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FOSSILIZATION IN SECOND LANGUAGE ACQUISITION: SOME EXPERIMENTAL DATA FROM THE SECOND LANGUAGE CLASSROOM

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Higgs and Clifford (1982) claim that grammatical accuracy must be stressed before communicative modes of language instruction can be undertaken. Implicit in this article is that grammar must be taught deductively and that students taught second languages through the use of communicative models, in which grammar is inductively taught, do not learn grammar.

In this study, experimental sections of first-semester Spanish courses were taught using the natural approach methodology and control sections were taught by instructors using a modified grammar-translation methodology including deductive grammar instruction. Students from all sections took the same department-administered discrete-point exams. The data presented herein show that the experimental sections outperformed the sections taught by traditional grammar-translation methods.

0. INTRODUCTION

In recent years, the role of fossilization in second language acquisition and second language learning has become a major source of controversy among researchers. Generally speaking, disagreement over the role of fossilization in second language acquisition and foreign language learning has created two major movements: one group promotes the importance of grammatical accuracy while the other stresses communicative competency.

In a frequently-quoted article, Higgs and Clifford 1982 makes the ad hoc claim that grammatical accuracy must be stressed, and presumably taught from a cognitive approach, before communicative modes of language instruction can be safely undertaken. According to Higgs and Clifford and other proponents of the grammatical accuracy movement, a language teaching methodology which stresses communicative activities before students have learned grammar runs the risk of fossilizing grammatical errors in the interlanguage of students. For many wrong reasons, Higgs and Clifford 1982 has assumed considerable importance in the area of second language acquisition research; and this same article has very often been quoted as evidence to support a contention that grammar must be taught deductively, and learned (not acquired) before communication in a second language can be undertaken. Also implicit in this article is that students who acquire second language through the use of communicative models in which grammar is inductively taught and acquired, do not learn grammar accurately and will fossilize incorrect patterns.

Unfortunately, as others have likewise observed, Higgs and Clifford's 1982 article lacks any scientific base or motivation. Their study offers no empirical evidence to support any of its assertions. Instead of scientific evidence, Higgs and Clifford (1982) couch their arguments in expressions such as "appears to be" (p. 68); "based on our vast experience" (p. 70); "data reported elsewhere" (p. 73); "experience shows" (p. 74); "we hypothesize" (p. 78), etc.

As has been pointed out elsewhere in the literature, see for example VanPatten (1986a:64), a data base is needed to test the validity of claims such as those made in Higgs and Clifford 1982. The purpose of the present study, therefore, will be to test Higgs and Clifford's claims utilizing empirical data from the second language classroom. Specifically, the question of whether students who acquire grammar inductively through the utilization of a communicative model do fail to learn grammar as well as those students who are taught grammar deductively will be examined.

1. Methodology

In an experiment carried out at two universities during three recent semesters, six sections of first-semester Spanish courses were taught using the Natural Approach teaching methodology (as outlined in Krashen and Terrell 1983) and another thirty-seven sections of this same course were taught by instructors using a modified grammar-translation methodology which included deductive grammar instruction. Students from all forty-three sections, however, were required to take the same department-administered mid-term and final exams. These were traditional discrete-point exams which tested students ability to cognitively manipulate many of the grammatical structures presented during the course of the semester. These tests included sections of English to Spanish translations, dehydrated sentences, a reading passage, a composition section, and a large variety of fill-in-the-blank type questions requiring students to write appropriate verb forms, vocabulary items, possessive adjectives, relative pronouns, direct and indirect object pronouns, comparatives, etc.

2. Findings

The relevant data concerning the mid-term and final examinations taken by the six experimental groups utilized in the present study are shown in Tables 1 and 2. The groups identified in the present study as experimental were those six sections of beginning Spanish which were taught utilizing a Natural Approach, communicative, methodology.

Table 1
MID-TERM EXAMS
NATURAL APPROACH METHODOLOGY STUDENTS

Experimental Group	Mean %	Median %	Range %	S.D. %	N
A (Fall-85)	87.7	87.0	97/71	8.86	19
B (Fall-85)	87.1	88.5	98/72	7.02	18
C (Spring-86)	84.1	86.0	96/55	10.66	22
D (Spring-86)	84.5	85.0	98/70	7.45	24
E (Summer-86)	83.3	84.5	98/72	10.75	20
F (Summer-86)	87.1	86.0	100/71	9.17	21

Table 2
FINAL EXAMS
NATURAL APPROACH METHODOLOGY STUDENTS

Experimental Group	Mean %	Median %	Range %	S.D. %	N
A (Fall-85)	78.1	79.0	98/61	9.03	19
B (Fall-85)	87.2	88.0	99/69	7.86	18
C (Spring-86)	75.5	79.0	94/43	13.70	22
D (Spring-86)	85.9	88.0	93/72	6.19	24
E (Summer-86)	78.7	80.5	95/49	10.51	20
F (Summer-86)	86.2	85.0	97/67	7.49	21

Tables 3 and 4 present a summary of the mid-term and final examination test scores from the thirty-seven control sections.

Comparing the test scores for the departmental mid-term examinations from the six experimental groups (Table 1) with those of the thirty-seven control groups (Table 3), it can be seen that for each of the three different test periods, the experimental groups had higher mean scores than the control groups: 87.4% vs. 83.8%; 84.3% vs. 80.6%; and 85.2% vs. 80.3% respectively.

For the test scores on the final examinations taken by both groups utilized in the present study, once again the six experimental groups had higher mean scores (Table 2) than the thirty-seven control groups (Table 4): 82.7% vs. 78.8%; 80.7% vs. 78.3%; and 82.5% vs. 78.8% respectively.

3. Discussion of data

It is clear from the data presented in Tables 1 through 4 that the six experimental groups consisting of students who were taught using a communicative approach, were quite successful on the traditional discrete-point exams which required them to cogni-

Table 3
MID-TERM EXAMS
GRAMMATICAL ACCURACY STUDENTS

Experimental Group	Mean %	Median %	Range %	N
1 (Fall-85)	87.3	89.3	96/61	22
2	84.3	82.5	94/47	20
3	82.5	82.0	96/52	21
4	87.7	90.0	97/71	22
5	83.8	86.0	92/65	23
6	86.3	83.0	96/60	23
7	85.4	83.5	91/54	22
8	84.2	84.0	93/53	25
9	86.2	83.5	95/55	22
10	79.6	79.0	95/58	23
11	83.5	82.5	94/40	22
12	78.1	80.0	96/50	25
13	82.5	84.5	93/47	24
14	86.0	87.0	98/64	21
15	80.7	81.5	93/54	26
16 (Spring-86)	80.8	79.5	94/51	20
17	80.1	79.0	94/56	17
18	79.3	76.5	91/60	24
19	82.5	84.0	99/61	21
20	82.4	83.0	93/49	21
21	77.0	79.5	93/39	14
22	78.1	78.5	89/50	20
23	80.1	78.5	96/40	23
24	82.7	83.5	92/61	20
25	83.7	85.0	88/44	17
26	78.9	81.0	95/56	25
27	79.7	80.0	94/59	23
28	78.2	80.5	93/49	21
29	84.2	83.0	95/38	16
30 (Summer-86)	78.9	80.0	92/70	17
31	77.3	80.0	94/58	20
32	82.4	84.0	99/49	15
33	81.2	84.0	95/42	23
34	83.5	83.0	91/64	17
35	79.4	81.0	98/70	25
36	81.5	83.0	97/69	18
37	77.9	80.0	98/59	21

tively manipulate grammatical structures. As a matter of fact, these students outperformed, as measured by mean exam scores, the control groups of students who had been taught grammar through a traditional, deductive methodology.

While in all three test periods the students who were exposed to a communicative teaching methodology did score consistently higher on the departmental exams in question than students taught grammar deductively, some of these differences are not

Table 4
FINAL EXAMS
GRAMMATICAL ACCURACY STUDENTS

Experimental Group	Mean %	Median %	Range %	N
1 (Fall-85)	77.2	76.5	99/69	22
2	76.6	76.0	92/61	21
3	80.0	81.0	91/59	21
4	77.4	79.5	96/42	22
5	75.5	74.0	91/61	23
6	76.1	79.0	95/48	23
7	79.3	80.0	93/63	22
8	78.7	81.0	97/54	25
9	81.9	84.5	94/56	22
10	79.9	81.0	94/50	23
11	76.8	78.5	93/67	22
12	78.4	79.0	90/58	25
13	82.3	81.0	96/60	24
14	81.1	80.0	89/64	21
15	80.2	80.5	95/38	26
16 (Spring-86)	76.8	78.5	93/59	20
17	77.1	78.0	90/44	17
18	79.2	77.5	87/60	24
19	79.2	78.0	94/41	21
20	80.1	79.0	91/36	21
21	78.6	79.0	92/57	14
22	77.6	75.5	89/55	20
23	76.3	77.0	93/54	23
24	77.4	79.0	90/52	20
25	79.3	78.0	90/50	17
26	80.4	82.0	93/45	25
27	78.7	79.0	91/46	23
28	76.4	80.0	88/51	21
29	78.9	80.5	95/48	16
30 (Summer-86)	79.1	81.0	96/40	17
31	81.5	81.5	87/52	20
32	79.2	76.0	94/57	15
33	78.5	78.0	90/49	23
34	80.8	83.0	95/51	17
35	76.3	78.0	89/60	25
36	75.5	75.0	92/54	18
37	79.4	76.0	91/49	21

statistically significant. However, the exact percentages of superior performance demonstrated by the six experimental groups is not of particular interest or importance; what is meaningful here is that those students who were taught grammar by a traditional method stressing grammatical accuracy did *not* score significantly higher than those students taught a second language with a communicative approach.

These data presented in Tables 1-4 may at first be surprising, as one might assume

that students taught using a grammar-translation model would be better prepared to perform on discrete-point grammar exams. However, it is important to point out that students in the six sections taught in a communicative mode were not deprived of the written language or written exercises. These students were required to write out and hand in all sections of the classroom textbook *Puntos de partida* (Knorre et al. 1985) which were not easily adaptable to a natural approach classroom (e.g. translation exercises). Students were likewise required to write out and hand in the appropriate chapters from the workbook and lab manual which accompany this classroom text. The utilization of these written exercises would seem to have been helpful to the students in the experimental groups when they were presented traditional exams.

It should be stated that there was no effort made to manipulate sociolinguistic or psycholinguistic variables within the forty-three groups of students who provided the data used in the present study. That is, the forty-three sections utilized were not constructed so as to regulate factors such as age, sex, intelligence, aptitude, motivation, etc. These forty-three sections of first-semester Spanish were normal, random groupings of undergraduate students. While the failure to construct homogeneous sections makes for a less-than-perfect experimental study, the random grouping of students does, nevertheless, represent the real world of language teaching, in which one cannot control different sociolinguistic and/or psycholinguistic variables present in any class group. However, none of the teachers involved in the present experimental study felt that their particular beginning Spanish section was in any way obviously atypical of undergraduate language classes.

4. Grammatical accuracy and grammar-translation

Before presenting conclusions to the present study based on the data just presented, it seems appropriate to reflect briefly upon the history of language teaching methodology in general, and on the role of the grammar-translation method in particular, because herein lies the real danger of the unsupportable affirmations presented in Higgs and Clifford 1982.

The use of the grammar-translation methodology to teach foreign languages has had a long and sacred history. Reintroduced in the early 1920's, this methodology had no real linguistic or psychological bases, and was, in reality, a language teaching format devised on the pragmatic grounds of economy of time and institutional resources. It was tacitly assumed that grammar and translation activities were at the heart of learning a language, and no attempt to motivate this methodology on theoretical grounds was really ever established.

With the introduction of the audio-lingual method of second language instruction in the early 1950's, many language teachers and students were subjected to a new methodology that was also destined to failure because it was based on faulty linguistic and psychological models. Furthermore, many who thought they were using the audio-lingual method of language teaching were in reality utilizing a grammar-translation format thinly disguised as an audio-lingual method text. The introduction of the audio-lingual method also established for the first time a troika-like cooperation among schools of psychology, linguistics and education. Many years prior to the introduction of the audio-lingual method, as psychologists were developing their

behaviorist and neo-behaviorist theories of learning, linguists were applying many of these same tenets to the linguistic model known as structuralism. Applied linguists and schools of education of the early 1950's naturally applied this structuralist model, based on neo-behavioristic principles, specifically to language acquisition and to language teaching methodology and the audio-lingual method was developed.

By the late 1960's, it had become painfully obvious to both second language acquisition researchers and language teachers alike that the audio-lingual method was not producing students who were fluent in second languages. By about this same time, many psychologists and linguists had abandoned their respective neo-behavioristic and structuralist models in favor of newly-developed frameworks. Psychologists were proposing what were to become known as cognitive psychology and humanistic psychology, while linguists were involved in the development of transformational-generative grammar models. As was the case between behaviorist psychologists and the linguistic school of structuralism, cognitive psychologists and generative grammarians shared many of the same theoretical beliefs, e.g. innateness of human language, rationalism, competence vs. performance, deep vs. surface structures, etc. It was only natural, then, for methodologists and schools of education of the 1960's to look to transformational-generative grammar for an appropriate theory of language acquisition. However, theoreticians working within the transformational-generative grammar model at that time made it very clear that their transformational-generative grammar model was one of linguistic competence, and that the question of language acquisition was of little interest or importance to them. Hence, a great void had been created in the field of language teaching methodology: the audio-lingual method was untenable, yet there was no new effective language teaching methodology available to replace it. As a result of this void, many language teachers returned to what they were most comfortable with, a modified grammar-translation methodology.

During the 1970's, communicative models of language teaching were introduced. Unfortunately, many teachers of foreign language were unwilling to utilize this important approach to language teaching, probably because of one or more of the three following reasons: 1. a disillusionment with prior unsuccessful psychological and linguistic contributions to language teaching theories; 2. an unclear understanding of the theoretical and methodological differences between the audio-lingual method and a communicative competence-based methodology; 3. a discomfort with yet another new methodology, since the vast majority of language teachers, especially at the college and university levels, have their own second language learning experience utilizing some version of the grammar-translation method. That is to say, a large percentage of today's language teachers are the products of the grammar-translation method, and have previously rejected the audio-lingual method in favor of a return to the grammar-translation method they are most comfortable with.

In spite of the large body of research in the area of second language acquisition and second language teaching methodology which has been introduced in recent years to support the value of communicative models of second language acquisition, many language teachers, for the reasons just mentioned, have therefore been reluctant to undertake a new methodology. Unfortunately, many language teachers not directly involved in methodology or language acquisition have seized upon Higgs and Clifford 1982 and the ACTFL guidelines to justify a return to the grammar-translation method,

and some of these same individuals have misinterpreted the intentions of Higgs and Clifford. Higgs and Clifford 1982 intended to stress the importance of teaching grammatical accuracy *before* communicative activities become the major focus in the second language classroom, i.e. Higgs and Clifford are *not* advocating the replacement of communicative activities in the second language classroom by grammar and translation activities.

5. Conclusions

The experimental data in the present study clearly demonstrate that students taught grammar inductively using a language teaching methodology which stresses communicative activities were able to perform as well or better than students who learned grammar taught deductively and within a system that stressed grammatical accuracy. Based on the data presented herein, it appears that those students who acquired Spanish as a second language within a communicative methodology show no evidence of greater degree of error fossilization than do students who were exposed to a methodology which stressed grammatical accuracy. In both the present study and in Higgs and Clifford 1982, it has been assumed that linguistic errors present at the time of testing represent the fossilization of anomalous forms. Neither in the present study or in Higgs and Clifford 1982 has it been demonstrated that, following Selinker's (1972:215) notion of fossilization, these observed errors had become imprinted on the linguistic systems of the language learners tested to the degree that "no matter what the age of the learner or amount of time of explanation and instruction" could they be corrected. However, if the forty-three groups of students utilized herein are typical of second language classes, then it is clear that empirical evidence renders totally invalid Higgs and Clifford 1982's claim that grammatical accuracy must be stressed, and presumably taught, from a cognitive approach, before communicative modes of language instruction can be safely undertaken in the second language classroom.

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