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## ABSTRACT

A return to basic inductive research methods is recommended. Specifically, the scientific method of "strong inference" ought to be applied in attempts to prove hypotheses concerning the relationship that may exist between attitude variables and the learning of a second or foreign language. These hypotheses, drawn from the literature and discussed here, are: (1) the strength of the relationship between attitudes and achievement increases with increments of time; (2) the relationship becomes weaker under the same conditions; (3) the relationship tends to remain unchanged; (4) the relationship between attitude variables and variance in second language learning is quite strong; variance which could be accounted for by attitude variables might be above 25%; (5) the variance might be much less, below 10%; (6) the relationship may be substantially stronger in contexts where many opportunities to communicate with the target language group are available; (7) the more a learner is self-confident, extroverted, and friendly, the more rapid will be his progress and the higher his ultimate level of attainment of proficiency; (8) the direction of causation is from attitudes to learning and achievement; (9) high levels of attainment or rapid rates of learning may cause positive attitudes; (10) the direction of causation is both from attitudes to attainment and the reverse; (11) the relationship of attitudes and achievement will be the same in foreign and second language learning contexts; (12) the contrast will reveal a stronger relationship in foreign language contexts; and (13) an integrative orientation will produce more efficient learning and a higher level of attainment than an instrumental orientation. (Author/CFM)

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SELF-CONCEPT, OTHER-CONCEPT,  
AND ATTAINED SECOND LANGUAGE PROFICIENCY

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Perhaps it is not inappropriate for a brief paper on the role of attitudes in second language acquisition to begin with a few words on attitudes toward research. There is probably no topic in sociolinguistics that is more elusive, abstract, and subjective in nature than the topic of attitudes and their effect on learning a second language. Therefore, it is important that the methods of investigation applied to such a subject be as sharp, impartial, and systematic as is possible.

Some years ago, John R. Platt offered the startling observation that not all science is equal, that "certain systematic methods of scientific thinking may produce much more rapid progress than others" (1964, p. 347). He argued that the astounding progress in some fields as compared to the lack of it in others was attributable not to the "tractability of the subject" nor to the "size of the research grants" nor yet to the "quality" of the people doing the work, but rather to a difference of intellectual approach. He referred to "the discoveries" that regularly "leap from the headlines" in fields like "molecular biology and high-energy physics" while there are "other areas of science that are sick by comparison because they have forgotten the necessity for alternative hypotheses and disproof" (p. 350).

Platt urged a return to the fundamentals of "the simple and old-fashioned method of inductive inference that goes back at least to Francis Bacon" (p. 347). Platt was speaking of a beefed up version of the method for which he proposed the term "strong inference". It differs from the Baconian approach only in the inclusion of multiple working hypotheses (as advocated by T. C. Chamberlin as early as 1897) and in its systematic regular recycling through the well known steps of (1) formulating clear alternative hypotheses, (2) devising crucial experiments to eliminate some of them, and (3) carrying out the experiments. By adding step (4), namely, recycling the procedure with subsequent hypotheses "to refine the possibilities that remain" (p. 347), Platt argued that the researcher almost guarantees a spiraling process of growth from theory to data to theory to data with greater explanatory power achieved in every cycle.

It is commonly believed that the subject matter of the social sciences is such that the method Platt was advocating is less applicable there than in the so-called hard sciences. Yet the criticisms he offered of some of the work in the hard sciences would be just as appropriate for some of the research in applied linguistics, sociolinguistics, and attitude research. Consider "The Frozen Method. The Eternal Surveyor. The Never Finished. The Great Man with a Single Hypothesis. The Little Club of Dependents. The Vendetta. The All Encompassing Theory Which Can Never Be Falsified" (p. 350). Is there not a familiar ring here? Surely such criticisms are

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as applicable to linguistics and other social sciences as they are to fields like chemistry which happened to be the one that Platt was addressing. He said, "We are all sinners, and. . . in every field. . . we need to try to formulate multiple alternative hypotheses sharp enough to be capable of disproof" (p. 351).

Platt observed further that "disproof is a hard doctrine. If you have a hypothesis and I have another hypothesis, evidently one of them must be eliminated. The scientist seems to have no choice but to be either soft-headed or disputatious. Perhaps this is why so many tend to resist the strong analytical approach--and why some great scientists are so disputatious" (p. 350).

There does not seem to be any reason to expect the Eternal Surveyor method of sociolinguistics, or the Great Man with a Single Hypothesis, or the Ruling Theory approach to be any more successful in the social sciences than it has been in the hard sciences. Is there any reason to expect the method of strong inference not to afford an improvement in research in our own little corner of the social sciences? Can it be any less effective than the Eternal Surveyor or the Ruling Theory which have, sad to say, been so characteristic of much of the work in our area? (And I say "our", for I too am numbered among the sinners doing research in applied linguistics and more recently in sociolinguistics and attitudes.)

It seems that now is a good time to at least try to apply the method of strong inference to some of the perplexing questions of sociolinguistics--in this case, to the questions about the sort of relationship that may exist between attitude variables and the learning of a second or foreign language. First we might ask what plausible hypotheses can be (or have been) posited about the nature of the possible relationship? Second, what evidence exists or could be acquired experimentally which could be used to exclude (disprove) some of the plausible alternative hypotheses? And third, what avenues of investigation may be expected to clarify some of the remaining possibilities?

In 1949, W. R. Jones published a pioneering study on the topic of attitudes toward learning a second language and a year later he reported results showing a positive, though not strong correlation between measures of attitude and attainment in Welsh studied as a second language. One of his conclusions was that attitudes tended to become less positive as the students progressed farther in their study, and another was that the strength of the correlation between attitude and attainment tended to increase. Interestingly, R. C. Gardner (1974) advanced a somewhat different view: ". . . in the initial phases of second language learning, motivational variables are relatively more important than are language aptitude and intelligence. As the student becomes more proficient, aptitude and intelligence take on greater significance" (quoted from Abstract 105 in Desrochers, Smythe, and Gardner, 1975). Although Gardner refers to additional variables and their relative importance, it is possible to distill mutually contradictory hypotheses from his statement and from Jones' conclusions: to wit (H1) the strength of the relationship between attitudes and achievement increases with increments of time versus (H2) the relationship becomes weaker under the same conditions.

Another possibility is (H3) that the relationship tends to remain unchanged. However, to focus attention on such questions leaves a fundamental question unanswered, namely, whether the relationship is strong enough in the first place to merit such attention.

If one is interested in explaining the variance in language acquisition, the crucial question becomes how much of that variability is contributed by attitude variables, and how much is contributed by other variables. In a paper in 1969, Spolsky suggested that among the factors believed to contribute to variance in second language learning were "method, age, aptitude, and attitude" (P. 404). This suggestion hints at the hub of the question, yet most of the research seems to be directed at the periphery. There are other factors besides the ones Spolsky mentions that might be expected to affect the rate and ultimate leveling off point of foreign or second language learning, but little research has been directed at determining the relative strengths of the contributions of just the four factors he suggests. Another important factor may be the type of learning context in which the language learning takes place. Given the availability of the right sorts of experiences outside of the classroom, it may make little difference what the second language teaching methods are, or what the age of the learners is, or their aptitude. Yet such questions can hardly be posed in a meaningful way until research is directed toward the relative strength of the contribution of a variety of factors to second language learning.

It is true that Gardner, Smythe, Clement, and Glikšman (1976) have argued that the strength of the relationship between attitude variables and attained language proficiency is at least as great as the relationship between aptitude and attained proficiency. In commenting on a number of studies, they say that "the various studies differed with respect to the nature and number of variables investigated, but the conclusion warranted from all the studies was that motivational variables were related to second language achievement, and where such comparisons were possible, that the motivational variables were as highly related to second-language achievement as were the indices of language aptitude" (p. 199). In another context, Gardner (1975) mentions the fact that several studies have shown "that measures of motivation and attitudes toward the second language community (in that order) account for more of the variance in continuing versus dropping the course than does language aptitude" (Gardner, 1975, p. 24).

All of this suggests the hypothesis (H4) that the relationship between attitude variables and variance in second language learning is quite strong--we might expect that the variance in language learning which could be accounted for by attitude variables might be above say, 25%. Another possible alternative is (H5) that the variance which can be explained by measures of attitude variables might be much less, say, below 10%. And yet another plausible alternative is that the amount of predictable variance in language acquisition attributable to attitude variables might vary with the learning context. For instance, consider (H6) that the relationship may be substantially stronger in contexts where many opportunities to communicate with the target language group

are available, and substantially weaker in contexts where a relatively artificial classroom experience is all that is available (cf. Gardner, 1975, p. 30).

But we are getting ahead of ourselves; let us return to a further consideration of the evidence that already exists concerning the strength of the relationship. Supposedly it is about the same as in the relationship between aptitude and attainment.

In 1967, John B. Carroll reported some of the results on a large and extensive study entitled "Foreign language proficiency levels attained by language majors near graduation from college." Among the variables investigated were scores on the Modern Language Aptitude Test (Carroll and Sapon, 1958). This may well be the widest used and most imitated language aptitude test in existence. Of the 2,172 subjects on whom appropriate scores were available, 1,039 were graduating majors in French, 289 in German, 80 in Russian, and 764 in Spanish. The numbers certainly ought to be sufficient to give a fair indication of the strength of the relationship between aptitude and attained proficiency even in the case of the relatively small group of Russian students.

Although a variety of language proficiency measures were used, only correlations of the three available aptitude subtest scores with the MLA Listening scores are reported. The results are interpreted by Carroll as showing that "language aptitude is significantly associated with success in foreign language study," but he goes on to say that "the association is not very strong" (p. 139). In fact, an inspection of the only reported data in Table 8 (Carroll, 1967, p. 149) reveals that in exactly half of the cases, the relationship is not even significant ( $p > .05$ ), and in none of the significant cases does the reported beta coefficient (i.e. simple correlation) exceed .17. This can be interpreted roughly as meaning that no single subtest on the MLAT (short form) accounted for as much as 3% of the variance in the Listening proficiency scores. Perhaps the correlations with other proficiency measures might have been higher, but though other matrices were apparently computed (Carroll refers to the results in Table 8 as "typical"), they are not reported. Thus, if attitude variables usually account for about as much variance in language proficiency as do reputable measures of aptitude, they account for very little variance at all. All of this evidence would have to be taken as favoring H5 stated above, and there is more data supporting that hypothesis.

In an extensive and it would appear very thorough review of research with attitude and motivation measures of various sorts, Gardner (1975) summarizes relationships observed between two measures of language proficiency (one a French Vocabulary test, and the other a Free Speech sampling technique) and 17 other measures including three aptitude scores, and 14 attitude variables. The reported correlations were computed averages from no less than 21 samples of data with an average number of 90 subjects (hence, none of the reported figures should have been derived from less than 1,890 cases). Of the six average correlations between aptitude subtests (Spelling Clues, Words in Sentences, and Paired Associates) and the two proficiency measures, the highest was .25 thus accounting for

less than 6% of the variance in the language proficiency measure, and of the 28 correlations between attitude variables and the language proficiency criteria, the highest was .29 which accounts for about 9% of the variance on the language proficiency measure in question. All of this evidence too would tend to support H5 rather than H4 stated above.

This is not intended categorically to mean that the relationship between attitude variables and attained language proficiency must be weak, but it is to say that the alternative that it may well be weak has not been excluded. The alternative that it is always strong has been excluded many times, just as the alternative that the relation between aptitude and attained proficiency is strong has been excluded several times with large samples of data. There are many remaining possibilities, however, and one of the interesting ones is that the measuring sticks could be improved both for assessing attitude variables and for assessing language proficiency. It is yet possible that Lambert's belief that "beliefs about foreign peoples and about one's own ethnicity are powerful factors in the learning of another group's language and in the maintenance of one's own language" (1974, p. 8) is correct. The trouble is that a number of competing alternatives have not yet been ruled out. What is more disturbing is that the hypothesis that the relationship must be a strong one has now been ruled out many times. It may, nonetheless, be significant and it may be considerably stronger in some situations than in others. It is to these latter possibilities that we now turn our attention.

Gardner (1975) says that "teachers often state that the outgoing, friendly, and talkative student is the more successful second language learner (cf. Valette, 1964), but few empirical studies have attempted to validate this claim" (p. 18). Following this line of thought, we might predict that (H7) the more a learner is self-confident, extroverted, friendly, and willing to take the social risks involved in conversing with speakers of a target language the more rapid will be his progress and the higher will be his ultimate level of attainment of proficiency in that language. This hypothesis presupposes that there is a causal relation between attitudes toward self and members of the target language and the attainment of proficiency in a target language.

As Nancy Bachman pointed out at a recent meeting of researchers at the TESOL Convention in New York, March 1976, it is often assumed that (H8) the direction of causation is from attitudes to learning and achievement, but it is certainly plausible that (H9) high levels of attainment or rapid rates of learning may cause positive attitudes whereas low levels and slow rates might cause negative attitudes. Another possibility is that (H10) the direction of causation (if in fact one exists) is both from attitudes to attainment, and the reverse (cf. Burstall, Jamieson, Cohen and Hargreaves, 1974).

In a recent, yet unpublished paper, Gardner and Smythe (1976) support a version of H8. They contend that attitude variables are among the factors that contribute to motivation to learn which is among the factors that eventually produce attainment in the language. They claim that the

relationship must be quite indirect. One source of evidence is the apparent weakness of the relationship between attitudes and attained proficiency as demonstrated in many previous studies. They do not mention this but they do show that little variance overlap between attitude measures and various other criteria (including proficiency in the target language) remains once the motivation variance is partialled out. However, H9 and H10 cannot yet be ruled out.

If we assume that a significant causal relationship exists, then one of the obvious factors that would have to be taken into account in testing H7 (that willingness to take social risks is positively correlated with attained levels of proficiency) would be the result obtained in any study of H6 (that the relationship will be stronger in contexts where there are more opportunities to communicate). The combined results of four studies recently completed at the University of New Mexico with two different populations of foreign language learners and two different populations of second language learners support H6 and simultaneously rule out the alternatives that (H11) the relationship will be the same in foreign and second language learning contexts, and (H12) the contrast will reveal a stronger relationship in foreign language contexts.

It is apparently the case that the correlation between attitude variables and attained proficiency tends to be stronger when the learners are in a social context where the density of opportunities to communicate with speakers of the target language is greater. For instance, Oller, Hudson, and Liu (in press) found a correlation of .52 between an attitude factor defined chiefly in terms of the traits "helpful, sincere, kind, reasonable, and friendly" referenced against Americans, and scores on an ESL proficiency test. The subjects were Chinese nationals studying for advanced degrees in Albuquerque or El Paso. For another population, a group of Mexican American women studying in a Job Corps school in Albuquerque, Oller, Baca, and Vigil (in press) found a correlation of .49 between an attitude factor defined mainly in terms of the traits "calm, conservative, religious, shy, humble, and sincere" referenced against Mexicans, and scores on an ESL proficiency test. Hence, for these two groups of learners of English as a second language, no less than 24% of the variance in the criterion measure could be predicted on the basis of an attitude variable in each case. However, in two studies of different populations of Japanese subjects studying English as a foreign language in Japan (Chihara and Oller, in press, and Asakawa and Oller, in press) the maximum amount of variance predicted in the EFL proficiency criterion by any of the attitude factors was less than 8%.

Another interesting possibility that has been much discussed in the literature is that different kinds of motivations to learn a target language may produce different rates and ultimate levels of proficiency. In numerous publications and at many professional meetings it has been claimed that (H13) an integrative orientation will produce more efficient learning and a higher level of attainment than an instrumental orientation. The terms are familiar enough, but their definitions have sometimes been altered to fit the exigencies of a particular sociolinguistic context. Generally though,

an integrative orientation can be taken to mean "a high level of drive on the part of the individual to acquire the language of a valued second-language community in order to facilitate communication with that group" (Gardner, et al, 1976, p. 199). An instrumental orientation on the other hand can usually be construed as a desire to acquire someone else's language system in order to use that language to achieve other goals such as material advantages, a better job, or a better education.

Unfortunately, the case for the superiority of an integrative orientation over an instrumental one is not open and shut. A study by Lukmani (1972) showed that an instrumental orientation was as strongly correlated with achievement in English for Marathi speaking high school students as was an integrative orientation. Moreover, in Gardner's own extensive research summarized in his 1975 review article, he notes, "ratings of integrativeness tend to correlate more highly with achievement than do ratings of instrumentality (. . .), though the differences in correlation often are not significant" (p. 27). One is inclined to seek a refinement of H13 that will produce a better fit with the observed data.

The difficulties of interpreting correlations between instrumental and integrative motives for studying a second or foreign language are even more serious. The typical method of assessing a subject's orientation toward the target language or the target language culture has been to ask certain fairly straightforward questions concerning reasons for studying the target language; or the importance (to the respondent) of possible reasons for travel to a country where the language is spoken. One of the problems is that subjects may tend to answer such questions in terms of what they think the question writer wants to hear, or what seems to be a socially acceptable response (e.g., one that makes the respondent appear acceptable by some definition). Another well-known difficulty is that the same question may mean different things to different people, or worse yet, different things to the same person depending on what happens to be his mind at the moment. For instance, as Gardner (1975) points out, "travel abroad" may be either an integrative or instrumental motive depending on its interpretation in given study. This, however, is true not only for some cases, but is generally true even for the reasons that are often used as examples to illustrate one or the other orientation type. Although "being an educated person" is often used to exemplify an instrumental motive, it could be an integrative motive if the learner perceived valued models of the target language culture as typically "educated persons" and wanted to be like them. A reason that is typically interpreted by researchers as integrative may in fact be instrumental to a particular group of subjects. For instance, "in order to live in the country where the language is spoken" could be instrumental if you happen to be a homeless refugee seeking a place of shelter, or if you feel the political situation is sufficiently unstable in the country of your native language.

Furthermore, in several recent studies, factors that are defined as either integrative or instrumental orientations or perhaps both may either fail to correlate at all with a proficiency criterion, or worse yet for the prevailing theoretical positions, they correlate negatively when the theories

predict positive relationships. Oller, Hudson, and Liu (in press) found that a factor defined principally as a desire to stay permanently in the United States (on the part of Chinese speaking graduate students in Albuquerque and El Paso) was negatively correlated with attained proficiency in ESL. Chihara and Oller (in press) found that a general travel motive factor, and a factor defined principally by a desire to travel to an English speaking country, were both negatively correlated with attained EFL proficiency for a population of Japanese adults. Asakawa and Oller (in press) found no significant correlations for factors distilled from direct questions concerning reasons for EFL study and possible reasons for travel to the United States for a population Japanese high school students. And, finally, Oller, Baca, and Vigil (in press) found a significant negative correlation between an instrumental attitude factor and an ESL proficiency criterion for a group of Mexican Americans in Albuquerque. None of the other six factors distilled from a series of direct questions correlated significantly with the proficiency criterion at all.

Promising avenues of further study include focusing serious attention on the reliability and validity of the instruments used to acquire attitude information (cf. Gardner, Ginsberg, and Smythe, 1976), and on the measures of language proficiency. It seems possible that in spite of the fact that many studies have failed to reveal a very strong relationship between attitude variables and attained language proficiency that under certain conditions the relationship may in fact be quite strong (say above a 25% overlap in variance). Clearly the investigation of attitudes and proficiency needs to be done concurrently with study of other potential variables contributing to variance in attained language proficiency. It seems safe to say that the area is still wide open to enterprising researchers and that the best explanatory theories have yet to be invented. It also seems likely that our rate of progress in all of this work will be faster if we diligently employ the method of "strong inference" and systematically work our way forward by clearly stating the plausible alternatives, disproving some of them by crucial tests, and always continuing to refine the remaining possibilities.<sup>2</sup>

## NOTES

<sup>1</sup>The system of numbering hypotheses is used merely for the sake of convenience. It is not intended to establish priorities, nor can they be inferred from it.

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