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THE ROLE OF OUTPUT IN ACQUISITION OF SECOND LANGUAGE SYNTAX

By

Elizabeth Harriett Glew

A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
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1994

ABSTRACT

THE ROLE OF OUTPUT
IN ACQUISITION OF SECOND LANGUAGE SYNTAX

By

Elizabeth Harriett Glew

Although most language instructors believe that students need practice, research findings on the role of output in SLA have been mixed. Some studies have failed to demonstrate that acquisition is aided by output, but others have shown that output does aid acquisition. I hypothesize that output does promote acquisition of target-like syntactical structures

Subjects were two groups of beginning German students: one whose instruction included output and another whose instruction did not. The subjects' acquisition of six grammatical structures was tested using two tasks, grammaticality judgments and elicited imitation.

While no significant differences were found between the two groups' performance on the elicited imitation task, t-test results show that the [+output] group's grammaticality judgments were significantly more accurate than the [-output] group's for five of the six sentence types tested. Results of the grammaticality judgment task indicate that output aids acquisition of L2 syntax.

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Elizabeth Harriett Glew

1994

Dedicated to my grandfather

Horace H. Glew

a devoted and pioneering teacher

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I. The Problem.

In recent years, questions about what is necessary, sufficient, and helpful for second language acquisition (SLA), have been the focus of considerable discussion among language teachers and SLA researchers. The role of input (learner exposure to the target language) in SLA has been given particular attention. The role of output (learner production of the target language) has also been examined, but less intensively.

Krashen's ideas about second language acquisition, particularly his input hypothesis, have had a dramatic effect on the ways teachers and researchers look at SLA. According to this hypothesis, "We acquire by understanding language that contains structure a bit beyond our current level of competence (*i+1*). This is done with the help of context or extra-linguistic information" (1982, 21). In Krashen's view, it is unnecessary to practice speaking or writing in order to become skilled at communicating in a second language. He believes that output (learner production of the language being acquired) may be indirectly helpful because it causes more input to become available, but that it is not necessary in order for acquisition to take place. In his words,

> According to the Input Hypothesis, speaking is not absolutely essential for language acquisition. We acquire from what we hear (or read) and understand, not from what we say. The Input

> Hypothesis claims that the best way to teach speaking is to focus on listening (and reading) and spoken fluency will emerge on its own (Krashen & Terrell 56).

Krashen (1985, 18) extends this claim, maintaining that ability to write is developed by reading.

Krashen's hypotheses about SLA, including his Input Hypothesis (as well as Natural Order, Acquisition/Learning, Monitor, and Affective Filter), have been strongly criticized by a number of scholars (Higgs & Clifford, McLaughlin) for circularity, vagueness, self-contradiction, unsupported assertions, metaphorical nature, and lack of falsifiability. McLaughlin, for example, one of Krashen's most energetic critics, points out problems with each aspect of Krashen's theory: The impossibility of determining objectively what constitutes acquisition and what is learning makes it impossible to test the acquisition-learning hypothesis and some data suggest that learning <u>can</u> become acquisition. Tests on Monitor use have failed to show predicted improvement, even when there is focus on form, sufficient time, and knowledge of rules--all the conditions supposedly necessary for Monitor use. And, "in a real sense, the Monitor Hypothesis is untestable" (30) because it is impossible to determine the source of an utterance. Research results only partially support the Natural Order Hypothesis, with differences apparent between cross-sectional and longitudinal studies and between

learners with different L1 backgrounds or learning strategies. The Input Hypothesis cannot be tested because of the impossibility of determining exactly what input is comprehensible to a learner or what a learner's *"i"* is, and there is some "evidence that first- and second-language learners acquire structures that are neither understood nor due to be acquired next" (40). Furthermore, cross-cultural research indicates that some children learn their first language without "comprehensible input" as defined by Krashen. The Affective Filter Hypothesis does not explain how such a filter would work or why L1 affects SLA, and there is no evidence that nervous or anxious people are necessarily poor language learners. In summary, McLaughlin specifies four criteria for evaluating theories:

> (1) the theory must have definitional precision and explanatory power, (2) the theory must be consistent with what is currently known, (3) the theory must be heuristically rich in its predictions, and (4) the theory must be falsifiable (55).

He asserts that "Krashen's theory fails at every juncture" (56).

In spite of this type of attack from the scholarly community, Krashen's ideas have become widely popular among teachers, perhaps in part, as McLaughlin suggests, because they are presented "in a way that makes them readily understandable to practitioners" (19) and because much of

what Krashen claims (the affective filter hypothesis, for example) is consistent with "common sense" based on classroom experience.

Research in both first and second language acquisition has shown that the input learners receive is important to the acquisition process and that no acquisition occurs without input (Larsen-Freeman & Long 128-145). The "strong version," of the input hypothesis - that input is **sufficient** for acquisition - is not entirely supported by research results. Although a few cases of first language acquisition in the absence of output (children physically unable to speak, but mentally able to use language) have been documented, even Krashen believes that it is probably better for children acquiring their first language to have opportunities for output (1982, 60).

While it may be the case that second language acquisition <u>can</u> occur in the absence of output, it seems intuitively obvious that this is not the optimal condition for SLA. Even if the only benefit of output is indirect, as Krashen believes, we should not hastily discount its value. Research on the utility of output for SLA has been less extensive than that related to input and findings are mixed (Larsen-Freeman & Long 130-132). Some studies have failed to demonstrate that acquisition is aided by output (Sato 1986, Hatch), but others have shown that productive practice does aid acquisition (Swain, Stevens, Terrell, Osguthorpe & Chang). No studies have shown output to hinder acquisition

and even indirect benefits can enhance learning. It seems most likely that output is differentially useful, that is, that output is, as Sato (1990, 84-91) has argued, more beneficial to some aspects of SLA than to others. More research needs to be done to determine how output functions in SLA. This study is a small step in that direction.

Another aspect of the problem is how to define and measure acquisition. Krashen and Terrell offer a definition of "acquiring," stating that "acquiring a language is 'picking it up,' i.e., developing ability in a language by using it in natural, communicative situations (18)." This definition is surprisingly vague and anecdotal and, since their purpose is to differentiate between learning and acquisition, rather than to indicate precisely what acquisition is, it is not of much use in measuring acquisition.

SLA researchers generally define acquisition operationally, depending on what exactly they are examining. For example, researchers studying morpheme acquisition typically consider a morpheme to have been acquired when a speaker supplies it in 80-90% of obligatory contexts (Larsen-Freeman & Long 300). Acquisition can also be measured relatively, by comparing how target-like learners' skills are. Such measurements of relative acquisition are sufficient for the purposes of much SLA research. For the purposes of this study, acquisition is defined as the ability to recognize and imitate correct use of selected

syntactical structures in limited contexts. It will be measured relatively, by comparing the [+output] group's ability to recognize and imitate correct use of the selected syntactical structures to the [-output] group's.

Syntactical structures are particularly interesting in light of Swain's (1985) finding that immersion students, who received copious comprehensible input developed native-like skills in several areas, (listening comprehension and "productive discourse competence", for example) but did not achieve native-like morphological and syntactical grammaticality. It appears that, while comprehensible input may be sufficient for some aspects of SLA, written and or oral output (learner production of target language) may be necessary for thorough acquisition of L2 syntax.

While some preliminary research on the role of output in SLA has been conducted, its role in development of L2 syntax has yet to be investigated specifically (Larsen-Freeman & Long 130-131). It is my hypothesis that output promotes development of target-like syntactical structures. The "target language" in this case is Modern High German, as presented in the subjects' textbooks. This hypothesis will be supported if the [+output] group's use of syntactical structures is more target-like than the [-output] group's use of syntactical structures.

Tracey Terrell is one researcher who has begun to investigate possible roles of output in SLA. In his 1986 article, which attempts to define acquisition by introducing

the concepts of binding and access, he distinguishes himself from (but carefully does not argue with) Krashen regarding the role of output in SLA. He describes binding as "the cognitive and affective mental process of linking a meaning to a form" (214) and access as "the production of an appropriate form to express a specific meaning in an utterance" (215). Access, he argues, "does not follow automatically from binding" (215). A number of other factors, such as the salience and frequency of the forms in input, and the phonological or morphological complexity of the forms may also affect ease of access. Most importantly, Terrell hypothesizes that "facility in access is also related to frequency of opportunities to access a specific form in a meaningful context" (215).

As a test of this hypothesis, Terrell experimented with students learning German. Two groups of students participated in a TPR lesson. The content of the lesson was identical for the two groups, but one group of students was asked to give commands to their peers after having responded to them as given by the instructor, while the other group of students only responded to commands from the instructor. When the students were tested on their ability to access the forms taught in the TPR lessons, both groups of students were able to access the forms, but the students who had practiced accessing the forms, were able to do so an average of .55 seconds faster than the students who had not practiced accessing the forms.

Based on this research, Terrell draws the conclusion that comprehensible input and opportunities to access forms are both necessary for acquisition. He defines acquisition of a form as "the process which leads to the ability to understand and produce that form correctly in a communicative context"(213) and states that he considers a form to have been acquired "only when it can be both understood and produced" (213). His conclusion is not entirely warranted by his test results, since all the students (both those who had opportunity to access the forms and those who did not) were able to access the forms tested, but his results do show clearly that practice in accessing bound forms is beneficial to students. He argues that "the student must have real two-way conversational experiences for complete acquisition to take place" (220). He does not address the possibility of providing students with opportunities to access bound forms in other settings, such as a language lab or oral drill.

Similarly, Swain argues for the importance of what she calls "interactional, meaning-negotiated conversational turns" (247) in second language acquisition. Her study of a group of French immersion students found that, although they had been receiving large amounts of comprehensible input in French for seven years and performed as well as native speakers on tests of listening comprehension and nearly as well as natives on tests of productive discourse competence, "the target system ha[d] not been fully acquired" (246).

Swain measured her subjects' acquisition of French as a second language by comparing their performance on tests of grammatical, discourse, and sociolinguistic competence to native speakers' performance. Although the immersion students' performance was similar to native speakers' performance on the measures of discourse competence (film retelling, argumentation, narratives, letters), they did not perform at near-native levels on tests of grammatical or sociolinguistic competence (structured interview, requests, suggestions, complaints, directives). Swain argues that this deficiency is attributable, not to insufficient or defective input, but to insufficient "opportunity for meaningful use of linguistic resources" (248) and the resulting paucity of "comprehensible output," which she defines as "being pushed toward the delivery of a message that is not only conveyed, but that is conveyed precisely, coherently, and appropriately" (249). Swain also hypothesizes that comprehensible output, which "forces the learner to pay attention to the means of expression needed in order to successfully convey his or her own intended meaning" (249) may help learners progress from semantic to syntactic processing of their second language. Semantic processing alone, she argues, often suffices for comprehension, but not for accurate production.

Swain's hypothesis is supported by Stevens' 1982 study comparing two groups of French immersion students; one in a traditional teacher-centered program, in which French

was the classroom language for 21¼ hours per week and one in an "activity centered" program, in which French was the classroom language for 13½ hours per week. All the students were given standardized, normed language and math tests used in Francophone schools, which allowed subjects to be compared with native speakers, a French-language adaptation of the multiple-choice California Reading Test consisting of 90 vocabulary questions and 29 comprehension questions, and a listening comprehension test in which they answered multiple-choice questions about a story they heard read on tape. Sixty percent of the students' speaking skills were evaluated in individual taped interviews using picture description and question/answer formats.

> In the French language tests, a comparison of the two immersion programme groups reveals significant differences only in 2 of the written measures: the Reading Test and the <u>test de rendement en français</u> in favour of the TC [teacher centered] immersion group. Both these tests are instruments which evaluate academic type skills, and are affected by both the students IQ level and formal teaching methods. There was no statistically significant difference between the two groups on the other tests, i.e. aural comprehension, math, and oral production. This finding is of particular interest because of the shorter length of time spent by the AC [activity centered] immersion

> group in French studies and, also, because two of the schools in the AC programme had never studied math in French (7).

The students in the activity-centered program spent a large part of their class-time working independently or in student groups and therefore had greater opportunity (and motivation) to use their language in meaningful ways than did the students in the teacher-centered program. They were encouraged and given opportunities to discuss and write about their projects in French. In short, they produced more output. Stevens cites this as well as the greater motivation to learn provided by an activity-centered classroom as the most important factors accounting for these students' acquiring approximately equal language skills with less instructional time.

Liming also points to the need for practice when learning a new language. He was a successful learner of English as a second language and a professor of English in China. Yet, upon immigrating to Canada, he found his skills inadequate for some basic communication needs, even after living in an English-speaking environment (and receiving comprehensible input) for 18 months. He had difficulty, for example, distinguishing between various forms of greeting such as "good morning" "hello" and "hi." He describes hearing various forms of greeting for over a year and reading about differences of register among the greetings in question, but mastering their use "only by practicing such

greetings in the authentic communication context" (22). Other embarrassments he encountered involved misusing English idioms such as telling a more senior professor that "your face is glowing with radiance" (10) when he really meant to say that the professor was looking particularly well that day and being unable to get change for the bus because he asked someone to "exchange" rather than "change" his bill (10).

Based on these and other experiences, recorded in a diary study, Liming describes three functions of output in advanced learners' acquisition of socially appropriate communication skills. He found that, as Swain predicted, production of comprehensible output aided his development of syntactic processing skills. He also found Krashen's idea that learners' efforts to produce comprehensible output will result in their receiving greater quantities of comprehensible input to be correct, but he does not believe that this is the only function of output. In Liming's experience, learner output is also necessary to stimulate "negative reactions and/or corrective feedback from speakers of the target language"(12), without which acquisition beyond a basic level is difficult (if not impossible).

Of course, such a study, relying as it does on a single subject's self-reports of learning, cannot be generalized to explain language acquisition in a broader sense. It also relies on chance to select the situations to be dealt with and language forms to be learned. While this is realistic,

it also means that the study cannot be replicated and that the researcher has no control over what is examined.

In contrast to Liming's personal, practical approach, Jarvis (1983) presents theoretical arguments that SLA researchers should be informed by (but not dependent on) the psychology of learning. He asserts that second language acquisition behavior is very similar to problem solving behavior. He cites Gagné's description of problem-solving behavior and points out similarities to language-learning behavior.

> The learners are placed in a problem situation, or find themselves in one. They recall previously acquired rules in the attempt to find a "solution." In carrying out such a thinking process, the learners may try a number of hypotheses and test their applicability. When they find a particular combination of rules that fit the situation, they have not only " solved the problem" but have also learned something new,...in the sense that the individual's capability is more or less permanently changed (156-7).

Jarvis sees each new utterance as a "problem situation" for second language learners since each one either presents or necessitates creation of a novel combination of linguistic elements (except in the case of repetitive drills). Learners draw on what they already know to decode and encode messages and, when they understand or create a meaningful

message, they add to their repertoire accordingly.

Jarvis argues that, since SLA is like problem solving, and since problem solving skills are enhanced by practice in solving problems, language teachers, like those who teach problem solving skills, should provide their students with opportunities for "substantial practice that is sufficiently, but not excessively varied in nature"(399). New material should be practiced in as many combinations with other new and old material as possible, but learners should be able to "decode" novel utterances. That is, students should be exposed to large number and variety of "problems" but none should be insoluble, since that would lead only to frustration.

Jarvis appears to agree with Krashen that input is not useful unless it is comprehensible input. Indeed, his description of useful problems is reminiscent of Krashen's description of i+1. However, Jarvis disagrees with Krashen about the sufficiency of comprehensible input. Jarvis believes that second language acquisition results from solving numerous language "problems", rather than from exposure to sufficient comprehensible input. He believes comprehensible input to be necessary, but not sufficient. In this respect, Jarvis agrees with Omaggio Hadley, whose first two hypotheses of methodology and proficiency emphasize the need for students to have varied opportunities for practice (79-83).

Jarvis' assertions, while reasonable, are based only on

his own observations and thinking. In order for them to be supported fully, empirical research would have to be carried out to determine how similar L2 acquisition processes really are to other problem-solving processes. Actual similarity cannot be deduced with certainty from apparent similarity.

Although there are substantial differences between the processes of first and second language acquisition, the similarities between the two are undeniable and studies of how children acquire their first language can shed some light on the processes of second language acquisition. In her 1978 book, Hatch uses discourse analysis to examine how communicative interaction contributes to both first and second language acquisition. Hatch's discourse analysis of learner conversations led her to conclude that language structures evolve

> out of discourse...not because of some magic acquisition device which operates automatically on input but because of the conscious desire of the child to say something, to talk about something (405).

Hatch concludes that the development of syntactic structures is based on conversational interaction, not vice versa. If these findings are reliable, then output, in the form of conversational interaction, plays a vital role in language acquisition.

Studies by the *Heidelberger Forschungsprojekt*, a group of researchers examining naturalistic acquisition of

German as a second language by Spanish- Italian-, and Turkish-speaking *Gastarbeiter* (guest workers), also point to the importance of conversation for development of L2 syntax. The group analyzed speech samples from 48 foreign workers. When the relationships between the subjects' acquisition and several non-linguistic factors were examined, it was found that "contact with Germans during leisure time" (18) had a greater effect on subjects' acquisition of German syntax than any of the other factors--age at time of immigration, contact with Germans at place of work, professional training in the country of origin, education, or duration of stay [in Germany]. The authors do not offer an explanation of why leisure-time contact is more beneficial than contact at work (which was third of the six factors, more important than training, education, or duration of stay). Perhaps it is related to the nature of the jobs most commonly held by guest workers, which could limit the amount of German spoken. It may also depend on affective factors which are difficult to quantify. In any case, while the authors do not define what "contact" consisted of, it seems safe to assume that contact with Germans was salient because of the subjects' interactions with the native speakers, not because merely being in their presence provided some benefit.

II. Method

A. Subjects

Subjects were 22 beginning German students in two groups: one group ([+output]) whose instruction included output and another ([-output]) whose instruction did not include output. For the purposes of this study, output is defined as learners' written or oral production of German. Subjects were drawn from two MSU German classes, GRM 101 AND GRM 400. Each class had approximately 20 students in it, who met with their instructor four to five hours per week.

Eleven students (6 male and 5 female) in GRM 101 formed the [+output] group. This primarily undergraduate beginning German class is focused on the development of communicative competence and devotes a great deal of instructional time to conversational practice. Students in this class are also assigned regular written exercises and compositions in German. Less than 20% of class time is typically spent on grammar instruction. Students are expected to study the grammar lessons on their own and they spend most of their class time on communicative activities, such as role plays, interviews, and small group discussions, which are designed to foster the development of communication skills. These activities incorporate the grammatical structures assigned for study. The GRM 101 students generate large amounts of both written and oral output.

The [-output] group consisted of 11 students (7 male and 4 female) from German 400, a beginning class for

graduate students who need to learn to read German. This class is focused solely on the development of the reading skill. Students receive only input (written and aural) and spend no time practicing German speaking or writing skills except for brief instruction in the sounds of spoken German during the first week of class. Their source of aural input is the instructor's reading of textbook exercises to them. They receive written input from their textbook exercises and from other German readings relevant to their fields of study. Homework and class discussions are in English. GRM 400 students spend about one third of their class time on grammar topics and about two thirds on reading practice. After they have been introduced (in the first nine weeks) to all aspects of German grammar which they are likely to encounter in reading, they spend the rest of the term practicing reading German--receiving a great deal of input but producing no output.

At first glance, it seems that the very differences which make these two groups interesting as research subjects would be likely to skew the results of a test for syntax in favor of the GRM 400 students, since they receive more grammar instruction. However, the most significant difference in grammar instruction between the two classes is that the GRM 400 students are presented with a greater number of grammatical structures than the GRM 101 students are. The amount of time spent on each grammatical structure is not greater for the GRM 400 students than it is for the

GRM 101 students. The other important difference between grammar instruction for the two groups is that GRM 400 students receive explanations of grammar in English, while GRM 101 students practice using structures about which they have read an English description in their textbook. They receive little or no formal grammar instruction in English in class.

All attempts were made in the selection of subjects for the two groups to minimize the variables and to establish uniformity. All subjects indicated that German was not their first language nor had it been spoken in their childhood homes. None had had more than one semester (or one year in high school) of German instruction prior to enrolling in GRM 400 or GRM 101, and none had spent more than three months in a German speaking country prior to testing. Students who did not meet these criteria were excluded from the pool of subjects.

Table 1 shows that analysis (using a Mann-Whitney U test) of the subjects' responses to demographic questionnaires (Appendix C) revealed no statistically significant differences in attitude, tiredness, or stress level between the two groups. When asked about their attitude toward learning German, 90.9% of all respondents said they were either "very interested" or "somewhat interested" in learning German. There were no statistically significant differences between how tired or stressed students in the two groups reported feeling.

Although one might expect a group of graduate students to be better students, on average, than a group of undergraduates, this does not appear to be the case for the subjects of this study. The undergraduates in the [+output] group were asked to report their current grade point average (GPA) and graduate students in the [-output] group were asked to report their undergraduate GPA. There was no statistically significant difference between the [+output] group's and the [-output] group's reported GPAs.

Table 1 Subjects' responses to demographic survey

	[+output] group mean rank	[-output] group mean rank	*z*	p	sig dif
attitude	11.18	11.82	-.266	.7903	no
tiredness	10.64	12.36	-.652	.5145	no
stress	11.77	11.23	-.252	.8009	no
undergrad GPA	13.59	9.41	-1.581	.1140	no

A *z* value greater than ±1.96 indicates that the two medians are different at the .05 significance level (Bruning & Kintz, 204), which means that the probability (p) of the results occurring by chance is less then 5%. Since none of these *z* values (table 1) are greater than ±1.96, we know that the differences between the two groups are not statistically significant.

Other differences between the two groups, such as level of maturity, purpose(s) for learning German, teaching

methods, and emphasis on structure in course goals, which might appear to make them unsuitable for comparison, are in fact not problematic. While the effect of maturity on SLA has not been extensively studied, perhaps because it would be difficult to define maturity operationally and to measure it, the effects of age have been investigated. While there is some evidence supporting the existence of a critical period for second language acquisition[1], it is not conclusive.

> The available evidence does not consistently support the hypothesis that younger second language learners are globally more efficient and successful than older learners. Nor is it possible to conclude from the evidence that older second language learners are globally more efficient and successful than younger learners (Singleton, 137).

In any case, the largest age-related differences in acquisition have been found between children beginning SLA before and after age six, while differences found between younger and older adults have been minimal (Larsen-Freeman and Long, 158). The students in GRM 400 and in GRM 101 are all (obviously) well past the age of six and furthermore, are all well past the onset of puberty, the end of Lenneberg's critical period. Although it is not possible to determine the effect (if any) of maturity, the slight age difference, at least, does not decrease the suitability of

these two groups as test subjects.

Although data on students' purposes for learning German were not collected, we know that most GRM 101 students take the course to fulfil requirements for their major or their college. Since graduate students very rarely have the luxury of taking "elective" courses merely because they find them interesting, it seems reasonable to assume that the GRM 400 students were also fulfilling program requirements. The two groups of students probably had similar purposes for learning German. I assume therefore that purpose for learning German is not sufficiently different for the two groups to be problematic.

The difference in teaching method is essential to this study, since it is this which creates environments in which students do or do not produce target-language output. The difference in emphasis on structure in course goals is a similar case. The GRM 101 students produce large amounts of output precisely because the main goal of their course is to develop their L2 communication skills, while the GRM 400 students produce no output because the main goal of their course is to develop the reading skill. Because they have only one semester in which to acquire the skill they need, they must cover all necessary grammatical structures in that semester. GRM 101 students are part of a program lasting at least two semesters, allowing grammatical structures to be introduced more gradually. They are, however, held accountable for structures that have been introduced just as

the GRM 400 students are. To that extent, emphasis on structure is similar in the two courses. Naturally, only structures covered by both classes were tested.

There are certainly more differences between the two groups of students than is consistent with a truly experimental research design, which would require random assignment of subjects to groups and precise control of their treatment. However, no two "real" groups of students will be free of such disturbing variation. Recruiting and screening subjects for a laboratory type experiment would present another set of practical and theoretical problems. For this reason, a quasi-experimental design was chosen. Although internal validity is somewhat compromised by using such a design, external validity (the degree to which the treatment effect can be generalized) is good because the conditions are representative of those present in real education situations (Seliger & Shohamy, 148-9).

> Quasi-experimental research is more likely to have external validity because it is conducted under conditions closer to those normally found in educational contexts. For this reason, research conducted under a quasi-experimental design format is often less likely to meet resistance from the 'consumers' of research, such as language teachers. Furthermore, since these designs are less intrusive and disruptive than others it is easier to gain access to subject populations and

thus easier to conduct such research (Seliger & Shohamy, 149).

Swain's study is a good example of the utility of quasi-experimental research designs. Her subjects were children in two different schools, in different cities, with different teachers and very different programs of instruction. Nevertheless, her results are interesting and her work is widely respected and is frequently cited by other researchers[2]. The subjects in the present study are at least as similar to each other as Swain's subjects were and the present study uses a similar quasi-experimental design, but is simpler because it measures only one aspect of subjects' acquisition, rather than several.

B. Measures

The subjects' acquisition of the following six syntactical structures was tested:

1. main clause final placement of verbal prefixes
   (*Der Film fängt in 5 Minuten an.*)
   [The film starts in 5 minutes up.]
   The film starts up in 5 minutes.
2. subject verb inversion in main clauses
   (Am Sonntag bringt Thomas das Bier zur Party.)
   [On Sunday brings Thomas the beer to the party.]
   Thomas will bring the beer to the party on Sunday.

3. verb position in sentences with present tense modal verbs

(*Herr Schmidt muß Spanisch lernen.*)

[Mr. Schmidt must Spanish to learn.]

Mr. Schmidt must learn Spanish.

4. verb final word order in dependent clauses

(*Tanja trinkt Wasser, weil sie durstig ist.*)

[Tanja drinks water because she thirsty is.]

Tanja drinks water because she is thirsty.

5. verb placement in main clauses in German *Perfekt*

(*Sonja ist in den Alpen gewandert.*)

[Sonja went in the alps hiking.]

Sonja went hiking in the alps.

6. use of dative articles with indirect objects

(*Stefan schenkt der Sekretärin Blumen.*)

Stefan gives the secretary flowers.

These six syntactical structures are well suited to this investigation since they contrast with the corresponding English structures and are easy to test. Because they are not similar to English structures, it is clear that the students' mastery of new German material, not transfer from English, was being tested. These structures are also useful because they are not at all ambiguous. Subjects either placed the words correctly or they did not. They either used the dative article or they did not. There was no middle ground to muddy the waters. All six structures had been taught to both groups of students prior to data

collection. All test sentences were constructed using vocabulary items that had been presented to both groups prior to testing. Appendix A contains a complete list of the thirty sentences used (twenty four test sentences and six distractors).

The structures were tested using two tasks: grammaticality judgments and elicited imitation. A grammaticality judgment task requires subjects to give their opinions about the grammaticality of sentences. The results show how well subjects are able to distinguish grammatical from ungrammatical sentences in their L2. An elicited imitation task requires subjects to mimic spoken L2 sentences (or other utterances) which are slightly too long to be retained in short-term memory. The length of the utterances forces the subjects to process (or mentally "digest") them before repeating them. This means that the subjects' responses will reflect the rules of the subjects' interlanguage(s), allowing a researcher a glimpse of what those rules are. Although it is theoretically possible to construct entire grammars of subjects' interlanguages, this study is interested merely in determining to what extent subjects' interlanguage grammars were consistent with target language grammar.

The written grammaticality judgments were intended to favor slightly the GRM 400 ([-output] group) students (whose instruction emphasized reading) without being prohibitively difficult for the GRM 101 ([+output] group) students. The

elicited imitations were intended to favor slightly the GRM 101 ([+output] group) students (whose instruction emphasized speaking and listening) without being prohibitively difficult for the GRM 400 ([-output] group) students. One half of each class performed each task first, so that any differences would not be attributable to the order of the tasks.

There were four test sentences (two grammatical and two ungrammatical) for each structure as well as a total of six distractor sentences unrelated to the structures under investigation. The following sentences were used for both the written grammaticality judgment task and the oral elicited imitation task, but were presented in random order without marking of ungrammatical sentences.

Type 1

main clause final placement of verbal prefixes

Der Konferenz findet heute statt.

[The conference takes today place.]

The conference takes place today.

Der Film fängt in 5 Minuten an.

[The film starts in 5 minutes up.]

The film starts up in 5 minutes.

***"Star Trek" anfängt in 10 Minuten.*

***"Star Trek upstarts in 10 minutes.

***Das Seminar stattfindet heute.*

***The seminar placetakes today.

Type 2

subject verb inversion in main clauses

Am Sonntag bringt Thomas das Bier zur Party.

[On Sunday brings Thomas the beer to the party.]

Thomas will bring the beer to the party on Sunday.

Dieses Jahr studiert Tina an der Universität.

[This year studies Tina at the university.]

Tina is studying at the university this year.

**Am Montag Michael bringt das Buch zur Klasse.*

[On Monday Michael brings the book to class.]

*On Monday brings Michael the book to class.

**Im Winter Maria studiert an der Hochschule.*

[In the winter, Maria studies at the college.]

*In the winter, studies Maria at the college.

Type 3

verb position in sentences with present tense modal verbs

Herr Schmidt muß Spanisch lernen.

[Mr. Schmidt must Spanish to learn.]

Mr. Schmidt must learn Spanish.

Frau Braun kann kaltes Bier trinken.

[Ms. Braun kann cold beer to drink.]

Ms. Braun can drink cold beer.

**Frau Schulz muß lernen Mathematik.*

[Ms. Schulz must to learn mathematics.]

*Ms. Schulz must mathematics learn.

**Herr Becker kann trinken warme Milch.*

[Mr. Becker can to drink warm milk.]

*Mr. Becker can warm milk drink

Type 4

verb final word order in dependent clauses

Tanja trinkt Wasser, weil sie durstig ist.

[Tanja drinks water because she thirsty is.]

Tanja drinks water because she is thirsty.

Marc kommt nach Hause, wenn er Sommerferien hat.

[Marc comes to home when he summer vacation has.]

Marc comes home when he has summer vacation.

**Emma trinkt Kakao, weil das Wetter ist kalt.*

[Emma drinks cocoa because the weather is cold.]

*Emma drinks cocoa because the weather cold is.

**Kurt kommt ins Theater, wenn er hat 15 Dollar.*

[Kurt comes to the theater when he has 15 dollars.]

*Kurt comes to the theater when he 15 dollars has.

Type 5

verb placement in main clauses in German Perfekt

Sonja ist in den Alpen gewandert.

[Sonja went in the alps hiking.]

Sonja went hiking in the alps.

Erik hat in Berlin gelebt.

[Erik has in Berlin lived.]

Erik has lived in Berlin.

**Stephanie ist gewandert in den Appalachians.*

[Stephanie went hiking in the Appalachians.]

*Stephanie went in the Appalachians hiking.

**Albert hat gelebt in New York.*

[Albert has lived in New York]

*Albert has in New York lived.

Type 6

use of dative articles with indirect objects

Christine gibt dem Mann ein Buch.

[Christine gives (to) the man a book.]

Christine gives a book to the man.

Stefan schenkt der Sekretärin Blumen.

[Stefan gives (to) the(fem.) female secretary flowers.]

Stefan gives flowers to the female secretary.

**Frau Graf gibt den Mann die New York Times.*

Ms. Graf gives the man the New York Times. (no indirect object)

**Monika schenkt dem Lehrerin einen Apfel.*

Monika gives (to) the(masc.) female teacher an apple.

Type 7

distractors

Das Wetter ist sehr schön.

The weather is very nice.

Herr Lenz besucht Frau Frisch in Berlin.

Mr. Lenz visits Ms. Frisch in Berlin.

Annette treibt gern Sport.

Annette likes to engage in sports.

Herr Müller findet 10 Dollar.

Mr. Müller finds 10 dollars.

Frau Schiller hat ein Auto.

Ms. Schiller has a car.

Peter kennt den Mann.

Peter knows the man.

Subjects were informed that the researcher was studying how people learn German, but were not told the exact nature of the study or what structures were being tested. The six distractor sentences were included to lessen the possibility of subjects identifying the test structures, which could affect their responses. The same sentences were used for both the grammaticality judgment and the elicited imitation tasks so that neither would accidentally be more difficult than the other. The items were presented in a different random order for each task. Similar test formats have been used successfully by other SLA researchers (Gass, in press). In retrospect, it was an error to use the ungrammatical sentences in the elicited imitation task, as they do not yield reliable data on subjects' competence.

The grammaticality judgment task was administered by the students' own teacher in their usual classroom. Students recorded their responses on machine-readable "bubble sheets." Subjects were instructed to "Please give <u>your opinion</u> of the acceptability of each sentence according to the following scale.

1 This is **definitely** an **acceptable** German sentence.

2 This is **probably** an **acceptable** German sentence.

3 I have **no idea** at all.

4 This is **probably not** an **acceptable** German sentence.

5 This is **definitely not** an **acceptable** German sentence."

Each student received an instruction sheet (Appendix D) and the instructor read an explanation of the task (Appendix E) to them before they began.

The most accurate response to grammatical test sentences was 1 and the most accurate response to ungrammatical test sentences was 5. Subjects' responses to the distractor sentences were not evaluated.

The elicited imitation task was administered by the researcher in the language lab and answers were recorded on cassette tapes which were labelled with code numbers. After collection, these code numbers were covered with randomly assigned numbers so that it was not apparent to which group any tape belonged. This prevented the researcher from inadvertently skewing the results while coding the responses.

The thirty test sentences (Appendix A) used for the elicited imitation task were the same as those used for the grammaticality judgment task, (see above, pp.27-30) but were presented in a different random order. Responses to the grammatical stimulus sentences were coded 1 for incorrect or 2 for correct. Responses to the ungrammatical stimulus sentences were not evaluated since they would not provide

any information about the subjects' ability to imitate correct German. In fact, rather than merely repeating the ungrammatical sentences, some subjects gave grammatical responses to the ungrammatical stimuli. But it was not possible to determine whether this occurred because subjects were correcting the ungrammatical stimulus sentences or because subjects were making more or less random errors. Most likely, some subjects made corrections and others made mistakes, and it is impossible to distinguish between the two. Since the subjects were instructed to imitate the sentences they heard as accurately as they could, some subjects probably imitated some ungrammatical sentences accurately (repeating the ungrammatical sentences) even though they knew them to be ungrammatical (and may have known what the corresponding grammatical sentence would be). Whether this occurred (and if so, where) cannot be determined from data collected. Therefore, responses to ungrammatical stimulus sentences could not give accurate information about the respondents' knowledge of German and these sentences were excluded from evaluation.

Students also responded to a questionnaire (Appendix C) asking about their prior experiences with German and other foreign languages and about their feelings regarding their current class and the testing situation. These answers were also recorded on machine readable answer sheets and were used to eliminate students with prior German knowledge from the subject pool and to compare the two groups.

C. Evaluation of Data

1. Grammaticality Judgment

In order to facilitate evaluation of the results, responses to all ungrammatical items were re-coded (5=1...1=5) after collection to match the grammatical items. Thus the lower a subject scored, the more accurate the subject's responses were. Mean scores for each group were calculated for each type of sentence and for all types taken together. The means for the two groups were compared and the differences between them were tested for significance using a t-test.

2. Elicited Imitation

A response was coded correct if the structure under investigation was accurately imitated, even if the subject made other errors. A response was coded incorrect if the structure under investigation was not accurately imitated. Since phonetic accuracy was not a topic of investigation, mispronounced or only partly articulated words were considered to have been imitated accurately if they were otherwise accurate. For example, if a respondent imitated the sentence "*Christine gibt dem Mann ein Buch.*" by saying "*Christin gib dem Mann das Buch.*", the response would be coded correct since the structure under investigation, *dem*, was imitated accurately and the mistakes in the noun, verb, and other article are irrelevant. Similarly, if a subject responded to "*Die Konferenz findet heute statt.*" with "*Der*

Konferenz findet heute." the response was coded incorrect since the structure under investigation, the separable prefix, was not accurately imitated. But if a subject responded "*Duh Konfrens find heute sta*." the response was coded correct since the verb prefix was present and placed correctly, although pronunciation was faulty. Since phonetics and verbal morphology are not topics of this study, the subject's mispronouncing the verb and omitting its ending are not relevant.

After all responses had been coded, mean scores for each group were calculated for each type of sentence and for all types taken together. The means for the two groups were compared and the differences between them were tested for significance using a t-test.

III. Results

Test results were calculated for each of the six types of test sentence and for all 24 test sentences taken together. Responses to the six distractor sentences were not included in the data. The six test sentence types were:

Type 1: main clause final placement of verbal prefixes

(*Der Film fängt in 5 Minuten an.*)

The film starts in 5 minutes up.

The film starts up in 5 minutes.

Type 2: subject verb inversion in main clauses

(*Am Sonntag bringt Thomas das Bier zur Party.*)

On Sunday brings Thomas the beer to the party.

Thomas will bring the beer to the party on Sunday.

Type 3: verb position in sentences with present tense modal verbs

(*Herr Schmidt muß Spanisch lernen.*)

Mr. Schmidt must Spanish learn.

Mr. Schmidt must learn Spanish.

Type 4: verb final word order in dependent clauses

(*Tanja trinkt Wasser, weil sie durstig ist.*)

Tanja drinks water because she thirsty is.

Tanja drinks water because she is thirsty.

Type 5: verb placement in main clauses in German *Perfekt*

(*Sonja ist in den Alpen gewandert.*)

Sonja went in the alps hiking.

Sonja went hiking in the alps.

Type 6: use of dative articles with indirect objects

(*Stefan schenkt der Sekretärin Blumen.*)

Stefan gives (to) the(fem.) female secretary flowers.

Stefan gives flowers to the female secretary.

See Appendix A for a complete list by type of all thirty test sentences.

A. Elicited Imitation Task

Mann-Whitney U tests revealed no significant differences between the [+output] group's and the [-output] group's performances on the elicited imitation task. Table 2 shows the results of this analysis. Since correct responses were coded 2 and incorrect responses were coded 1, the highest median scores reflect the most accurate responses.

Table 2
Elicited Imitation Scores of [+output] and [-output] Groups

Item Type	Median Score [+output]	Median Score [-output]	*z* value	probab-ility	sig dif
All Items (1-6)	12.09	9.80	-.8525	p<.3939	no
Type 1	11.18	10.80	-.1626	p<.8709	no
Type 2	11.64	10.30	-.5276	p<.5977	no
Type 3	12.00	9.90	-1.5199	p<.1285	no
Type 4	6.31	6.88	-.3062	p<.7595	no
Type 5	11.50	10.49	-1.0488	p<.2943	no
Type 6	9.86	12.25	-1.0555	p<.2912	no

The Mann-Whitney U tests the hypothesis that the medians of

the two groups are equal. A *z* value greater than ±1.96 indicates that the two medians are different at the .05 significance level (Bruning & Kintz, 204), which means that the probability (p) of the results occurring by chance is less than 5%. Since none of these *z* values (table 2) are greater than ±1.96, it is clear that the differences between the two groups' performance on the elicited imitation task are not statistically significant.

The inconclusive results from this task are probably attributable to the small number of items which could be analyzed. The grammaticality judgment and elicited imitation tasks contained the same sentences so that neither task would inadvertently be made more difficult than the other. This was important since each task was intended slightly to favor one of the groups and having one task more difficult than the other would have skewed the results. Only after data had been collected did it become apparent that the ungrammatical sentences essential to the grammaticality judgment task would not yield useful data from the elicited imitation task. Discarding the responses to ungrammatical stimulus sentences from the elicited imitation data analyzed left each of the six sentence types represented in the data by only two items. Differences may have existed between the two groups, but there simply were not enough responses to make any such differences apparent.

B. Grammaticality Judgment Task

T-test results show that the [+output] group's grammaticality judgments were significantly more accurate than the [-output] group's overall (all six sentence types combined) and for five of the six individual sentence types. Table 3 shows the results of the grammaticality judgment task for each sentence type. The scoring system was constructed so that lowest mean scores indicate the greatest accuracy.

Table 3
Grammaticality Judgment Scores of [+output] and [-output] Groups

Item Type	Mean Score [+output]	Mean Score [-output]	*t* value	probab-ility	degrees of[3] freedom	sig dif
All	53.23	71.18	-4.00	p<.001	19.78	yes
1	8.73	11.82	-2.08	p<.050	18.78	yes
2	8.09	12.64	-3.50	p<.003	16.03	yes
3	5.82	8.64	-2.50	p<.021	19.99	yes
4	11.27	12.18	-.66	p<.516	19.72	no
5	8.91	12.82	-3.03	p<.008	15.05	yes
6	10.46	13.09	-2.43	p<.026	17.24	yes

A *t* value greater than or equal to ±1.96 indicates that the difference between the means is significant at the .05 level, which means that the probability (p) of the results occurring by chance is less than 5%.

The mean scores of the [+output] group are lower (more accurate) than the mean scores of the [-output] group on all sentence types. The difference between the mean scores of

the two groups was not statistically significant for type four sentences (sentences containing dependent clauses). For all other sentence types, the *t* values are greater than ±1.96. Therefore, it is clear that the [+output] group was significantly better than the [-output] group at distinguishing grammatical from ungrammatical German sentences except when the sentence contained a dependent clause (sentence type four).

The non-significance of the results obtained for sentence type four may be due to the difficulty of the dependent clause structure for the students. Neither group did well at distinguishing grammatical from ungrammatical dependent clause sentences. Sentences containing dependent clauses were also the most difficult of the six types for both groups to imitate, as shown by the low scores obtained for type four sentences on the elicited imitation task (6.31 for the [+output] group and 6.88 for the [-output] group). Although most students are able to understand the concept of verb final word order in dependent clauses, most find it quite difficult to apply this knowledge and consistently place the verb after the subject, as in English. It is unclear why students find this construction so problematic, but it may be due to the lack of similar English constructions since many beginning students tend to rely on their L1 grammar and "paste" German words onto essentially English sentences. This strategy of L1 transfer is often successful, especially for very basic communication needs,

since English and German do have many similarities. However, in this case, the strategy appears to be counter-productive, delaying rather than facilitating students' acquisition of the target structure. In any case, further studies of the acquisition of German verb-final syntax by English speakers are still needed.

IV. Discussion

Do second language learners in fact "acquire by understanding language that contains structure a bit beyond [their] current level of competence (*i+1*)" as Krashen (1982, 21) believes? Is comprehensible input all that is needed for SLA, or is something else required as well? We know that input is necessary, but is it sufficient? Even if input is sufficient, it does not necessarily follow that "input-only" is the best way for learners to acquire a second language. What is the role of grammar instruction? Of output? A great deal of research will be needed before these questions can be answered definitively. This study, comparing acquisition of L2 syntactical structures by learners who produced output and learners who did not is, so to speak, a drop in the research bucket. If the [+output] group proved better able to recognize and imitate correct use of L2 syntactical structures than the [-output] group, then the hypothesis that output aids acquisition of L2 syntax would be supported.

This hypothesis is, in fact, partially supported by the data from the study. The [+output] group performed significantly better than the [-output] group on the grammaticality judgment task, even though this task was designed slightly to favor the [-output] group. Only for sentence type 4 (word order in dependent clauses) were the [+output] group's responses not significantly more accurate than the [-output] group's ($t=-.66$, $p<.516$). There was no

significant difference between the two groups for this type of sentence. The reason for this is not clear from the data. It may well be because, in order for output to aid acquisition, learners must produce specifically the structures to be acquired, not just the target language in general. That is, it may be the case that in order for output to aid acquisition of (for example) verb final word order in dependent clauses, learners must produce target language dependent clauses with verb final word order. If this is the case, then it is not surprising that the [+output] group performed similarly to the [-output] group only on sentence type four. Most beginning students find dependent clauses difficult and tend to avoid producing them if possible. This could be a factor simply of the length of utterance required to use these sentences or of some more complex phenomenon. Since the students' output was not manipulated to ensure that they produced all of the structures under investigation equally, it seems likely that their output would have included dependent clauses less frequently than it included the other test structures, which generally seem to be somewhat less problematic for beginning students. The hypothesis that output aids acquisition only if students produce the specific structures to be acquired could be tested using three groups of subjects; a [-output] group, a [+output] group similar to those used for this study, and a [+ manipulated output] group, whose production would be guided to ensure that they practiced equally all of

the structures under investigation. If test results showed significant differences between the three groups, it would be possible to conclude that not only output, but type of output is an important factor in acquisition.

Alternatively, it may be the case that output is more beneficial in acquiring some structures than others. However, this does not seem highly plausible. If output is beneficial in acquiring syntax, it seems reasonable that it would be beneficial in acquiring all aspects of syntax, not just a few. This hypothesis could also be tested by controlling subjects' output, allowing various groups to produce various combinations of structures. More research will be needed before the exact mechanism by which output contributes to SLA can be understood, but the results of this study do indicate generally that output is beneficial to acquisition of L2 syntax.

The results of the grammaticality judgment task (detailed in the previous section) support Swain's (1985) argument that output is necessary if L2 learners are to perform at near-native levels grammatically and are consistent with her hypothesis that output may help learners progress from semantic processing (which is largely adequate for comprehension) to syntactic processing of their L2, which is needed for accurate production. Swain's idea that output aids development of sociolinguistic competence falls outside the realm of this study and should also be examined experimentally.

The results of the grammaticality judgment task are also consistent with Stevens'(1982) argument, based on her study of elementary immersion students, that output is an important factor aiding the SLA process, and with the results of the *Heidelberger Forschungsprojekt* (1978) study, which found that contact with Germans was the most important factor in predicting guest workers' acquisition of German syntax.

Of course, much more study will be required before the function of output in SLA is thoroughly understood. Many questions remain. How does output assist acquisition of a L2 and of L2 syntax in particular? Is output more helpful for acquisition of some structures than of others? What is the role of output in other aspects of second language acquisition, such as development of target-like pronunciation and acquisition of vocabulary items? Does output affect listening and reading comprehension and if so, how? What is the role of written output? However, taking the findings of the present study, in conjunction with earlier data, into consideration, it is clear that output plays a significantly more important role in SLA than the one it is allotted by Krashen's theory.

This finding is of interest to SLA theorists and researchers as well as to designers of L2 curricula and materials, and to L2 instructors. Since it appears that output does aid acquisition of L2 syntactical structures, second language learners will be best served if materials

and curricula for SLA provide sufficient opportunities for output. Textbooks and other instructional materials should include activities designed to generate learner production of the target language, perhaps of specific structures. Instructors should plan their lessons to encourage output as well as to provide plenty of input. Instruction for beginning foreign language teachers and continuing education for experienced teachers should include information about the importance of output in SLA. Teachers should receive training in ways of incorporating output in their curricula.

NOTES

[1] Based on his studies of patients with brain lesions and of deaf children, mentally retarded children, and data pertaining to so-called "wolf children," Lenneberg (1967) postulated a biologically-based critical period for language acquisition beginning at approximately age two and continuing until the onset of puberty. He believed that changes in the brain around the time of puberty, particularly a decrease in brain "plasticity" and a corresponding increase in "cortical specialization" made acquisition of a first or native language impossible after puberty. The idea of a critical period for human language acquisition, which was widely accepted through the mid-seventies, has been viewed with increasing skepticism since that time. Close re-examination of Lenneberg's (and other) data by Krashen (among other researchers) has cast doubt on the reliability of Lenneberg's conclusions and of the critical period hypothesis. For a comprehensive discussion of age factors related to language acquisition, see Singleton (1989).

[2] The Social Sciences Citation Index lists seventeen citations of the relevant article in the 1991-1993 volumes.

[3] "Degree of freedom is a measure of the extent to which the values of the observations are free to vary and still satisfy some constraint" (Clayton, 107). The constraints are the means and the numbers of people sampled.

APPENDICES

Appendix A

Appendix A

Test sentences grouped by type.

Subjects were presented with sentences in random order without asterisk marking of ungrammatical sentences.

Type 1

main clause final placement of verbal prefixes

Die Konferenz findet heute statt.

Der Film fängt in 5 Minuten an.

*"Star Trek" anfängt in 10 Minuten.

*Das Seminar stattfindet heute.

Type 2

subject verb inversion in main clauses

Am Sonntag bringt Thomas das Bier zur Party.

Dieses Jahr studiert Tina an der Universität.

*Am Montag Michael bringt das Buch zur Klasse.

*Im Winter Maria studiert an der Hochschule.

Type 3

verb position in sentences with present tense modal verbs

Herr Schmidt muß Spanisch lernen.

Frau Braun kann kaltes Bier trinken.

*Frau Schulz muß lernen Mathematik.

*Herr Becker kann trinken warme Milch.

Type 4

verb final word order in dependent clauses

Tanja trinkt Wasser, weil sie durstig ist.

Marc kommt nach Hause, wenn er Sommerferien hat.

*Emma trinkt Kakao, weil das Wetter ist kalt.

*Kurt kommt ins Theater, wenn er hat 15 Dollar.

Type 5

verb placement in main clauses in German Perfekt

Sonja ist in den Alpen gewandert.

Erik hat in Berlin gelebt.

*Stephanie ist gewandert in den Appalachians.

*Albert hat gelebt in New York.

Type 6

use of dative articles with indirect objects

Christine gibt dem Mann ein Buch.

Stefan schenkt der Sekretärin Blumen.

*Frau Graf gibt den Mann die New York Times.

*Monika schenkt dem Lehrerin einen Apfel.

Type 7

distractors

Das Wetter ist sehr schön.

Herr Lenz besucht Frau Frisch in Berlin.

Annette treibt gern Sport.

Herr Müller findet 10 Dollar.

Frau Schiller hat ein Auto.

Peter kennt den Mann.

Appendix B

Appendix B

Times Tested Structures Were First Presented

Table 4 Times Tested Structures Were First Presented

Structure	GRM 101 [+output]	GRM 400 [-output]
Type 1 main clause final placement of verbal prefixes	week 4	week 3
Type 2 subject verb inversion in main clauses	week 4	week 2
Type 3 word order in sentences with present tense modal verbs	week 8	week 5
Type 4 word order in dependent clauses	week 9	week 6
Type 5 verb placement in main clauses in German *Perfekt*	week 11	week 3
Type 6 use of dative articles with indirect objects	week 13	week 1

Appendix C

Appendix C

Demographic questionnaires administered to subjects.

QUESTIONNAIRE FOR GERMAN 101 STUDENTS 14 April 1993

1. What German class are you taking now?
   1. German 101
   2. German 400

2. What is your sex?
   1. male
   2. female

3. What ethnic group do you consider yourself a part of?
   1. White / Caucasian
   2. Black / African American
   3. Asian, Pacific Islander
   4. Native American
   5. other

4. What is your native or first language?
   1. English
   2. German
   3. an Asian language (Mandarin, Japanese, etc.)
   4. a Romance language
   5. another language. What? _____

5. What is your approximate GPA?
   1. 3.5 - 4.0
   2. 3.0 - 3.49
   3. 2.5 - 2.99
   4. 2.0 - 2.49
   5. below 2.0

6. Which of the following statements best describes your attitude?
   1. I am very interested in learning German.
   2. I am somewhat interested in learning German.
   3. I am indifferent about learning German.
   4. I would rather not learn German.
   5. I hate learning German.

7. How many semesters of college German had you taken before starting this class?
   1. none (or less than one)
   2. one
   3. two
   4. three
   5. more than three

8. How many years of high school German had you taken before starting this class?
   1. none (or less than one)
   2. one
   3. two
   4. three
   5. more than three

9. How many college semesters or high school years of instruction in a language or languages other than German had you had before starting this class? (Please do not count instruction in your native language.)
   1. none (or less than one)
   2. one
   3. two
   4. three
   5. more than three

   What language(s) did you take? _____

10. How many linguistics courses have you taken?
   1. none.
   2. one introductory class in high school.
   3. one introductory class in college.
   4. more than one introductory class.

11. How many months did you spend in a German-speaking country before starting this class? (Please do not include time spent in an English-speaking environment. Use the space at bottom to explain if necessary.)
   1. less than one month (or never been to a German-speaking country)
   2. one to three months
   3. four to six months
   4. seven to nine months
   5. ten months or more

12. When you were a child, was German spoken in your home?
   1. No, never.
   2. Yes, but infrequently. I didn't understand it.
   3. Yes, I understood some, but never spoke it myself.
   4. Yes, I understood it and spoke it some.
   5. Yes, it was the/a primary language used at home.

13. Please rate how tired you are feeling today.
   1 = not tired → 5 = very tired

14. Please rate how stressful you find this situation.
   1 = not stressful → 5 = very stressful

15. How many college credits will you have completed by the end of this semester?
   1. 1 - 27
   2. 28 - 55

3. 56 - 87
4. 88 or more

If you would be willing to participate in a short interview related to this study, please write your name and phone number here.

Thank you very much for contributing to this research!

Please turn the answer sheet over and begin your responses at number 57.

QUESTIONNAIRE FOR GERMAN 400 STUDENTS 14 April 1993

1. What German class are you taking now?
   1. German 101
   2. German 400

2. What is your sex?
   1. male
   2. female

3. What ethnic group do you consider yourself a part of?
   1. White / Caucasian
   2. Black / African American
   3. Asian, Pacific Islander
   4. Native American
   5. other What? _____

4. What is your native or first language?
   1. English
   2. German
   3. an Asian language (Mandarin, Japanese, etc.)
   4. a Romance language (Spanish, French, Italian)
   5. another language. What? _____

5. What was your approximate undergraduate GPA?
   1. 3.5 - 4.0
   2. 3.0 - 3.49
   3. 2.5 - 2.99
   4. 2.0 - 2.49
   5. below 2.0

6. Which of the following statements best describes your attitude?
   1. I am very interested in learning to read German.
   2. I am somewhat interested in learning to read German.
   3. I am indifferent about learning to read German.
   4. I would rather not learn to read German.
   5. I hate learning to read German.

7. How many semesters of college German had you taken before starting this class?
   1. none (or less than one)
   2. one
   3. two
   4. three
   5. more than three

8. How many years of high school German had you taken before starting this class?
   1. none (or less than one)
   2. one
   3. two
   4. three

5. more than three

9. How many college semesters or high school years of instruction in a language or languages other than German had you had before starting this class? (Please do not count instruction in your native language.)
   1. none (or less than one)
   2. one
   3. two
   4. three
   5. more than three

   What language(s) did you take? _____

10. How many linguistics courses have you taken?
   1. none.
   2. one introductory class
   3. more than one introductory class.

11. How many months did you spend in a German-speaking country before starting this class?
   (Please do not include time spent in an English-speaking environment. Use space at bottom to explain if necessary.)
   1. less than one month (or never been to a German-speaking country)
   2. one to three months
   3. four to six months
   4. seven to nine months
   5. ten months or more

12. When you were a child, was German spoken in your home?
   1. No, never.
   2. Yes, but infrequently. I didn't understand it.
   3. Yes, I understood some, but never spoke it myself.
   4. Yes, I understood it and spoke it some.
   5. Yes, it was the/a primary language used at home.

13. On a scale of one to five, please rate how tired you are feeling today.
   1 = not tired → 5 = very tired

14. On a scale of one to five, please rate how stressful you find this situation.
   1 = not stressful → 5 = very stressful

15. How many graduate credits will you have completed by the end of this semester?
   1. 1 - 12
   2. 13 - 24
   3. 25 - 36
   4. 37 - 48
   5. more than 48

Please write your approximate <u>current</u> GPA here. _____

If you would be willing to participate in a short interview related to this study, please write your name and phone number here.

Thank you very much for contributing to this research!

Please turn the answer sheet over and begin your responses at number 57.

Appendix D

Appendix D

Instructions to Subjects

INSTRUCTIONS

please do not write on instruction sheets

Please give your opinion of the acceptability of each sentence according to the following scale.

1 This is **definitely** an **acceptable** German sentence.
2 This is **probably** an **acceptable** German sentence.
3 I have **no idea** at all.
4 This is **probably not** an **acceptable** German sentence.
5 This is **definitely not** an **acceptable** German sentence.

For example if you thought the sentence "My dog have fleas." was probably not acceptable, you would mark "4" on the answer sheet.

Please indicate on the questionnaire why you think an unacceptable sentence is not acceptable. What don't you like about it? For example, if you didn't like the verb in this sentence, you might change it to "has".

has
My dog have fleas.

Or, if you didn't find "My" acceptable, you might change it to "mine".

Mine
My dog has fleas.

It is not important that you completely understand the sentences, just indicate whether they seem like acceptable German sentences to you or not. There are no right or wrong answers to the questions on this opinion survey.

Please work quickly and do NOT go back and change any of your responses.

Appendix E

Appendix E

Explanation of Grammaticality Judgment Task
read to subjects by instructor.

Please check to be sure that your white answer sheet has the same ID number as your computer answer sheet.

Please turn the computer answer sheet over and begin the next part at number 57.

On a scale of one to five, please rate how acceptable each sentence on the white page is to you. One is the most acceptable and five is the least acceptable.

If you rate a sentence four or five, please indicate why on the white survey. There is an example of how to do this on the orange instruction sheet.

You will have approximately fifteen minutes for this part.

Please read the orange instruction sheet and begin giving your opinions now.

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