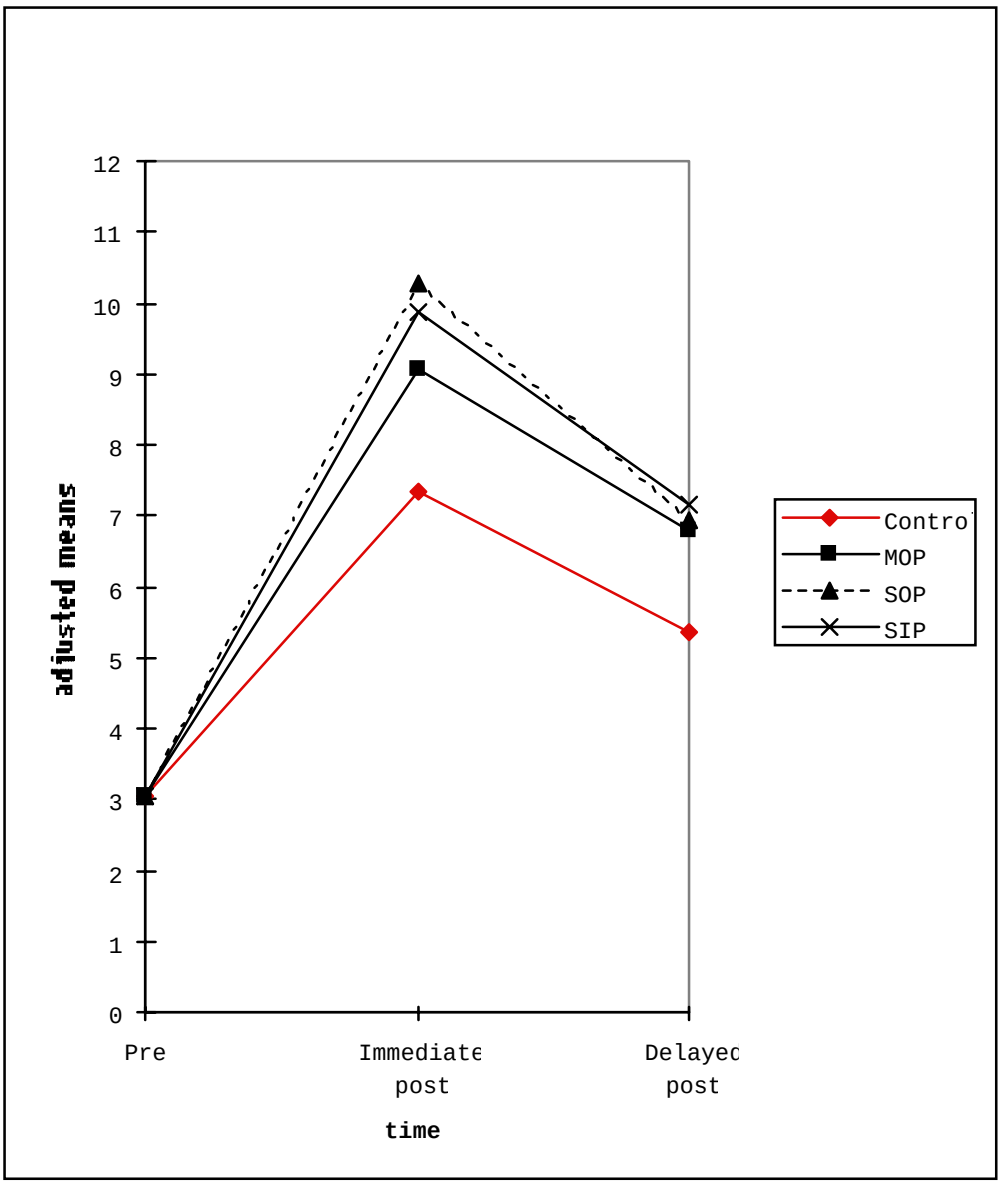

Figure 1. The interaction between treatment and time on the production test.

The Interpretation Test

Table 7 summarizes the results of the overall two-way ANCOVA procedures conducted on the immediate and delayed interpretation posttests. They revealed a significant main effect for Treatment Group ($F = 5.59$, $p = 0.02$), no significant main effect for Time ($F = 2.27$, $p = 0.139$), and no significant interaction between Treatment and Time ($F = 1.22$, $p = 0.314$). Adjusted means and standard errors for the interpretation pretest and posttest scores appear in Table 8. A visual representation of the adjusted means of the production tests is shown in Figure 2. Table 9 summarizes the adjusted means, standard errors, and the results of two follow-up one-way ANCOVAs

with the immediate and delayed interpretation posttests as dependent variables and treatment group as the independent variable and with pretest scores as the covariate.

Table 7
Summary Table for Two-Way Repeated Measures ANCOVA Using Pretest as the Covariate on the Immediate and Delayed INTERPRETATION Posttests

Source of Variation	*df*	*SS*	*MS*	*F*	*p*
BETWEEN SUBJECTS					
Treatment Group	3	93.04	31.01	5.59	.002
Residual	45	249.54	5.55		
WITHIN SUBJECTS					
Time	1	5.73	5.73	2.27	.139
Treatment x Time	3	9.20	3.07	1.22	.314
Residual	45	113.39	2.52		

Table 8
Adjusted Means and Standard Errors for the INTERPRETATION Pretest and Posttests

	Explanation Only		Explanation + Mechanical Output		Explanation + Structured Output		Explanation + Structured Input	
	M	*SE*	*M*	*SE*	*M*	*SE*	*M*	*SE*
Pretest	7.52		7.52		7.52		7.52	
Immediate Post	10.26	.608	12.84	.442	12.28	.524	13.01	.524
Delayed Post	9.21	.732	10.94	.532	11.93	.631	12.18	.631

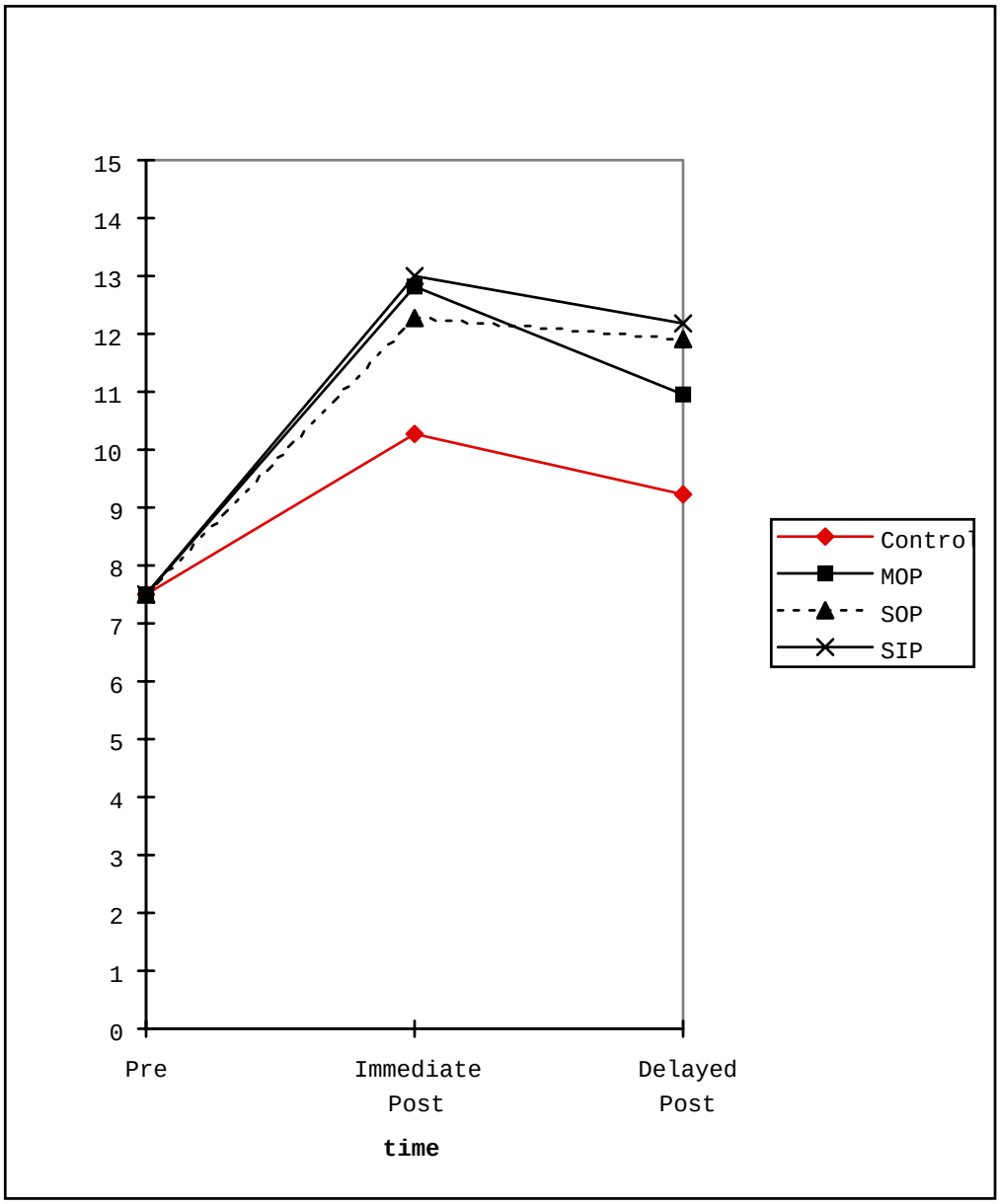

Figure 2. The interaction between treatment and time on the interpretation test

Table 9
Summary Table for Two One-Way ANCOVA Using Pretest as the Covariate on the Immediate and Delayed Interpretation Posttests

	Explanation Only		Explanation + Mechanical Drill		Explanation + Structured Output Practice		Explanation + Structured Input Practice		One-way ANCOVAs		Eta^2
	M	*SE*	*M*	*SE*	*M*	*SE*	*M*	*SE*	*F*	*p*	
Task											
IP	10.26	0.608	12.84	0.442	12.28	0.524	13.01	0.524	4.830	0.005	0.244
DP	9.21	0.732	10.94	0.532	11.93	0.631	12.18	0.631	3.808	0.016	0.202

IP=Immediate Test; DP=Delayed Test

The one-way ANCOVA conducted on the immediate interpretation posttest revealed significant differences among the four groups ($F = 4.830$, $p = 0.005$). Sidak and Bonferroni post-hoc comparisons were used to analyze each pair of adjusted means for the immediate interpretation posttest. The results of both sets of post-hoc comparisons were identical: a significant difference was found between the control group and the MOP group ($p = 0.008$) and between the control group and the SIP group ($p = 0.008$). No other comparisons proved statistically significant. The one-way ANCOVA conducted on the delayed interpretation posttest also revealed a significant difference ($F = 3.808$, $p = 0.016$). Sidak and Bonferroni post-hoc comparisons were used to compare each pair of adjusted means for the immediate interpretation posttest. The results of the both sets of post-hoc comparisons were identical: a significant difference was found between the control group and the SIP group ($p = 0.021$). No other comparisons proved statistically significant. Thus, although both the MOP group and the SIP group performed significantly better on the immediate interpretation test than the control group, the SIP group maintained the gain better than the MOP group. The Eta^2 values for the ANCOVAs shown in Table 9 indicate that the main effect for treatment group explains 24.4% of the variance for the immediate test and 20.2% of that for the delayed test.

DISCUSSION

In this section, I will discuss responses to the two research hypotheses posed earlier within the context of teaching the lexical and sociolinguistic rules of Japanese verbs of giving and receiving to students of second-semester Japanese.

Hypothesis 1: As an immediate follow-up to explicit explanation, SIP that encourages the learners to achieve form-meaning connections through interpretation is more effective than SOP that encourages such connections through production in enhancing learners' abilities to *interpret* the target verbs in a sentence-level discourse;

additionally, the former is as effective as the latter in enhancing learners' abilities to *produce* these verbs in the same level of discourse (an application of Cadierno, 1995; VanPatten & Cadierno, 1993).

The first part of the hypothesis regarding *interpretation* was not confirmed. Although the SIP group did perform better than the SOP group on interpretation tests, there was no significant difference in learners' performance between these groups. This finding does not suggest that SIP is more effective than SOP in enhancing learners' abilities to interpret the target verbs because the observed non-significant difference that existed between the SIP and SOP groups can only be interpreted as a chance fluctuation in means. However, it must be noted that, among the three treatment groups, only the SIP group performed significantly better than the control group (explanation only) on both the immediate and delayed interpretation posttests. In other words, the present study suggests that SIP may contribute to the observed significant gains on learners' abilities to interpret the target verbs. This finding partially confirms VanPatten and Oikkenon's (1996) finding that the regular processing instruction group performed significantly better than the explanation-only group both on the interpretation and production tests. Although their study investigated only short-term effects (no delayed tests were given), the present study suggests that the beneficial effect of SIP (in processing instruction) on how learners process input may be more enduring.

The second part of the first hypothesis in the present study regarding *production* was not confirmed either. There was no significant difference between the SIP and SOP groups, and neither group performed significantly better than the control group. In addition, as Table 5 and Figure 2 show, a significant drop in the over-all adjusted means was observed from the immediate to the delayed posttests.

Hypothesis 2: When output-oriented practice is given as an immediate follow-up to explicit explanation, the type of output practice (mechanical vs. meaningful/ communicative) does not significantly influence learners' abilities to interpret and produce the target verbs at a sentence-level discourse (an extension of VanPatten's SLA model).

The second hypothesis seems to be confirmed. With regard to *production*, neither the SOP group nor the MOP group performed significantly better than the control group on either the immediate or delayed posttests. Also, although the SOP group performed better than the MOP group, no significant difference was found between the SOP and MOP groups on these tests. In other words, the observed non-significant difference between these two groups can only be interpreted as a chance fluctuation. These findings suggest that, when a certain amount of production-based practice is given as an immediate

follow-up to explicit explanation, whether it is mechanical or meaningful/mechanical, the instructional effects on production may not be significantly different from each other and from an explanation-only control group in terms of production.

With regard to *interpretation*, while the SOP group did not perform significantly better than the control group on either the immediate or delayed posttests, the MOP group performed significantly better than the control group on the immediate posttest, although the instructional advantage of the MOP group demonstrated on the immediate posttest seems to have disappeared on the delayed posttest. Between the SOP and MOP groups, however, there was no significant difference on either the immediate or delayed posttests. In other words, the non-significant difference observed between these groups on either test can only be interpreted as a chance fluctuation in means. This finding also seems to support the second hypothesis.

Although the present results support the second hypothesis, the fact that the MOP group achieved the same level of improvement on interpretation as the SIP group—even if the effect tapered off—is interesting and unexpected. Why would the students in the MOP group achieve better than the explanation-only control group and also achieve the same level of improvement as the students in the SIP group on the immediate interpretation test? Research suggests that mechanical drills are "examples" of students engaging in implicit learning of the target rules and that a combination of explicit instruction and implicit learning may be better than either explicit instruction or implicit learning alone (N. Ellis, 1993; N. Ellis & Laporte, 1997). By analogy, it may be possible that, in the present study, explicit instruction helped the students of the MOP group focus their attention on target rules in the input and consequently enhanced their intake. However, without requiring an attempt to link forms and meaning, it may be that the portion of input that became intake, that which was stored in the learners' working memory, was not subsequently accommodated in their long-term memory. This interpretation may be compatible with DeKeyser's (1998) view of mechanical drills when they are given after explicit explanation. DeKeyser suggests that, from the perspective of cognitive skill theory, even if the learners have declarative knowledge gained from explicit explanation, without the linkage between form and meaning—or without an opportunity to use the language in communicative/meaningful contexts—no proceduralization of declarative knowledge takes place, and therefore, no knowledge is stored in long-term memory (pp. 52-53).

CONCLUSION

As a follow-up to VanPatten and Cadierno's studies, which were conducted within the context of teaching specific morphosyntactic rules in Spanish, the present study compared the instructional effects of three types of practice given as a follow-up to explicit explanation in teaching lexical and sociolinguistic rules of Japanese verbs of giving and receiving. Within certain limitations (e.g., the use of planned tests only), the present study observed the following: (a) when SIP or MOP is given as a follow-up to explicit explanation, they equally enhance how the learners process input or the amount of input converted to intake in the learners' head in the immediate future; however, (b) without an attempt to link forms and meaning through interpretation, the effect of MOP did not seem to be maintained or the portion of input that became intake did not seem to transfer to students' long-term memory. In other words, as for the ways learners process input, the present study suggests that the conversion from input to intake does not seem to require SIP, but the accommodation of intake into the learners' long-term memory seems to help. With regard to the improvement in what learners could access for future production, the present study observed no significant differences for any one of the treatment groups over the control group. One might ask what will happen, then, if SIP were to be followed by SOP? After all, supporters of processing instruction [PI] are not advocating that PI is a sole way of practicing the target grammar; in their view, PI should precede SOP whose primary role is to access the developing system for accuracy and fluency.

Issues concerning the instructional effects of practice type have both theoretical and pedagogical significance. However, as discussed earlier, the results concerning the relative effects of input vs. output practice are not consistent among previous studies. As Table 1 shows, one critical factor contributing to these inconclusive results is apparently methodological differences across the studies. Given the inconclusive results among recent studies that compared the effects of different types of practice, it is important to continue this line of research to learn more about the relative instructional advantages of various ways of attending to form. Future research should explore a variety of target grammatical rules, should employ prolonged engagement of observation, and should use both planned and unplanned tests. Such research should also be conducted in a variety of second languages.

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