Learning syntax through semantics: An instructional experiment[1]

Mark Sawyer
University of Hawai'i

Abstract

This experiment is part of a doctoral dissertation (Sawyer, 1995) that presents data from three tasks—novel verb elicited production, picture description, and acceptability judgments—to shed light on how adult Japanese learners of English represent the dative alternation, and how those representations can change as a result of instruction. The dissertation adopts the framework of Pinker's (1989) semantic structure theory, according to which the complex constraints on argument structure alternations are fundamentally semantic, and are learnable largely due Universal Grammar-based sensitivity to two levels of semantic criteria. These criteria are assumed to have their effect by means of two layers of lexical rules that operate on the semantic structures of verbs.

The particular experiment reported here is an instructional experiment exploring the teachability of semantics-syntax correspondences. One group of learners was given instruction on the semantic criteria underlying the dative alternation, while a second group was given comparable instruction on the locative alternation. A control group was given no relevant instruction. Although no statistically reliable differences were found among the groups, the results were in the expected direction. The group with instruction on the dative alternation became gradually more accurate, followed by the group with information on a related alternation, followed by the control group, whose judgments remained stable.

1. OUTLINE OF THE STUDY

The study reported in this paper is part of a research project (Sawyer, 1995) designed to understand how one domain of syntax is represented by adult second language learners, and how those learners' representations change over time in response to different types of input. The syntactic domain that has been chosen is the English dative construction, which is realized by either or both of the variants exemplified in (1) below.

(1) a. Ann gave the dictionary to Max.
b. Ann gave Max the dictionary.

The alternation between the two variants of the dative construction has been of long-standing interest to language acquisition theory, primarily because of the complex constraints on its productivity. Such partial productivity is argued to constitute a severe learnability problem, which requires explanation in any plausible theory of language acquisition. This study thus has the luxury of building on a substantial foundation of previous research on the dative alternation both in first language (henceforth L1) and second language (L2) acquisition.

Specifically, this study adopts a theoretical framework which emphasizes the regularities between the syntax and semantics associated with individual verbs. Building on the insights of numerous theoretical linguists who have given a prominent place to syntax-semantics correspondences, Pinker (1989) has developed an explicit psycholinguistic theory of the role of semantics-syntax linking regularities in language acquisition. Pinker provides a

detailed account of how the predictable links between semantic concepts (e.g., agent and patient) and grammatical concepts (e.g., subject and direct object) enable children to master the dative alternation and other similarly problematic alternations (e.g., passive, causative, and locative alternations).

In L2 acquisition, Pinker's (1989) ideas have been applied in work by Yoshinaga (1991), Bley-Vroman & Yoshinaga (1992)[2], and Wolfe-Quintero (1992). These studies have assessed the differences between native and non-native speaker task performance in relation to dative alternation from the perspective of the Fundamental Difference Hypothesis, or FDH (Bley-Vroman, 1989), which holds that child first language acquisition and adult second language acquisition proceed through fundamentally different processes. In addition to their contributions to L2 acquisition theory, these studies have also provided empirical corroboration of the viability of Pinker's theory, at least to the extent that the native speaker control groups have performed consistently with Pinker's predictions.

1.1 Learnability

The learnability approach to studying language acquisition focuses on the "logical problem of language acquisition," the assumption that language is logically not learnable on the basis of the limited types of input available to children. Therefore, learnability theorists attempt to discover learner-internal principles and mechanisms that can bridge the gap between the learner's experience and full adult competence in the language. Pinker's (1989) proposal is a prime example of theorizing within the learnability approach. The question of learnability in adult L2 is more controversial than in L1, because of considerable maturational and environmental differences, but it makes sense as a research strategy to begin with a continuity hypothesis, i.e., the assumption that the learning mechanisms available from early childhood continue to play some role throughout an individual's lifetime. To a large extent, the FDH represents an attempt to specify the ways in which the continuity hypothesis needs to be amended for adult L2 learners. The present research project attempts to contribute toward specifying differences between L1 and L2 learning mechanisms.

1.2 Teachability

While the learnability approach is a promising way to identify specific differences between uniformly successful L1 learners and generally unsuccessful L2 learners, such knowledge is not a satisfying end point of study. Ultimately, we are more interested in what the learner can do than what the learner cannot do. Recently, there has been considerable interest among L2 researchers concerning various techniques for inducing a *focus on form* by the learner, and what effects such inducements might have for the learning of various language forms. Much of this research highlights the relative advantages of explicit instruction vs. more indirect ways of making forms and principles salient to the learner (e.g., Carroll & Swain, 1993; Doughty, 1991; Fotos & Ellis, 1991; Tomasello & Herron, 1989; VanPatten & Cadierno, 1993; White, 1991), while another strand of teachability research concerns itself less

with how to instruct than with the timing of instruction, based on natural developmental sequences (Pienemann, 1989). The present experiment, motivated by the shortcomings of adult L2 learners in relation to the dative alternation, explores the possibility of narrowing the gap between them and native speakers through instruction. Such an approach can also be expected to provide insights into the concept of learnability itself.

1.3 Argument structure

As the learning of the English dative structures and how they alternate is one case of the acquisition of argument structure, a rudimentary understanding of argument structure is necessary to make sense of the connection between the dative alternation and the learnability and teachability issues addressed in this study. The obligatory semantic roles in a sentence are known as *arguments*, and they are determined by the verb which heads the sentence. *Argument structure*, also known as predicate argument structures, argument frames, and subcategorization frames, has a range of meanings within different theories, but most generally refers to the structural information included in the lexical entry of a verb. This information crucially includes the semantic roles of arguments entailed by the verb, such as agent and recipient, and their corresponding syntactic relations, such as subject and direct object. Argument structure has played an increasingly important role in modern syntactic theory, as linguists have discovered that many facts of grammar can be explained by examining the properties of words, especially verbs.

The dative alternation is an alternation between two argument structures. In the prepositional dative (hereafter PD) sentence *Ann gave a dictionary to Max*, the theme *a dictionary* is linked to the direct object and the recipient *Max* is linked to an oblique object. In the double-object dative (hereafter DOD) sentence *Ann gave Max a dictionary*, the recipient *Max* is linked to the direct object position and the theme *a dictionary* is linked to a second object position. Figure 1 illustrates.

PD sentence:	Ann	gave	a dictionary	to Max
Semantic roles:	agent		theme	goal
Syntactic relations:	subject		object	oblique object
DOD sentence:	Ann	gave	Max	a dictionary
Semantic roles:	agent		goal	theme
Syntactic relations:	subject		object 1	object 2

Figure 1. Semantics-syntax links for PD and DOD sentences

As mentioned earlier, the dative alternation represents a severe learnability problem, due to the complex constraints on its productivity. While the verb *give* and many other dative verbs can be paired equally well with either of the two argument structures, some verbs sound natural in only one of the two structures. For example, in (2) only the PD sentence is good, while in (3) only the DOD form is acceptable.

(2) a. Ann pushed the dictionary to Max.
b. *Ann pushed Max the dictionary.
(3) a. *Ann refused the dictionary to Max
b. Ann refused Max the dictionary.

Accounting for this partial productivity has been a major concern for theorists from a wide range of perspectives: from those who emphasize the role of non-linguistic cognition (Lakoff, 1987), to those who favor autonomous formal syntactic principles (Hale & Keyser, 1986), to connectionists who reject the symbol-processing model of mind (McClelland, 1986). The explanation elaborated by Pinker (1989), and adopted here, is that productivity is constrained by two levels of semantic criteria: a broad one that limits DOD forms to sentences that feature a potential change of possession; and narrow ones that limit DOD forms further to ten narrow classes of verbs, the members of each class being very closely related in their semantics. Although much further discussion of the broad- and narrow-range classes is necessary for a complete understanding of the present study, space considerations do not permit it here; instead, refer to Pinker (1989), Sawyer (1995), and/or the Appendices of this paper.

2. THE EXPERIMENT

Earlier experiments, reported in Sawyer (1995), demonstrated that Japanese learners of English do have at least partial access to the semantic criteria that govern the English dative alternation. Nevertheless, their sensitivity to these criteria is far from native-like; on elicited production and acceptability judgment tasks, Japanese adult NNSs seemed overly conservative in producing and judging dativizable DOD sentences, but when given a chance on a picture description task to produce both dative variants if considered appropriate, they overgeneralized. As discussed earlier, the learners' predominant conservatism is not a bad strategy in the case of the English dative alternation, but it does limit the learners' expressiveness. Furthermore, if this conservatism turns out to be a more general orientation to unfamiliar language features, it is likely to slow down the their progress considerably. Indeed, this is the main reason why strict conservatism is an unattractive solution to the learnability problem. On the other hand, the few learners who seemed to treat the dative alternation as fully productive are in a worse position, since their future input will never provide them with evidence that they are overgeneralizing.

Given the apparent fact that Japanese learners of English cannot "get" the dative alternation without a clearer sense of the criteria governing it, this experiment was designed to find out what effects would be yielded by the provision of explicit information concerning those criteria. In other words, if the criteria are not learnable for adult learners in the sense that they are claimed to be for L1 children, are they teachable through formal instruction? Besides shedding light on the L2 development of argument structure, such an experiment should

contribute to the ongoing body of research on 'focus on form', concerning the relative effects of different ways of drawing learners' attention to particular features of the language code.

Two previous studies have attempted, both with some success, to teach aspects of the dative alternation. Fotos & Ellis (1991) compared the effects of a "traditional grammar lesson" (teacher-fronted information giving) with a "communicative grammar task" for learning the appropriate argument structure possibilities for ten dative verbs. In the communicative grammar task, learners were put into groups of four members, each member being given a task card with five sentences and an indication of each sentence's grammaticality. The learners then read their cards to each other. Based on this exchanged information, they filled in worksheets with the possible correct order(s) of direct and indirect objects for each of the ten verbs. The final step was to write three rules concerning the orders, which were: (1) the indirect object may be placed either after the verb or as a prepositional phrase at the end of the sentence; (2) the indirect object may only appear as a prepositional phrase; (3) the indirect object must be placed immediately after the verb. Fotos & Ellis' results were that both of the instructional groups made significant gains while the control group did not; however, there were no reliable differences between the grammar lesson and grammar task groups, and both types of instruction faded somewhat by the delayed post-test two weeks later. Most importantly in contrast to the present experiment, Fotos & Ellis' study was strongly instance-based. The learners were presented with ten verbs, and were tested on those same ten verbs. No abstraction or generalization was facilitated; memory was necessary and sufficient for successful performance.

Carroll & Swain's (1993) study was more criteria-based, at least for one of their five learning conditions. In their experiment, they presented learners (individually) with dative sentences; the learners were instructed to provide the corresponding sentence in the other argument structure if they believed the particular verb to be alternating. The five learning conditions were based on different types of feedback: (1) Explicit Hypothesis Rejection, which meant that learners were given a semantic or morphophonological reason when their response was wrong; (2) Explicit Utterance Rejection, in which learners were told directly that their response was wrong; (3) Modeling/Implicit Negative Feedback, in which learners were not told that they were wrong but instead had the correct response modeled for them; (4) Indirect Metalinguistic Feedback, in which learners were asked if they were sure of their response only in case it was wrong; and (5) no feedback. The Explicit Hypothesis Rejection group did the best, both during the experimental session and in the two recall sessions (immediately after the experimental session and then again one week later). However, all the other feedback groups also did better than the control group. Carroll & Swain's study was more ambitious than Fotos & Ellis' (1991), in that Carroll & Swain tried (with success) to show that their treatment was generalizable to new instances. However, the extended feedback sessions with individual learners featured in Carroll & Swain's experiment are not practical in most L2 instruction, so it

still remains to be demonstrated that usable knowledge about the dative alternation can be instilled through classroom instructional activities.

The present experiment combines the classroom format of Fotos & Ellis (1993) with the criteria-based condition of Carroll & Swain (1991). The basic assumption underlying the instructional treatment in Experiment 4 is that 'noticing' (in the sense of Schmidt (e.g., 1992)) is necessary for learning to take place. In other words, the learner must focus some attention on the relevant language feature and have a subjective experience of having detected it. For Schmidt's theory, the verification of the subjective experience of noticing is an important and difficult issue, but for the present experiment, what is more important is a corollary to the "noticing hypothesis," that more noticing leads to more learning. Although Schmidt claims that actual understanding is not necessary for learning, understanding does represent a higher level of noticing, and it could produce a crucial difference in learning in the present experiment. One instructional group (Locative Group) was instructed on the criteria underlying the locative alternation, exemplified in (4).

(4) a. Max sprayed water on the plants.
b. Max sprayed the plants with water..

(5) a. Ann poured water on the plants.
b. *Ann poured the plants with water.

(6) a. *Yoshiko drenched water on the plants.
b. Yoshiko drenched the plants with water.

The Locative Group thus had plenty of opportunity to notice that argument structures do alternate in English, and that there are constraints on these alternations, but they had no access to the relevant criteria governing the alternation to be tested (dative alternation). The other group (Dative Group) was first given the means to discover the relevant criteria underlying the dative alternation, and then, to the extent they fell short, they received the necessary information directly. The Control Group simply judged sentences at times corresponding to the instructional groups' pre-test, post-test, and delayed post-test, with no relevant instructional input. Since the Control Group performed only one task (an acceptability judgment task) three times, the other experimental tasks (elicited production and picture description) also have to be construed as part of the two instructional groups' treatment.

2.1 Hypothesis

H1. The instructional groups will become more discriminating in their DOD performance in relation to Alternating and PD-only verbs.

In other words, the instructional groups should produce more DOD forms with Alternating verbs (those which meet the semantic criteria and fall into a dativizable subclass) than with PD-only verbs (those which do not fall into a dativizable subclass). The test of this

hypothesis will be (T)ime by Verb (C)lass by (I)nstructional Group interactions, with the following expected order of discrimination: Dative Group > Locative Group > Control Group.

3. METHOD

3.1 Subjects

The Japanese subjects composing the two instructional groups (Dative and Locative) consisted of 32 students[3] sent from Japanese companies to a 10-week program designed to prepare them for extended overseas work assignments. There were 31 males and 1 female, average age 29. This group took the TOEFL, or Test of English as a Foreign Language (Educational Testing Service, 1994) on June 29. Their TOEFL results are as follows: mean=472; standard deviation=45; range=380-550. Additionally, there was a Control group, receiving no relevant instructional treatment; this group consisted of students from a similar but separate summer intensive English program on the same Japanese university campus. Their TOEFL scores were somewhat higher than those of the instructional groups, with a smaller standard deviation, even after eliminating the higher proficiency (less comparable) students from the analysis. The comparative TOEFL information is presented in Table 1.

Table 1. Group TOEFL statistics for Experimental subjects

GROUP	N	MEAN	S.D.	RANGE
Dative	18	472	46	380-550
Locative	14	473	45	393-537
Control	18	519	17	460-550

The subjects in the Control Group, like those in the instructional groups, were all Japanese company employees who had been dispatched to the university programs. The data analyzed was from the 18 students with proficiency levels closest to the Instructional groups. Also in common with the instructional groups, few Control Group subjects had extensive international experience. The Control Group mean age (26) was slightly younger than that of the instructional groups (29). The subjects of all groups were predominantly male; there was one woman in the Dative Group, and two in the Control group.

Although the Control Group was an intact group, the instructional groups were randomly assigned to one or the other of the treatments based on a matched pairs technique. Pairs of subjects were matched based on their combined scores on TOEFL and TOEIC (Test of English for International Communication)[4]. Because of subjects that needed to be dropped from the analysis (see Footnote 3), the Locative Group was left smaller than the Dative Group by four subjects. The final N-sizes were Dative=18; Locative=14; and Control=18.

3.2 Instructional treatments

Two parallel instructional treatments were developed, one for teaching the broad and narrow semantic principles underlying the dative alternation, and one for teaching the corresponding principles underlying the locative alternation. The treatments were thus quite parallel, differing only in the particular argument alternation and the verbs that enter into the alternation. However, crucially, the dative instruction represented the alternation under investigation, while the locative instruction could be expected merely to attune learners to the greater possibilities of alternation than they had previously realized. There were two sessions, each one on a Friday morning of two consecutive weeks. The first session, dealing with broad-range rules, was 40 minute long; the second session, presenting the narrow-range rules, was 80 minutes long. Since all sessions were conducted by the present researcher, the groups underwent the treatment sequentially, with the order of treatment counterbalanced across the two weeks. The instructional treatments were not perceived as especially unusual because the students' curriculum included a grammar-related lesson taught by the present researcher every Friday morning during their course of study. However, the students knew these sessions were for research as well as pedagogical purposes, and by the time of the instructional sessions they were more or less aware of a special priority given to argument structure alternations.

3.3 Materials

For each group, two sets of worksheets were developed. These are included as Appendices A–D. For the Dative Group, the first set of worksheets included numerous examples of groups of sentences whose grammaticality hinged on whether the Possession Constraint was violated or not, and provided spaces for subjects to try to test out hypotheses. For the Locative Group, the first set of worksheets provided parallel examples focusing on whether verbs expressed change of location (licensing the "content-oriented" argument structure), or change of state (licensing the "container-oriented" argument structure).

The worksheets for the second instructional sessions focused on the dative and locative narrow-range classes, respectively. In each case, the first page provided verbs grouped together to show the grammatical consequences they share, and the second page featured a task for categorizing verbs into narrow conflation classes.

3.4 Procedures

The general overall procedure was to proceed through each chunk of material on the worksheet set in three stages. In the first stage, the subjects would spend a few minutes individually trying to formulate reasons for the (non-)grammaticality of a small set of sentences. In the second stage, they would discuss their hypotheses with one or two partners. Finally, in the third stage, the experimenter would elicit responses from the group as a whole. If a preferred answer did not emerge from the groups, the experimenter would provide it.

The materials were organized so as to simulate, very roughly, the learning mechanisms that Pinker (1989) suggests are used by children to learn argument structure alternations. As Pinker's mechanisms rely heavily on hypothesis testing, so did the learning procedures here.

In both the first and second instructional sessions, a main activity was to look at semantically similar verbs with differing grammaticality, in order to identify what part of the semantic structure of the verbs must be relevant to allowing the particular grammatical form. This approach is a variation of what Pinker calls "Conflation Class Skeleton Building Through Reverse Linking." Pinker's idea is that children register verbs that appear in similar grammatical patterns in order to began to make rough inferences of what meaning elements they have in common; in the present approach, adults can make quicker work of this because they can use negative evidence (provided saliently in the worksheets) to ferret out semantic differences which might account for the obvious grammatical difference. By inferring that, for example, you cannot say "I sent Florida the letter" because Florida, being inanimate, is clearly not capable of receiving, one can easily infer that the DOD sentences have potential receivers, and thus involve change in possession. This serves as a shortcut for the positive-evidence based categorization process that Pinker calls "Conflation Class Completion Through Lexical Abstraction." In the present experiment, multiple salient examples of the similar behavior of verbs from the same classes, and the adult subjects' better developed ability to abstract, made it possible to mimic this process within a very limited period of time.

In breaking down broad-range classes into narrow-range classes, Pinker suggests that a mechanism of "Parameterization of Idiosyncratic Lexical Information" is at work, by which children manage to abstract particular properties that small groups of verbs all share in their meanings, but with different values or settings of that property. For example, children need to figure out that *scream*, *shout*, and *whisper*, though not all sharing a particular manner, all do share the fact that some MANNER of speaking is specified, unlike *tell*, which belongs to a different class. The particular different manners are irrelevant (they are considered the idiosyncratic, grammatically inconsequential parts of verb meanings), but the presence of MANNER is crucial. This mechanism putatively allows children to ignore lexical information that is not syntactically relevant, in order to focus on the semantic features that do make a syntactic difference by defining a narrow conflation class. In the present experiment, a more direct approach was taken, first by having the learners determine the properties shared by groups of verbs (in closely related sentential contexts) that distinguished them, semantically and in terms of grammaticality, from superficially similar groups of verbs. Then the learners had to search explicitly for the non-idiosyncratic lexical information that formed the cores of all dative narrow conflation classes. Their actual task was to categorize thirty verbs into fifteen narrow conflation classes, two verbs per category, and then to try to explicitly characterize the commonality in each pair of verbs.

Since pilot testing had shown that the categorization of thirty verbs into fifteen classes is a difficult task, even for native speakers, the subjects' task was simplified by having three of the fifteen categories already completed for them, and having four more categories begun with one of the two verbs placed into them. The completed and half-completed categories varied for each member of the two- or three-person group in jigsaw fashion, so that when the group-work

stage began, the task became substantially simplified. In this way, every subject was able to work out all the categories within the existing time constraints. By making use of the different information already provided on other group members' worksheets, each learner was virtually guaranteed of arriving at the appropriate classes. In the second part of that task, deciding on suitable labels for each of the classes, subjects had considerable difficulty in articulating characterizations of the categories that they had created, but seemed satisfied with their (correct) choices of the verbs that compose them.

3.5 Measures of the effects of instruction

One week after the second instructional session, an acceptability judgment task was administered to the Dative, Locative, and Control groups for the second time. The following week, a picture description task was re-administered to the Dative and Locative groups, and each member of those two groups also did an elicited production task again from one to five days after that. Next, all three groups did the acceptability judgment task one more time as a delayed post-test, four weeks after the instructional had been completed. The organization of the entire data collection is outlined in Table 2.

Table 2. Outline of data collection activities

Week	Activity	Subjects
1	Elicited Production	NS, NNS (Dat, Loc)
2	Picture Description	NS, NNS (Dat, Loc)
3	Acceptability Judgments	NS, NNS (Dat, Loc, Con)
4	Instructional Treatment 1 (BRRs)	Dat, Loc
5	Instructional Treatment 2 (NRRs)	Dat, Loc
6	Acceptability Judgments 2	Dat, Loc, Con
7	Picture Description 2	Dat, Loc
8	Elicited Production 2	Dat, Loc
9	Acceptability Judgments 3	Dat, Loc, Con
10	Debriefing	Dat, Loc, Con
10	Picture Description 3	Dat, Loc
10	Acceptability Judgments 4	Dat, Loc

3.6 Analysis

An overall 1 by 3 repeated measures ANOVA was performed on subjects' averaged DOD ratings/production. The between-subject variable was (I)nstructional Group, with three levels (Dative, Locative, Control) for the acceptability judgment task and two (Dative, Locative) for the remaining two tasks. The within-subject variables were (T)ime and verb (C)lass type. The Time variable had three levels for the acceptability judgment (Pre, Post, and Delayed) and picture description (Pre, Post1, Post2) tasks, and two levels (Pre, Post) for the elicited

production task. The Class variable in the overall analysis had two levels: (Alternating, PD-only). The alpha level was set at .05 for all comparisons.

4. RESULTS

4.1 Acceptability judgments

For H1 to be confirmed on the acceptability judgment task, the instructional groups would have to become more discriminating by gradually rating DOD forms higher when they contained verbs from dativizable (Alternating) verb subclasses, and lower when they featured verbs from non-dativizable (PD-only) subclasses. H1 was not confirmed for the acceptability judgment task. As shown in Figure 2, the Time by Class by Instructional Group interaction was non-significant. There was a main effect for Instructional Group, $F(2, 47) = 5.13$, $p < .0096$, caused by overall higher DOD ratings by the two instructed groups than by the control group: DAT=4.51; LOC=4.24; CON=3.73. The main effect for Class, $F(1, 47) = 13.48$, $p < .0006$, reflected the fact that all groups appropriately rated the Alternating verbs higher than the PD-only verbs at each time: overall Alt=4.41 vs. PDO=3.90.

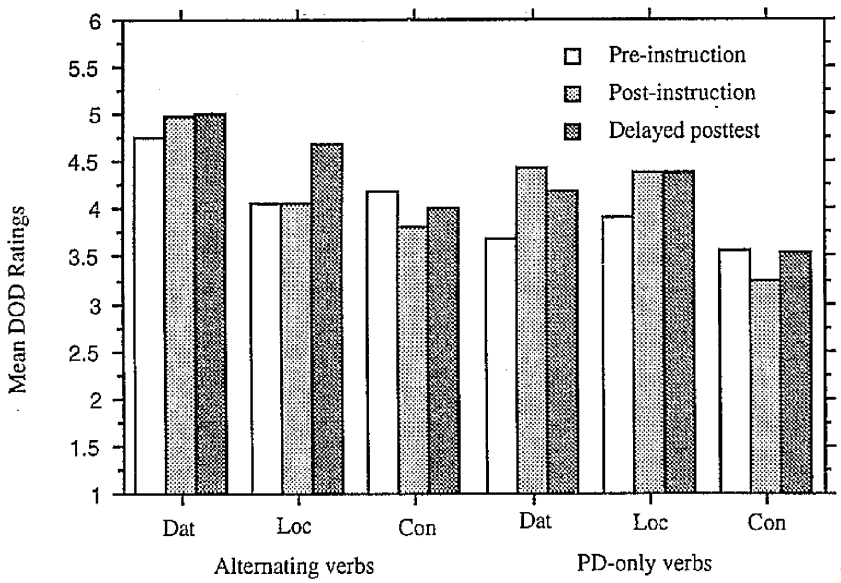

Figure 1. Mean DOD ratings by Class type and Instruction group

Figure 1 makes clear that one reason for the lack of Time by Class by Instruction interaction was the inequality of the groups at Time 1. Despite the efforts that were made to ensure comparable groups, the Dative Group was already much more accepting of Alternating verbs at Time 1. Although this group maintained their advantage over the other two groups at the posttest and delayed posttest, their overall progress was not impressive. Their 5.0 average is still far from the native speaker mean of 5.53 (see Sawyer, 1995 for details). Both the

Dative Group and the Locative Group became more accepting of both kinds of sentences, whereas the Control Group remained relatively stable and conservative on both kinds of sentences.

4.1.2 Post-debriefing comparison

Motivated by a concern that the two instructional sessions might be insufficient for learning in usable fashion the complex rules governing the dative alternation, a fourth administration of the grammaticality judgment task (as well as a third administration of the picture description task) was done three days after the debriefing. The thirty-minute debriefing had provided to both groups all the relevant facts on both the dative and locative alternations. At this time a Class by Instructional Group interaction effect was obtained, $F(1, 30) = 5.71$, $p < .0233$. As can be seen in Figure 2, the Dative Group rated the Alternating verbs only slightly higher than the Locative Group did, but began to recover from their overgeneralizations on PD-only verbs. Their comparative means on these verbs between the Delayed Posttest and the Post-debriefing test were 4.19 down to 3.66, whereas the Locative Group increased slightly from 4.39 to 4.51.

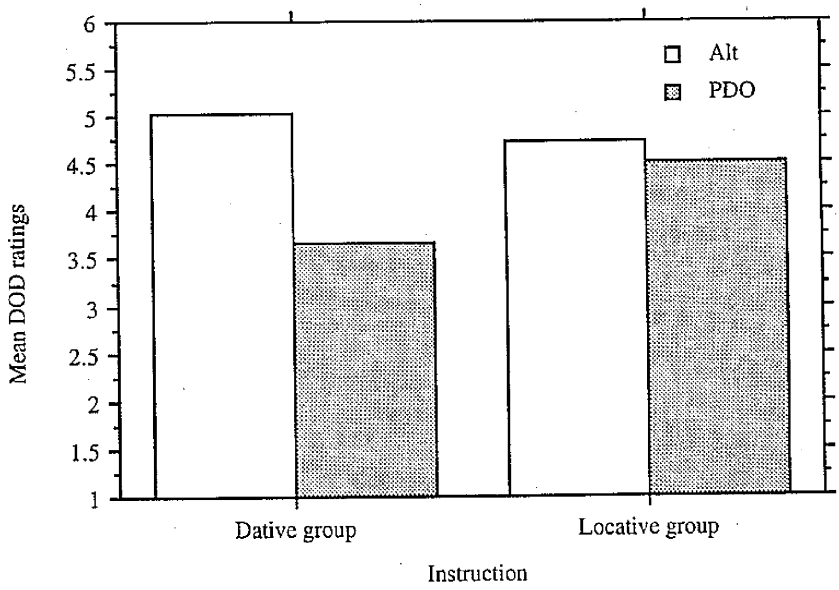

Figure 2. Mean DOD ratings for Alternating and PD-only sentences, post-debriefing

4.2 Picture description task

The picture description task was done only by the two instructional groups. The post-instruction task was administered two weeks after the second instructional session, and the third administration of the task was after the debriefing session. For H1 to be confirmed, the instructional groups would have had to gradually use more DOD forms when describing

pictures that called for a dativizable verbs, and fewer for pictures calling for a PD-only verb. There were two ways of scoring the task, since subjects were asked to describe the pictures in as many ways as appropriate (up to three). There were no reliable differences of any type in the analysis of the "first choice" data, because production remained low for DOD forms as "first choice" in all conditions. In any case, the "any choice" data is more relevant to determine if the NNSs came to avoid producing ungrammatical sentences as their second and third choices.

Using the "any choice" criterion, there was no Time by Class by Instructional group interaction effect needed to support H1, but there were several other statistically reliable differences. A main effect for Class, $F(1, 30) = 19.19$, $p < .0003$, showed that both groups preferred PD sentences overall, and a Class by Instruction effect, $F(1, 30) = 10.85$, $p < .0025$, indicated, as seen in Figure 3 that the Dative Group maintained a comparable DOD production level to the Locative Group with ungrammatical PD-only verbs, while producing more grammatical DOD sentences. Finally, a Time by Class interaction, $F(2, 30) = 4.67$, $p < .0131$, as illustrated in Figure 4, demonstrated that both groups improved in their discrimination between Alternating and PD-only verbs over Time.

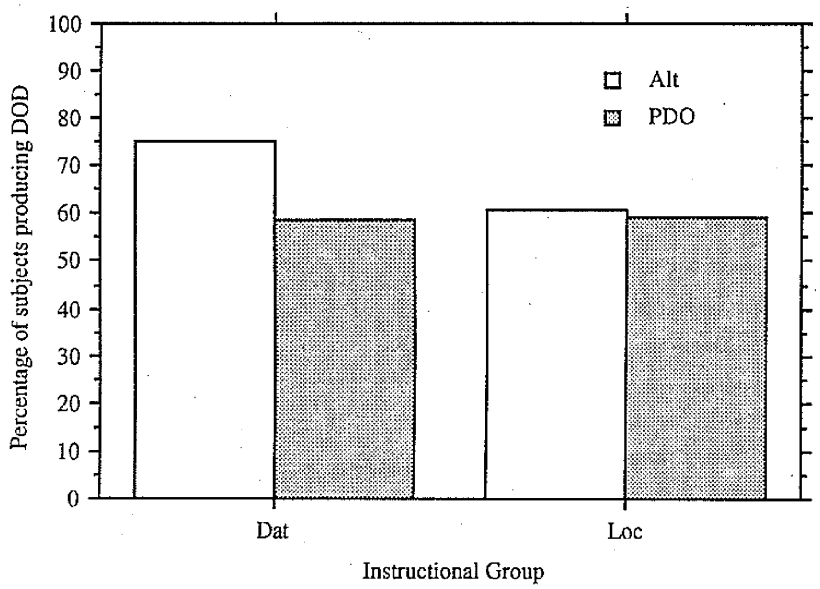

Figure 3. DOD production with Alt and PD-only verbs ("any choice")

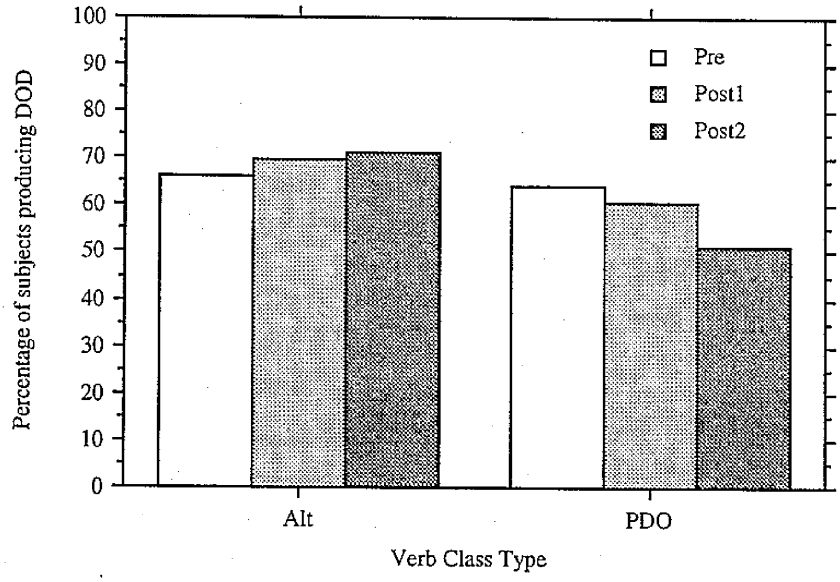

Figure 4. DOD production ("any choice"), Time by Verb Class Type interaction

Figure 5 shows that even though the relevant interaction effect was not statistically significant, the Dative Group did end up with better discrimination between Alternating and PD-only verbs than did the Locative Group.

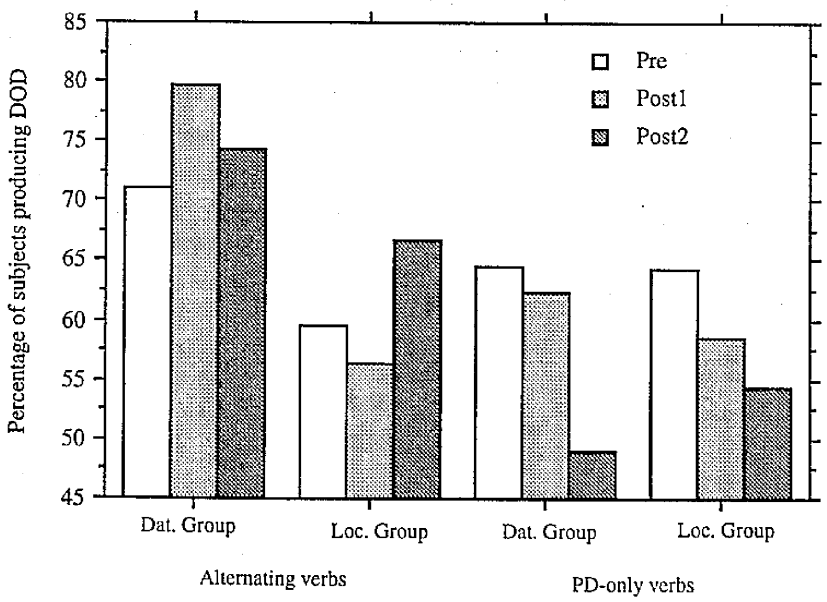

Figure 5. DOD production with Alt and PD-only verbs ("any choice"),
Time by Verb Class Type by Instructional Group interaction

4.3 Elicited Production

For H1 to be supported on the elicited production task, the instructional groups would have to gradually produce more DOD forms with made-up verbs that fell into dativizable subclasses (those describing ballistic motion) than with made-up verbs falling into PD-only subclasses (those describing continuous motion). The results from the pre- and post-instruction elicited production tasks do not support H1, as no Time by Class by Instruction interaction was found. A main effect for Instruction, $F(1, 30) = 4.89$, $p < .0348$, was due to the fact the Locative Group was more willing than the Dative Group to produce DOD sentences with novel verbs, regardless of the type of verb or recipient. The overall mean percentages of production were 12% for the Dative Group vs. 30% for the Locative Group.

A main effect for Class, $F(1, 30) = 14.66$, $p < .0006$, indicated that both groups were more willing overall to produce DOD sentences with "ballistic motion" than with "continuous motion" verbs (24% vs. 16%). Correspondingly, a main effect for Recipient, $F(2, 30) = 13.74$, $p < .0001$, showed that learners were more productive with DOD forms when the recipients were animate than when they were inanimate. Overall means were: Self=28%; Animate=20%; Inanimate=13%. The two effects simply confirmed that the NRR and BRR sensitivity revealed in the pre-instruction elicited production task did not disappear over time.

An interaction effect of Time by Origin by Instructional Group, $F(2, 30) = 5.23$, $p < .008$, was due to a large gap between the Locative Group and the Dative Group in production of DOD forms with real verbs on the post-test (14% vs. 45%). This is shown in Figure 6. A reason for this may well be that one differential effect of the two groups' instruction was to alert the Locative Group to the fact that more alternations were possible than they were yet aware of, while warning the Dative Group that the alternation was restricted in particular ways.

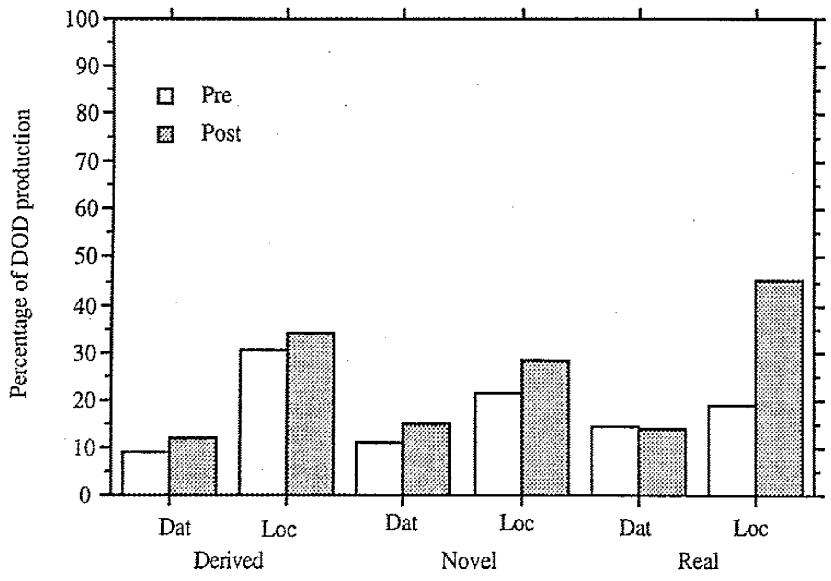

Figure 6. DOD production with novel verbs, T x O x I interaction

An Origin by Recipient interaction, $F(4, 30) = 3.20$, $p < .0155$, indicated that the combination of Real verbs (*toss* and *push*) and "self" as Recipient encourages DOD production more than other combinations. This finding, depicted graphically in Figure 7, is interesting because it seems to suggest that even with NNSs, particular associations determine their use of DOD forms. Their general order of preference for DOD forms for self as recipient, then animate, then inanimate recipients is consistent with studies of L1 children, but within that general trend they make no distinction among derived (*tube, pan*), novel (*norp, doak*), and real (*push, toss*), except when self is the recipient. Thus, despite their limited experience with DOD forms, their production already reflects the statistical trend toward more DOD use with self as recipient. The fact that they do not generalize to novel and derived nouns is likely due to the impossibility of having formed associations between any of these verbs and particular argument structures.

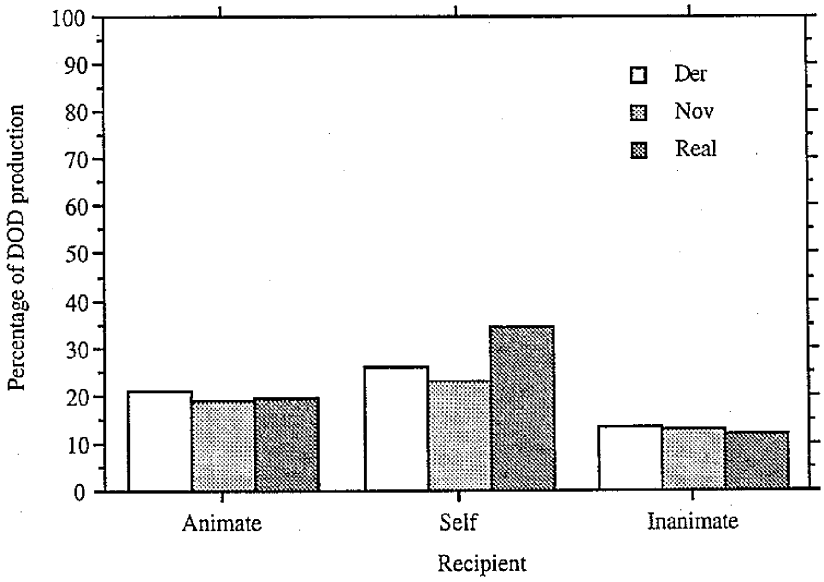

Figure 7. DOD production with novel verbs, O x R interaction

A Class by Recipient interaction, $F(2, 30) = 3.17$, $p < .0492$, as shown in Figure 8, implies that the "ballistic" vs. "continuous" distinction is most vivid when Self is the recipient. As indirect corroboration of this result, several subjects apparently construed the "continuous motion" actions as not requiring them to receive the objects, such that the objects sometimes fell off the table in front of the subject before the subject reacted.

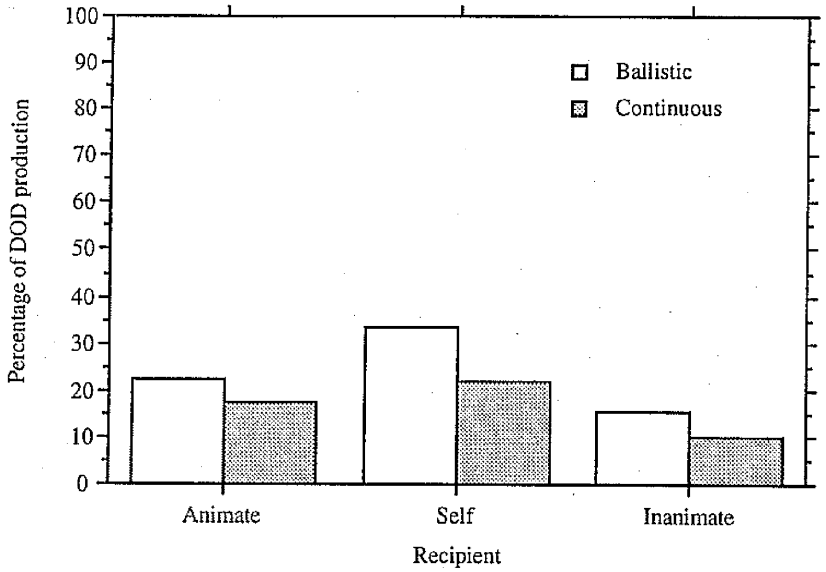

Figure 8. DOD production with novel verbs, C x R interaction

The final statistically reliable effect, the three-way interaction between Class and Recipient and Instructional Group, $F(2, 30) = 3.25$, $p < .0456$, was due to the Dative Group's performance with respect to inanimate recipients. The Dative Group (appropriately) broke from the pattern of producing more DOD sentences with "ballistic" verbs than with "continuous" verbs only when such a sentence would violate the possession constraint. Figure 12 illustrates.

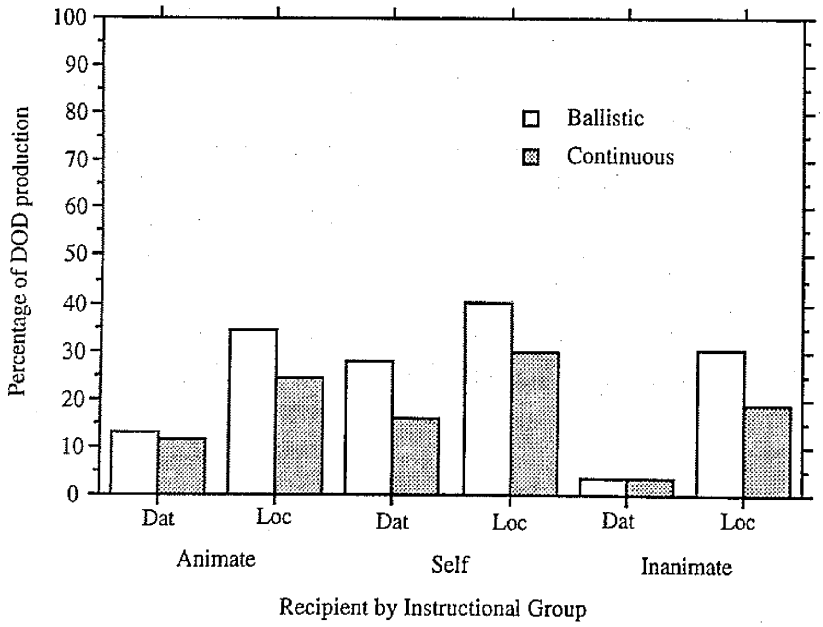

Figure 12. DOD production with novel verbs, C x R x I interaction

5. DISCUSSION

None of the three tasks turned up unambiguous evidence of learning from the instructional treatment, except for the post-debriefing administration of the acceptability judgment task. Some obvious contributing reasons for the weak results were the pre-existing differences between the Dative Group and the Locative Group at the outset of the study, the small and uneven N-sizes of the groups, the small amount of instruction in relation to the complexity of the principles to be learned, and the subtlety of the learning being measured (on acceptability judgments for example, the overall distinction between DOD sentences with Alternating and PD-only verbs made by NSs was only 5.53 vs. 4.07). Considering these factors, the studies of Fotos & Ellis (1991) and Carroll & Swain (1993) were more realistic.

There may also be more fundamental reasons for the non-results. One possibility is that the dative alternation is in some sense unteachable. Long (1991), for example, has argued that for form-focused instruction to be effective, the problem addressed by the instruction must be (1) pervasive; (2) persistent; and (3) remediable. It is very difficult to evaluate the dative alternation in relation to these criteria. Dative structures are pervasive in everyday language, but if learners use DOD with *give* and *tell* and a few other well-rehearsed very familiar verbs, and PD with all the rest, there are few situations where they will run into trouble. It could be that for L2 learners, optional syntax like the dative alternation is anything but pervasive. The question of persistence is closely related. Persistent errors are generally considered those that have been automatized, probably because they involve frequently occurring obligatory language features. In one sense, DOD under-utilization is persistent, since there are probably a multitude of contexts when NSs would use a DOD but an NNS would not (although this has yet to be verified), but this NS-NNS difference rarely if ever draws attention to itself. Many other avoidance (and ignorance) phenomena would also fall into this category. If the learners do not perceive themselves as having a pervasive and persistent problem, their motivation to work on it is correspondingly reduced.

The issue of remediability is closely tied to one conception of learnability and teachability. Pienemann (1989) has stated the case most forcefully by claiming specific absolute and universal psycholinguistic processing constraints that delimit the possibilities of instruction. Although no one has proposed a psycholinguistic constraint on learning the dative alternation, it may be that adult general problem-solving abilities are poorly suited to replacing the semantic sensitivity that children seem to have, possibility by virtue of UG. Framing it in a more positive way, in a discussion of implicit learning, Long (1994) has included the dative alternation among the phenomena that are usually learned in L2 without conscious analysis or understanding. Thus, explicit learning of the dative alternation may be unnecessary, impossible, or both.

On the other hand, the general patterns of performance after the instructional experiment did suggest some effect. Both instructional groups seemed to have had their representations of

the dative alternation destabilized, leading in the short term to overgeneralizations. Since the learners started from a conservative base, the instruction apparently caused them to notice that the dative had wider applicability than they had previously considered, but they were able only to partially internalize the complex constraints in the 80 minutes of instruction that were devoted to the narrow-range rules. There was already a trend toward recovery at the Delayed Post-test, and further evidence of recovery after small amount of additional instruction during the debriefing session. If the debriefing session indeed made a difference, it serves as an example of a point made by Mellow & Kennedy (1994): there are many possible patterns of learning besides a simple linear increase from pre- to post-test. Additional time and/or instruction can reveal measurable learning that might be inaccessible in a short-term pre-post design, and for some types of learning (argument structure alternation being a prime candidate), some apparent backsliding may be a pre-requisite for true progress.

5.1 Some suggestions for future research

Though some arguably useful findings came out of this experiment, the results were clearly disappointing in relation to the time and effort involved. A possible reader's inference is that instructional and/or theory-oriented experiments are too prone to failure to be worth trying. Such a conclusion is not warranted, however. Additional care in any of a number of areas may well have yielded the statistical support necessary to lend confidence to the trends present in many of the graphic displays of the results. Probably the most serious limitation of the present experiment was the complexity of the phenomenon in relation to the amount of experimental instructional time available—prudent future studies will reduce the scope of the instructional goal to something demonstrably manageable. Next in importance is the net total number of subjects. Dividing 40 students into two groups for instructional treatment was arguably a reasonable beginning, but when dropouts, no-shows, and non-homogeneous subjects are factored out, the potential statistical power available dwindles rapidly. Again in relation to statistical power, the matched pairs technique of assigning subjects to groups seemed safer than random assignment, but the resulting Dative Group nevertheless turned out to be significantly different from the Locative Group from the beginning. This was a surprising and unfortunate coincidence, but could have been avoided by basing assignment not on matched general proficiency, but rather on a measure more related to the phenomenon of interest. In retrospect, it would have been easy to match subjects based on any or all of the pre-instructional tasks. Finally, the clear demonstration of progress through instruction requires abundant room for improvement prior to the study. In the present experiment, the fact that optional rather than obligatory syntax was most often involved, and the general murkiness of native speaker judgments that were expected to provide a clear (and distant) baseline, reduced the possibility of turning up clear learning effects.

6. CONCLUSION

This experiment attempted to demonstrate that a very complex area of grammar could be taught, using a focus on form to increase "noticing" of the crucial grammatical criteria. Three different forms of measurement of sensitivity to constraints on the English dative alternation were administered before instruction on those constraints, and then repeated three times after instruction. The measurements in the original research design yielded no consistent reliable effects for instruction. The hypothesis predicting the improvement of the groups in the order Dative > Locative > Control was not confirmed, although there were a number of trends in the right direction. In contrast to the Control Group, the two Instructional groups became more accepting of and productive with DOD forms, both in grammatical and ungrammatical contexts. By the Delayed Post-test there were some signs of recovery toward better discrimination between Alternating and PD-only forms. On a fourth administration of the acceptability judgment task, after the debriefing to all groups and not originally planned as part of the study, the expected reliable difference between the Dative and Locative groups finally emerged, with the Dative Group showing significantly better discrimination than the Locative Group. This difference appeared despite the fact that the Locative Group had received in the debriefing the criteria constraining the dative alternation.

NOTES

[1] This research was made possible only with huge doses of cooperation from the students and staff of the International University of Japan's Intensive English Program and Intensive International Executive Program. I am especially grateful to Tom Hayes and Richard Smith for steadfast moral support and frequent logistical magic. I would also like to thank my dissertation committee members Richard Schmidt (Chair), Robert Bley-Vroman, Craig Chaudron, William O'Grady, Jan Stelovsky, and Kate Wolfe-Quintero for assistance throughout the design, analysis, and writing process. The remaining shortcomings are exclusively my own.

[2] The experiments reported in Bley-Vroman and Yoshinaga (1992) are those from Yoshinaga's (1991) thesis research, but the 1992 article features the most thorough account of the study's theoretical ramifications.

[3] The full group was actually 40 students; eliminated from the analysis were one dropout, five Chinese native speakers, and two Japanese students with exceptionally high proficiency (above 550 on the TOEFL).

[4] TOEIC is a business- rather than academic-oriented English proficiency test developed by the Educational Testing Service. At present it is more familiar than TOEFL to most Japanese company employees.

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Appendix A. Dative Instruction Materials, Broad-range rule

Experimental Grammar Lesson 1: Group 2

As you all know by now, there is more than one sentence pattern in English (and many other languages) for saying the same thing.

A well-known example is:

1. You passed Joe the salt.
2. You passed the salt to Joe.

But why do we need more than one way? Is there any difference in meaning?

Well, what do you think?

If I asked the question "What did I pass to Joe?," which of the above choices would be the more appropriate answer? (Please circle: 1 or 2)

If I asked the question "Who did I pass the salt to?," which would be the more appropriate answer? (Please circle: 1 or 2)

Please try to think of a reason why one answer seems more natural than the other.
Write it below.

My idea: _____

Instructor's idea: _____

OK, so what? The two sentence patterns might be used more often in slightly different situations, but both are still more or less acceptable, aren't they?

Unfortunately for adult learners of English, the answer is "No!"
There are many cases where only one is possible.

Think about sentences 3 -6.

3. I shipped the package to my mother.
4. I shipped my mother the package.

5. I shipped the package to Hawaii.
6. I shipped Hawaii the package.

Are there any sentences from 3-6 that seem unacceptable to you?

If so, what possible reason can you think of?

_____

Let's try some more.

7. I took the newspaper to Jan.
8. I took Jan the newspaper.

9. I took the newspaper to the cafeteria.
10. I took the cafeteria the newspaper.

Now, can you figure out what is wrong with the unnatural ones?

_____

So far so good. But not quite the whole story....

How do sentences 11-14 sound to you?

11. I built a house for my wife.
12. I built my wife a house.

13. I fixed the flat tire for my wife.
14. I fixed my wife the flat tire.

If any sound bad, what seems to be the problem?

_____

Well, then, what about 15-18?

15. I threw the ball to Fred.
16. I threw Fred the ball.

17. I threw the ball to the fence.
18. I threw the fence the ball.

Is there some generalization you can make from sentences 1-18?

_____

Although these cases might seem somewhat different from each other, their differences all come from a simple difference in meaning of the two patterns.

The prepositional form (with to or for) always has the following underlying meaning:

_____ CAUSE _____ TO GO TO _____

i.e. [subject] CAUSE [object] TO GO TO [recipient]

eg. John CAUSED the ball TO GO TO Fred (by means of throwing)

On the other hand, the sentence pattern without a preposition (let's call it the double object pattern), has the following underlying meaning.

_____CAUSE _____ TO HAVE _____

i.e. [subject] CAUSE [recipient] TO HAVE [object]

eg. John CAUSED Fred TO HAVE the ball (by means of throwing)

Now, take another look at all the bad sentences 6, 10, 14, 18, and try to figure out what they have in common.

My idea:_____

Instructor's idea:_____

So now you have one basic principle of meaning which can take the place of my smaller grammatical rules. Some sentences simply do not make sense in the double object pattern, because for some reason the recipients cannot "come to have" the objects that go to them. In other words, there is no possible change of possession. No possible change in possession, no double object form!

Appendix B. Locative Instruction Materials, Broad Range Rule

Experimental Grammar Lesson 1: Group 1

As you all know by now, there is more than one sentence pattern in English (and many other languages) for saying the same thing.

A well-known example is:
1. You passed Joe the salt.
2. You passed the salt to Joe.

Another example which you are familiar with is:

3. The men loaded furniture onto the truck.
4. The men loaded the truck with furniture.

But why do we need more than one way? Is there any difference in meaning?

Well, what do you think? If I asked the question "What did the men load the furniture onto?," which would be the more appropriate answer? (Please circle: 3 or 4)

If I asked the question "What did the men load the truck with?," which of the above choices would be the more appropriate answer? (Please circle: 3 or 4)

Please try to think of a reason why one answer seems more natural than the other. Write it below.

My idea: _____

Instructor's idea: _____

OK, so what? The two sentence patterns might be used more often in slightly different situations, but both are still more or less acceptable, aren't they?

Unfortunately for adult learners of English, the answer is "No!"
There are many cases where only one is possible.

Think about sentences 5-8.

5. I splashed the water onto the floor.
6. I splashed the floor with water.

7. I poured the water onto the floor.
8. I poured the floor with water.

Are there any sentences from 5-8 that seem unacceptable to you?
If so, what possible reason can you think of?

_____

Let's try some more.

9. I sprinkled salt on my eggs.
10. I sprinkled my eggs with salt.
11. I dumped salt on my eggs.
12. I dumped my eggs with salt.

Now, can you figure out what is wrong with the unnatural ones among 5-12?

_____

So far so good. But not quite the whole story....

How do sentences 13-16 sound to you?

13. I stuffed my backpack with supplies.
14. I stuffed supplies into my backpack.

15. I covered my bed with a blanket.
16. I covered the blanket onto my bed.

If any sound bad, what seems to be the problem?

_____

Well, then, what about 17-20?

17. I stocked the shelves with beer.
18. I stocked beer onto the shelves.
19. I filled the shelves with beer..
20. I filled beer onto the shelves..

Is there some generalization you can make from sentences 13-18?

_____

Although these cases might seem somewhat different from each other, their differences all come from a simple difference in meaning of the two patterns.

The **"content"** form (indicated by *into* , *onto,* etc.) always has the following underlying meaning:

_____ MOVES _____ INTO/ONTO _____

i.e. [subject] MOVES [object] INTO/ONTO [location or container]

eg. I MOVED the beer ONTO the shelves

On the other hand, the "container" form (indicated by *with,* etc.) has the following underlying meaning:

____CAUSES ____ TO CHANGE STATE BY MEANS OF MOVING ___ TO ___

i.e. [subject] CAUSES [location or container] TO CHANGE STATE BY MEANS OF MOVING [content] TO [location or container]

eg. I CAUSED the shelves TO BECOME FULL BY MEANS OF beer MOVING TO shelves.

Now, take another look at all the bad sentences 8, 12, 16, 18, and try to figure out what they have in common.

My idea:_____

Instructor's idea:_____

So now you have one basic principle of meaning which can take the place of my smaller grammatical rules. Some sentences simply do not make sense in the one of the two patterns, because the meaning of the verb does not fit the meaning of the sentence pattern.

Appendix C. Dative Instruction Materials, Narrow-range Rules

VERBS THAT SHARE MEANING ALSO SHARE GRAMMAR

Directions: Please look for meaning similarities for the following groups of verbs. As you know from previous tasks, some verbs sound equally good in two different sentence patterns, such as the verb "***give***" in the sentences (i) and (ii) below.

(i) I gave the box to Mary.
(ii) I gave Mary the box.

The verbs in **Group A** below are like '***give***', because most native speakers of English consider them natural in both sentence patterns (i) and (ii).

However, the sentences in **Group B** do not sound as good. For some reason, the verbs in **Group B** would sound OK in pattern (i), but they sound strange in pattern (ii). (Strange sentences are indicated by ( )). Please think about the meanings of the four verbs in each group, and write in the spaces below what you think the four verbs of the group have in common. Specifically, the similarity you decide among the verbs in **Group A** should distinguish them from the verbs in **Group B**.

Group A	**Group B ( )**
1. I **threw** Mary the box	5. I **pull**ed Mary the box.
2. I **kicked** Mary the box.	6. I **carried** Mary the box.
3. I **flung** Mary the box.	7. I **lift**ed Mary the box.
4. I **slid** Mary the box.	8. I **lowered** Mary the box.

Group A Common Meaning:

_____
_____

Group B Common Meaning:

_____
_____

The next step is to do the exact same thing for Groups C and D below.

Group C	**Group D ( )**
9. I **showed** John the answer.	13. I **yelled** John the answer.
10. I **asked** John the answer.	14. I **whispered** John the answer.
11. I **wrote** John the answer.	15. I **screamed John** the answer.
12. I **read** John the answer.	16. I **muttered** John the answer.

Group C Common Meaning:

_____
_____

Group D Common Meaning:

_____
_____

Directions: Please try to put each of verbs below into categories according to their sharing of meaning with one of the other verbs. There should be two verbs in each of the 15 categories. One example category is completed for you, and five other categories have been started for you.

1. **ask**: I asked her a question.
2. **assert**: I asserted my rights to her.
3. **bake**: I baked her a cake.
4. **bring**: I brought her a present.
5. **build**: I built her a house
6. **choose**: I chose a necklace for her.
7. **deny**: I denied her my love.
8. **drag**: I dragged the large sack to her.
9. **fax**: I faxed her the itinerary.
10. **find**: I found her the book she wanted.
11. **get**: I got her a diamond ring.
12. **give**: I gave her a pay raise.
13. **hand**: I handed her the cash.
14. **lower**: I lowered the lifesaver to her.
15. **mail**: I mailed her the brochures.
16. **offer**: I offered her a job.
17. **present**: I presented the trophy to her.
18. **promise**: I promised her a better life.
19. **provide**: I provided a uniform to her.
20. **refuse**: I refused her another chance.
21. **roll**: I rolled her the ball.
22. **say**: I said my true opinion to her.
23. **select**: I selected a new car for her.
24. **ship**: I shipped her the new books.
25. **show**: I showed her the way to do it.
26. **take**: I took her some flowers.
27. **telex**: I telexed her the good news.
28. **throw**: I threw her the frisbee.
29. **whisper**: I whispered a secret to her.
30. **yell**: I yelled a warning to her.

Category 1	**Category 2**	**Category 3**	**Category 4**	**Category 5**
1. _____	1. _____	1. _____	1. _____	1. _____
2. _____	2. _____	2. _____	2. _____	2. _____
Category 6	**Category 7**	**Category 8**	**Category 9**	**Category 10***
1. _____	1. _____	1. _____	1. _____	1. _____
2. _____	2. _____	2. _____	2. _____	2. _____
Category 11*	**Category 12***	**Category 13***	**Category 14***	**Category 15****
1. _____	1. _____	1. _____	1. _____	1. _____
2. _____	2. _____	2. _____	2. _____	2. _____

After you have filled in your categories, please describe below the aspect of meaning that the category members have in common. One description is done for you as an example.

C1 (**Example**): _____

C2 (and so on to C15) _____

Appendix D. Locative Instruction Materials, Narrow-range Rules

VERBS THAT SHARE MEANING ALSO SHARE GRAMMAR

As you know from previous tasks, some verbs sound equally good in two different sentence patterns, such as the verb "***spray***" in the sentences (i) and (ii) below.

(i) I sprayed water on the dog.
(ii) I sprayed the dog with water.

However, other verbs sound O.K. only in one of the two sentence patterns, such as "***pour***" and "***fill***":

(iii) I poured water into the glass.
(iv) I poured the glass with water.
(v) I filled water into the glass.
(vi) I filled the glass with water.

Verbs like "***pour***" are called **content** verbs because they tell us only about what happens to the content or object that moves, not what happens to the container or location where it moves to.

Verbs like "***fill***" are called **container** verbs, because they tell us what happens to the container or location where the content goes, not how the content caused that to happen.

"***Spray***" is a basically a content verb, but it also tells us about what happens to the location that gets sprayed, so it can appear in both forms.

On the other hand, "***load***" is basically a container verb, but it also tells us about how the content was moved, so it can also appear in both forms, as in (vii-viii) below:

(vii) I loaded the printer with paper.
(viii) I loaded paper into the printer.

On the next page, you will have a chance to figure out why these verbs behave the way that they do.

[New page] The verbs in **Group A** below seem to be content verbs like '***pour***'. They sound good in the sentence pattern with the preposition "***on***". However, the sentences in **Group B** do not sound good in that sentence pattern.

Group A	**Group B** ( )
1. I dripped beer on the carpet.	5. I flooded beer on the carpet.
2. I dumped beer on the carpet.	6. I drenched beer on the carpet.
3. I spilled beer on the carpet.	7. I soaked beer on the carpet.
4. I sloshed beer on the carpet.	8. I stained beer on the carpet.

On the other hand, **Group B** verbs sound fine in the container verb sentence pattern with the preposition "***with***", whereas **Group A** verbs sound bad in that sentence pattern.

Group B	**Group A** ( )
5. I flooded the carpet with beer.	1. I dripped the carpet with beer.
6. I drenched the carpet with beer.	2. I dumped the carpet with beer.
7. I soaked the carpet with beer.	3. I spilled the carpet with beer.
8. I stained the carpet with beer.	4. I sloshed the carpet with beer.

Please think about the meanings of the four verbs in each group, and write in the spaces below what aspects of meaning you think the four verbs within each group have in common. Specifically, the similarity you decide among the verbs in **Group A** should distinguish them from the verbs in **Group B**.

Group A Common Meaning:

_____

_____

Group B Common Meaning:

_____

_____

Directions: Please try to put each of the verbs below into categories according to their sharing of meaning with one of the other verbs. There should be 2 verbs in each of the 15 categories.

3 example categories are completed, and 4 other categories have been started for you.

1. **adorn**: I adorned the gift with ribbons.
2. **block**: I blocked the road with my car.
3. **coil**: I coiled wire around the spool.
4. **cover**: I covered the bed with a blanket.
5. **decorate**: I decorated the room with posters.
6. **drench**: I drenched the fire with water.
7. **glue**: I glued the handle onto the pot.
8. **load**: I loaded the gun with bullets.
9. **nail**: I nailed the sign onto the door.
10. **pack**: I packed the box with books.
11. **paint:** I painted varnish on the wall.
12. **pave**: I paved the road with asphalt.
13. **pile**: I piled newspapers on the desk.
14. **plug**: I plugged the leak with my finger.
15. **pour**: I poured syrup on the pancakes.
16. **rub**: I rubbed lotion on my shoulder.
17. **saturate**: I saturated the soil with water.
18. **scatter**: I scattered papers on the floor.
19. **spit**: I spat the rotten food into the sink.
20. **speckle**: I speckled the canvas with paint.
21. **spill**: I spilled wine on my tie.
22. **splash**: I splashed water on the floor.
23. **spray**: I sprayed water on the plants.
24. **stack**: I stacked books on the shelf.
25. **stock**: I stocked the shelves with cans.
26. **strew**: I strewed seeds in the field
27. **stud**: I studded the coat with metal stars.
28. **stuff**: I stuffed the bag with clothes.
29. **vomit**: I vomited my food into the bowl.
30. **wind**: I wound the rope around the pole.

Category 1*	**Category 2***	**Category 3***	**Category 4***	**Category 5***
1. _____	1. _____	1. _____	1. _____	1. _____
2. _____	2. _____	2. _____	2. _____	2. _____
Category 6*	**Category 7**	**Category 8**	**Category 9**	**Category 10**
1. _____	1. _____	1. _____	1. _____	1. _____
2. _____	2. _____	2. _____	2. _____	2. _____
Category 11	**Category 12**	**Category 13**	**Category 14**	**Category 15**
1. _____	1. _____	1. _____	1. _____	1. _____
2. _____	2. _____	2. _____	2. _____	2. _____

After you have filled in your categories, please describe below the aspect of meaning that the category members have in common. Three descriptions are done for you as examples.

C1* (**Example**): _____

C2*: _____

C3*: _____

C4*: _____

C5 (and so on): _____