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# PROJECT ECHO

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## I. THE TASK

Research conducted under Phase I of Project ECHO has sought to develop a methodology for understanding alien cultures and communicating more effectively with these cultures. The former objective, understanding, accrues from the method's ability to:

1. identify subcultures within a population
2. identify the value systems of these cultures
3. determine the degree of internalization of specific values of members of the subculture
4. quantify differences in social perceptions
5. identify the "power structure" operating in the culture

The ECHO technique utilizes a "projective survey" format; the method is projective because the subjects (Ss) are permitted to define some variables which are usually predetermined by the investigators, and a survey because groups rather than individuals are the object of concern. The value of this type of attitude survey and the theoretical logic underlying its development are explicated below.

## II. THEORETICAL CONSTRUCTS AND ASSUMPTIONS

Current theories hold that attitudes, which ECHO attempts to assess, have three components: cognitive (with focus primarily on the evaluative part), affective, and behavioral. People tend to seek consonance among the three components, so that a given attitude has internal consistency: if the evaluation of an object is positive, then the feelings about and behavior toward that object are likely also to be positive. A person who evaluates an object, person, or concept positively will be predisposed to behave positively toward it; conversely, a person is likely to act in opposition to an object, person, or concept that he evaluates negatively.

If, on the other hand, the system is out of balance (e.g., feelings and evaluation are positive while behavior is negative), the individual has a strong tendency to bring it into balance by modifying either the behavior or the feelings and evaluation.

Values can be considered to be enduring systems of positive or negative evaluations. Thus, if a value system is understood, corresponding behaviors can be estimated; correspondingly, behavior can be influenced by modifying values. The primary ECHO task is to discover value systems by a method that is analogous to survey sampling (polling).

With the recent advances in polling techniques, very small samples of data can be used with great confidence to predict public opinion on a wide range of issues. However, polls are only applicable to populations about which much is already known. Asking the right question of the right people is difficult even in a culture with which we are intimately familiar. The ECHO method obviates this "previous knowledge" problem by reversing the polling process. Polls ask the respondent to assign an evaluation to a preselected topic; the ECHO technique assigns an evaluation and asks the respondent to think of a behavior which carries this evaluation.

A specific example of this kind of projective question is: "What is a good thing that you could do which someone would praise you for doing? Who is the someone who would approve?" The format of the question can be modified by varying the assigned evaluation and "role". The role in this example was "you". Another role might be "you as a nurse" (student, employee, etc.). Questions can be cast in several forms according to the needs of the investigators.

Answers to the query "Who would approve (disapprove)?" provide information about the subjects' perceived "powerstructure", i.e., the sources of positive and negative reinforcement which control his behavior.

The projective survey technique was conceived by Professor Alex Bavelas[1] and applied in a variety of settings by Kalhorn,[2] Warner,[3] Havinghurst and Neugarten,[4] and Rice.[5] Research conducted under Project ECHO has differed from previous studies in a variety of ways. The current research, for example, uses indigenous classifiers rather than "experts" to categorize the raw inputs, and validity tests have been introduced. New forms of the instrument and methods of statistical analysis have also been developed during this period.

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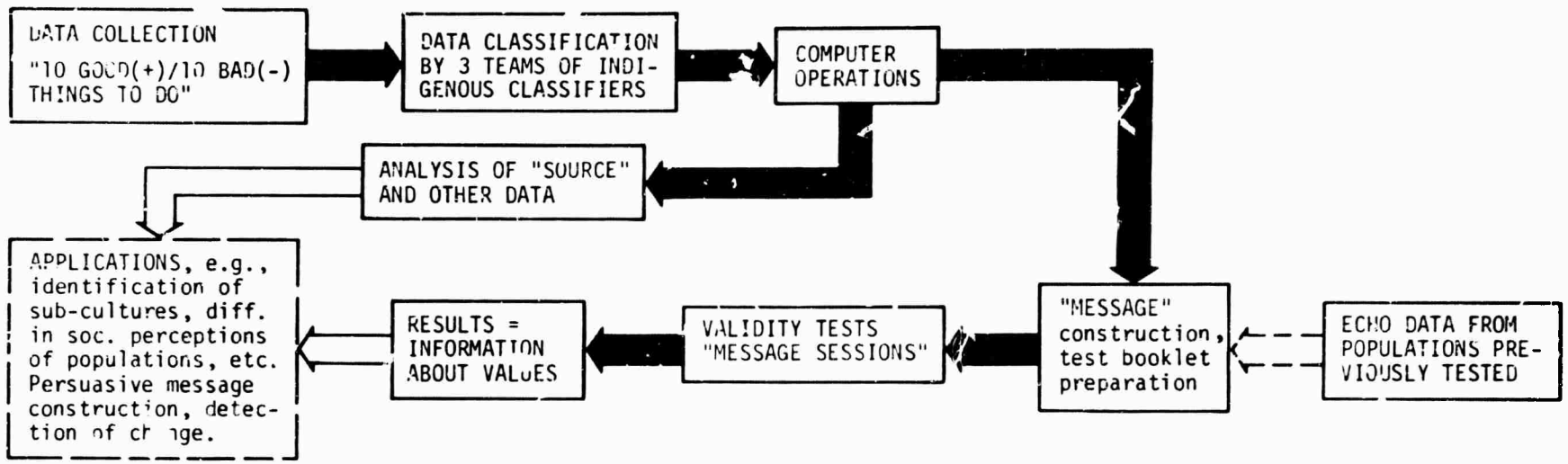


Figure 1. The ECHO Methodology

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## III. THE ECHO METHODOLOGY

The ECHO methodology, as developed by General Research, is a nine-step process from data collection to production of valid descriptions of value hierarchies and power structures in the test population. Figure 1 represents the process diagramatically.

A brief summary of the significant elements in the ECHO methodology follows:

1. The problem is tentatively defined and an appropriate form of two projective ECHO questions is selected.

2. A population is identified and a sample selected.

3. Subjects are asked to generate ten anonymous answers to each of the ECHO questions. Answers are recorded on preprinted and coded IBM tabulating cards.

4. The response cards are divided into logical groups (male-female, good-bad, etc.) and each group of data is categorized by three different teams of classifiers (Cs). Cs divide the cards into categories and provide brief descriptions of each category's contents. They then rank the categories on some assigned dimension of importance.

5. The classified cards are punched with the two-digit codes which identify the classifying team and the category description which was assigned. Coded cards are submitted to a five-step computer analysis which produces value system and power structure outputs.

6. Equal-length lists of "values" are extracted by selecting the titles of the five categories with the highest frequencies (f) (i.e., the largest number of cards) in each classification system.

7. The lists are presented in a forced-choice, paired-comparison format to a second sample of subjects from the same population.

Each list is paired with one of the others, or with a list from some other population; Ss are asked to select the set of values in each pair which is "most important to them". The hypothesis is that the Ss will select (significantly more than chance) the list which came from their own population and will reject (significantly more than chance) lists which did not come from their population.

8. Those lists which were selected as hypothesized are assumed to come from valid representations of a portion of the population's value hierarchy.

9. Concurrently with the above, other data are analyzed and the results combined with (8).

The above apercu constitutes only a cursory outline of the ECHO methodology. A detailed description and justification of each variable in the process (20 cards, 3 classifications, 5 most frequently mentioned categories, etc.) is given in Secs. V through VII.

The methodology described above is the product of a large number of individual experiments. The contribution that each experiment made to a particular element of the methodology is described below; the chronological sequence of events, hypotheses, and experiments, are reported in Appendix I.

## IV. SUBJECT POPULATIONS USED IN PHASE I

Eleven different populations participated in the Phase I research. These groups included: freshmen, seniors, and graduate students from three different universities (Northwestern, UCLA, and Stanford); clerical workers from two Southern California companies; student nurses from a Chicago hospital; two classes of elementary school children (third and sixth grades); Mexican-American residents of "East L.A."; and two groups of Cuban exiles who now reside in Southern California. In many cases, multiple samples were drawn from larger populations and a different experimental treatment was applied to each sample group. A summary of the populations used in research completed under this contract is contained in Table 1. This table, however, does not reflect the actual number of samples tested, experimental treatments applied, or subcultures studied (a single population may have several subcultures operating simultaneously). For convenience of presentation this detailed information has been included in Appendix I.

TABLE 1

SUMMARY OF SUBJECT POPULATIONS AND EXPERIMENTAL TREATMENTS USED IN PROJECT ECHO, PHASE I

| Population | Code | Number of Ss in Population | Number of Classifications Completed | Message Session Held? | No. Ss | Number of Forms |
|---|---|---|---|---|---|---|
| UCLA | B | 137 | 17 | Yes | 70 | (2) |
| Northwestern | T | 68 | 11 | Yes | 83 | (6) |
| Stanford | A | 72 | 2 | No | | |
| Nurses | N | 52 | 12 | Yes | 37 | (2) |
| Carnation Company | C | 54 | 2 | Yes | 31 | (2) |
| Prudential Company | P | 93 | 3 | Yes | 98 | (2) |
| Third Graders | 3 | 17 | 3 | No | | |
| Sixth Graders | 6 | 24 | 3 | No | | |
| Cuban Exiles | CE/K | 25/18 | 10/8 | Yes | 25 | (2) |
| Total | | 560 | 71 | | 387 | 16 |

## V. DATA COLLECTION

The ECHO question can be cast in a variety of forms according to the needs of the investigators; different forms tap different attitudes. There are five major variables in the question:

1. Role assignment ($\rho$): the socially prescribed position to be used as the frame of reference for answering the question
2. Event ($\varepsilon$): the kind of occurrence, usually a behavior, solicited
3. Event evaluation ($\eta$): the positive or negative quality of the event (behavior)
4. Reinforcement ($\pi$): specification of either positive or negative reinforcement
5. Source ($\sigma$): the person(s) or concept(s) which provides the reinforcement.

In some cases a sixth variable may be introduced to define the relationship between the role holder ($\rho$) and another role, role holder, or group.

For example, a question designed to tap the areas of conflict between segments of a society might take the following form:

> What is something <u>a person like you</u> ($\rho$) could do ($\varepsilon$) that <u>your friends would say was foolish</u> ($\eta$) but that someone else would <u>praise</u> ($\pi$) you for doing? Who would that <u>someone else</u> ($\sigma$) be?

Two forms of the projective question have been used to collect data during the Phase I research: "What is a (good/bad) thing to do?" and "What is a (good/bad) thing that could happen?" The latter question was used during the summer 1966 pilot studies and has been given only cursory consideration during this phase of the research.

Subjects were asked to write their answers on IBM cards, which became the basic data for all subsequent operations.

## VI. CLASSIFICATION

The classification process is an integral part of the ECHO methodology. It is based on the hypothesis that indigenous classifiers (members of the exact population under study) are able to make fine discriminations among statements from their own subculture and to understand the nuances of the language, and that they do this better than "experts". This hypothesis was supported in the multiple classification studies, reported below, and in the validity test sessions (Sec. VII).

### A. METHOD

The classifiers worked first individually, each with one-third of the deck, sorting the cards into categories that had meaning to them. The investigator did not give examples of categories since any example would tend to structure the process in terms of the investigator's frame of reference; ECHO is interested in discovering the frames of reference of the subject population.

Although classifiers take varying amounts of time for this step, the modal time is approximately 30 min. After all three had completed the individual sorting, they joined together to develop a single set of categories to include all cards. One person read the cards in one of his stacks and the others added cards that meant the same thing. The process was continued, with the other two taking turns reading cards, until all the cards had been placed into categories. They then titled the categories, either making up titles or using a representative answer found on one of the cards in that category.

The investigator assigned a two-digit code number to each category, the cards were punched, and then they were classified by another team.

### B. QUANTITY OF DATA

A team can comfortably classify the data cards of 25-30 subjects, that is, 250-300 cards.

This conclusion was reached by a process of successive approximations. The first classification session at UCLA was designed to test the process as well as to generate data. Two teams each classified approximately 1400 cards. Two sessions, six hours and five hours long, were required. The high motivation and enthusiasm that seemed clear at the beginning changed to discomfort, fatigue, boredom, and frustration as the hours passed.

In the studies at two Southern California companies, the classification teams worked with approximately 500 cards (516, 526, 599, 600 and 472 cards). Although fatigue and boredom were not as pronounced as in the UCLA sessions, the investigators were still impressed by the decreased efficiency as time passed.

In the Stanford study, the two classification teams each worked with 700 cards. One team completed its task in approximately 5 hours; the other team stopped work at the end of 4-1/2 hours, and completed the task in 3 hours the following morning.

In the Northwestern study the classifiers worked with decks of approximately 325 cards. The Nurses study classifiers worked with approximately 250 cards. In both groups, a complete classification took from 2 to 3 hours. The team members did not appear fatigued; informal interview data supported the observation. In both studies, a second set of four teams reclassified the data two days later under virtually identical conditions. Although the second group had had no experience with the process, the time to complete the task varied from 1-1/2 to 2-1/2 hours. A possible explanation for this time reduction is that the second group learned from classmates that the task was nonthreatening and therefore approached it with more confidence.

In the course of the UCLA multiple classification session, described below, 11 classification sessions with 150 cards were run. The modal time was under two hours; only one group took 3 hours. Four sessions using 300 cards were completed in 2-1/2 to 3 hours .

The Cuban study classifiers worked with packets of 90, 100, 110, and 140 cards. During each three-hour session each group classified twice.

C. MULTIPLE CLASSIFICATION OF DATA

Current findings indicate that a given deck of cards should be classified by three different teams to give a measure of reliability. Also, the categories from one classification can be used to interpret the categories of another.

Multiple classification appears to be one of the most powerful tools for data analysis. The process is simple: two or more teams independently classify the same set of cards. Studies conducted with UCLA, Northwestern, Nurses and Cuban groups indicated that when classifiers came from the same groups, reliability tended to be high (i.e., the same cards were grouped together), but these same teams used different numbers of categories and different category widths. Examination of the structures of the categories indicated that when the cards placed in a large category by one group were distributed into two or more categories by another group, the category labels had semantic equivalence.

> Example: The category "Hel[illegible]ner people" from UCLA female (F1) classifiers was distributed by another group (F2) of classifiers into three categories with titles "Help someone at your own expense," "Help those less fortunate," and "Help others." Since both the language and culture were familiar, it was possible to state with some assurance that the classifiers were in agreement, but that the second group made finer discriminations.

When classifiers are drawn from somewhat different populations the classifications have less overlap, presumably the result of a difference in social perceptions. Table 2 shows male data classified by a team of male (M2) and a team of female (F4) classifiers. An examination of the titles indicates that they are not in disagreement but only organized differently. Thus, the male concept of "Be a better person and relate to

TABLE 2

UCLA MALE (M2) DATA CLASSIFIED BY F4 and M2

| Female (F4) Classifications | Male (M2) Classification |
|---|---|
| "Live up to self-ideal" (f = 7) | |
| "Be more easy-going" (f = 4) | |
| "Have more self-confidence" (f = 3) | "Be a better person and relate to my environment better" (f = 21) |
| "Realize minor goals" (f = 3) | |
| "Be more liveable" [sic] (f = 3) | |
| "Improve sphere of knowledge" (f = 1) | |

my environment better" meant, to these women, a number of things: "Live up to self-ideal", "Be more easy-going", "Have more self-confidence", "Realize minor goals", "Be more liveable" [sic], and "Improve sphere of knowledge". A person from our culture can intuitively see the logic of that particular breakdown of the larger category. Two groups such as this, males and females from the same subculture, understand each other quite well: a number of different groups have checked the classifications made by other groups to see if they would agree with the way the cards were sorted; other groups were given the category titles and asked to sort the cards into those categories. The agreement was almost absolute. The multiple classification method appears potentially fruitful, and the method itself is undergoing refinement.

D. ARE INDIGENOUS CLASSIFIERS NECESSARY?

All evidence indicates that indigenous classifiers (Cs) are more able than experts to organize the raw inputs into meaningul categories; this ability accrues from the indigenous classifiers' greater familiarity with the subject population.

Example: One group of University Cs distributed a batch of cards, which the experts (a professor and a graduate student) defined as "Be kind to roommates," into two different categories: "Be kind to dorm roommates" and "Be kind to apartment roommates." In explaining their actions the Cs pointed out that apartment roommates are secured through a "self-selection" process while the dormitory roommates are assigned by an impersonal computer; therefore, more tolerance and understanding is due the former.

The importance of indigenous classifiers is evident when the work of alien Cs is compared with the classifications made by indigenous Cs. For example, a batch of 115 UCLA cards was classified, at different times, by a group of three UCLA coeds and a group of three female Cubans. The categories created by each team and the cards composing each of these categories are shown in matrix form in Table 3. Obviously, the UCLA Cs were able to make finer discriminations; the shaded area, for instance, shows that the Cubans lumped together five UCLA categories ("study hard to get good grades"; "prepare for future career"; "graduate in alloted time;" "learn for learning's sake;" and "learn new skills") into a single general category, "learning and get good grades." The matrix has other examples of this discrimination differential. Experimentation with both Cuban and College Cs indicates that these apparent differences in social perceptions are not artifacts of culture-specific ways of categorization (e.g., using few or many categories), but represent different ways of viewing the same concepts, which is what one might expect between cultures.

## E. CONCLUSIONS

1. The optimum number of cards for one classification session is 250-300. (Note that investigations, reported below, indicate that this number yields a stable data base.)

2. If larger numbers are to be classified, the sessions should be broken so that no session is longer than three hours. A minimum of two hours should elapse between sessions.

3. Each deck should be classified three times.

TABLE 3

EXAMPLE OF TWO CLASSIFICATIONS OF SAME DATA

"Eyeball Analysis" Indicates That the UCLA Cs Were More Able to Make Finer Distinctions Among Concepts. Shaded Areas Illustrate Differences in Two Teams' Social Perceptions.

| UCLA FEMALES CLASSIFYING $F_2$ / CLASS FEMALES CLASSIFYING $F_2$ | Get a Good Job | Cleanings | Helping Others | Family | To One Self | Personal Interest | Learning and Get Good Grades | Participate with Other People | Learn More | Take More Classes | Lose Weight | Love for Other People | Go to Church | Be on Time | TOTALS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Prepare for Future Career | 6 | | | | | | 1 | | | 2 | | | | | 9 |
| Do Chores | | 4 | | | | | | | | | | | | | 4 |
| Help a Friend With a Problem | | | 3 | | | | | | | | | | | | 3 |
| Be Sociable | | | 1 | 1 | | | | 9 | | | | | | | 11 |
| Be Nice to Family Members | | | | 13 | | | | | | | | | | | 13 |
| Be Tolerant with Family Members | | | | 4 | | | | | | | | | | | 4 |
| Be a Good Parent | | | | 2 | | | | | | | | | | | 2 |
| Be Kind and Considerate of Others | | | | | 1 | | | | | | | 9 | | | 10 |
| Experience Life Fully | | | | | 1 | 2 | | | 1 | | | | | | 4 |
| Improve oneself (Qualities) | | | | | 10 | | | | | | | | | | 10 |
| Study Hard to Get Good Grades | | | | | | | 10 | | | 1 | | | | | 11 |
| Graduate in Allotted Time | | | | | | | 4 | | | | | | | | 4 |
| Learn for Learning's Sake | | | | | | 1 | 2 | | 1 | 2 | | | | | 6 |
| Learn New Skills | | | | | | | 3 | | | | | | | | 3 |
| Get Married | | | | | | | | 1 | | | | | | | 1 |
| Participate in Organizations (extracurricular activities) | | | | | | | | 6 | | | | | | | 6 |
| Miscellaneous | | | | | | | | 1 | | | | | | | 1 |
| Go to Church | | | | | | | | | | | | | 2 | | 2 |
| Be Attractive | | | | | | | | | | | 5 | | | | 5 |
| Attend Cultural Events | | | | | | 1 | | | 2 | | | | | | 3 |
| Break Bad Habits | | | | | | | | | | | | | | 3 | 3 |
| TOTALS | 6 | 4 | 4 | 20 | 12 | 4 | 20 | 17 | 4 | 5 | 5 | 9 | 2 | 3 | 115 |

4. Each classification should be checked by having another team sort the cards into the categories generated by the original team.

5. The classifiers (including the team mentioned in (4) above) should rank the categories for importance (or whatever variable is being investigated). Note that this is a check on ranking by frequency.

## VII. VALIDITY CHECK

As an estimate of validity ("Does the instrument do what it purports to do?"), test sessions were run to see if ECHO-generated data represented important and prevalent values in the subject culture. The sessions also allowed the assessment of the method's sensitivity: could it distinguish among similar subcultures? In addition, the test sessions were used to determine how to select specific value statements from the many categories supplied by the classifiers. Six groups were tested: UCLA, Carnation, Prudential, Northwestern, Nurses, and Cuban Exiles.

### A. PROCEDURE

Although each session differed in some way from the others, the same basic procedure, a "message session", was followed in all. The subjects were given test booklets that contained, in paired-comparison format, equal-length "messages"* (lists of category titles) that came from three sources: (1) classification sessions that represented the subject population; (2) classification sessions of other populations; and (3) a list, in the same form, of items prepared by an "expert" in that culture. Ss were required to select the one of each pair that they believed to be the "most important". Figure 2 is a sample page from a message-session test booklet.

The position of each pair of messages on a page was alternated and the pages were placed in random order in the test booklets to control position and ordering effects. Each message from a classification session consisted of the titles of the five categories with the highest frequency, in rank order.

In some cases, special test booklets were prepared for different subgroups. For example, the Carnation subjects were divided into two groups, secretaries and non-secretaries, and different messages, based

*The term "message" was inherited from an early study; it is now used to refer to the list of words or phrases used in a validity check session.

F1

TO GET BETTER GRADES

TO HELP OTHER PEOPLE

TO BE KIND, CONSIDERATE AND UNDERSTANDING OF OTHERS

TO BECOME A SELF-FULFILLED PERSON

TO UNDERSTAND MYSELF BETTER

R61

HAVE FUN AND GET ENJOYMENT OUT OF LIFE

STUDY AND GET GOOD GRADES

MAKE LOVE AND HAVE SEXUAL RELATIONS

MAINTAIN GOOD HEALTH

FEEL AND ACCEPT SOCIAL RESPONSIBILITY, BE A REFORMER

WRITE YOUR ANSWER HERE_____. Go on to the next page.

Figure 2. Sample Page From a Northwestern Test Session Booklet. Fi is From UCLA Female Data; R61 is From Northwestern Male Data

on secretarial and non-secretarial data respectively, were prepared for them. Similarly, the male subjects in the Cuban and Northwestern groups received test booklets containing messages based mainly on the male responses while the females in those two groups received messages created mainly from female responses.

The hypothesis, as stated earlier, was that Ss would select the list which came from their own population over any other, and would select lists which came from a similar population over lists coming from "alien" populations. "Population", in this instance, refers to both the data source and the classifiers. Table 4, in the example below, shows some of the possible variations of classifier and data-source mixes.

B. MESSAGE CONSTRUCTION

Several decisions, based on the judgment of the investigators, were made about message construction: (1) the language of the subjects should be used unchanged; (2) the selection of the specific items to be included should be by mechanical means and independent of the judgment of the investigators; (3) messages should contain approximately five items. In accordance with the first decision, no connecting words or phases could be used, so category titles were presented in a list. To implement the second decision several methods were tried; at the present time the evidence seems clear that the categories with the highest frequencies (the largest number of cards) are the most representative. Appendix II contains data supporting that contention. The other methods tried were (1) ranking by classifiers (high correlation with frequency), (2) ranking by S's estimate of importance, and (3) selection by source; it is possible that this last method may have merit for other research purposes.

The third decision, to limit the number of categories, fit the empirical findings: in almost every classification session, the five categories with the highest frequencies accounted for over 60% of the cards. In the few exceptions, the sixth category was tied with the fifth. When a tie occurred, a coin was tossed to determine the rank.

An "expert" was asked to write, in rank order of importance, the significant components of the clerical jobs in his company. An expert was defined as being a person with considerable knowledge about a population but who was not part of that population. An example was the personnel manager of Prudential relative to the clerical force of that company.

C. EXAMPLE OF RESULTS

The details of each validity check session will be found in Appendix I; the Cuban study is reported here as an example.

1. List Construction

The Cuban lists consisted of the titles of the five highest-frequency categories in each of six classification sessions. Table 4 shows the classification systems used.

TABLE 4

CUBAN CLASSIFICATION SYSTEMS EMPLOYED IN CONSTRUCTION OF LISTS FOR VALIDITY TEST

| LIST | CLASSIFICATION SYSTEM |
|---|---|
| I | Males classifying male positive data |
| III | Females classifying female positive data |
| V | Males classifying combined male positive and negative data |
| VI | Females classifying combined female positive and negative data |
| VII | Males classifying female positive data |
| IX | Females classifying male positive data |

In addition, a list (translated into Spanish) was constructed from the five highest-frequency categories in the Stanford positive data.

2. Procedure

The lists were presented in a paired-comparison format, the Ss being instructed to select from each pair the list which they considered to be "most important".

The test booklets consisted of randomly ordered pages, each of which contained two lists and an answer blank. Figure 3 is a sample page. Male and female Ss received two slightly different test booklets.

3. Results

Table 5 indicates the proportions of Ss selecting each of the lists and the levels of significance of the results.

XI

AYUDAR A OTROS.
INCREMENTAR EL BIENESTAR COMÚN.
ESTAR INTERESADO POR MUCHAS COSAS.
VIVIR LA VIDA PLENITUD.
ACTIVIDAD FAMILIAR.

III

AYUDAR AL PROJIMO.
LIBERACIÓN DE CUBA.
PROPAGACIÓN DE LA FE CRISTIANA.
RESPETO A LAS LEYES Y BUEN COMPORTAMIENTO EN ESTE PAIS.
COMBATIR EL COMUNISMO.

RESPUESTA_____

Figure 3. Sample Page From Cuban Test Booklet. XI is a Translation of Stanford Data; III is Cuban Female Data

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## TABLE 5

## RESULTS OF CUBAN VALIDITY TEST

| COMPARISONS PRESENTED TO Ss (Hypothesis: Ss will prefer message on left) | | | PERCENT OF SAMPLE IN WHICH HYPOTHESIS WAS SUPPORTED | | | |
|---|---|---|---|---|---|---|
| | | | Males | | Females | |
| | | | Percent | Significance, = | Percent | Significance, = |
| Same-sex positive data, Same-sex* classifiers | -vs- | Opposite-sex pos. data, Opposite-sex classifiers | 36 | N.S. | 69 | 0.10 |
| | | Same-sex pos. data, Opposite-sex classifiers | 73 | 0.10 | 82 | 0.05 |
| | | Opposite-sex pos. data, Same-sex classifiers | 76 | N.S. | 83 | 0.05 |
| | | Same-sex mixed data, Same-sex classifiers | 73 | 0.10 | 69 | 0.10 |
| | | Stanford pos. data | 100 | 0.05 | 100 | 0.05 |
| Same-sex mixed data, Same-sex classifiers | -vs- | Opposite-sex mixed data, Opposite-sex classifiers | 18 | 0.05 | 92 | 0.05 |
| Opposite-sex pos. data, Opposite-sex classifiers | -vs- | Stanford pos. data | 82 | 0.05 | 92 | 0.05 |
| Same-sex pos. data, Opposite-sex classifiers | -vs- | Stanford pos. data | 91 | 0.05 | 100 | 0.05 |

*"Same-sex" and "Opposite-sex" relative to the Ss of the validity test.

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Ss appeared to discriminate between the lists on the basis of the sex and the culture of the subjects from whose responses the lists were generated. For example, though the male Ss rejected their own list (I) in favor of that generated by the Cuban females (III), they significantly chose their own lists over that based on the Stanford data (XI). These results also present some evidence on the question of whether positive and negative responses should be classified together or separately. As can be seen in Table 5, both male and female subjects selected their own positive lists over those generated by the classification of combined positive and negative responses.

The validity test results indicate tht the ECHO instrument can determine not only important attitudes within the subject population but also many of the differences among various subgroups within the population.

VIII. POWER STRUCTURE ANALYSIS

The basic question, "What is a good/bad thing to do?" has a second part: "Who would approve?" The answers to this question, which we call "sources" and sociologists call "surrogates," provide additional information about the perceived "reinforcers" which control behavior in the subject culture. A tenable assumption is that human beings, like all animal life from one-celled amoebae to Nobel-prize-winning physicists, tend to seek positive reinforcement (reward) and avoid negative reinforcement (punishment); those who dispense these reinforcements hold "power" in the culture. People acquire the beliefs, attitudes, norms, and values of their reference culture through a process of learning, i.e., by experiencing the positive and negative consequences of their behaviors. This learning process is referred to as "socialization."

The source(s) which control a behavior may change over time. In most cases, the source of approval or disapproval changes from an external entity to an internal control mechanism, i.e., people learn to feel guilty* when they do something that their society says is wrong. The Power Structure Analysis element of the ECHO methodology permits identification of the perceived sources of reinforcement and changes in the structure, or pattern, of power impinging on the individual. Our studies indicate, for instance, that children in the third grade tend to view their parents, particularly mother, as the most important source of approval and disapproval. College students, on the hand, cite "self" as the most important source. The college students appear to have "internalized" the value system of the culture; the third graders still use their parents to tell them what society thinks is right or wrong. Sixth grade children respond more like the college students. Figure 4 shows the relative degree of influence

*Note that "guilt" is what a person experiences when he knows that he has done something wrong; "shame" is what he feels if anyone else knows about it. The two feelings are not necessarily the same.

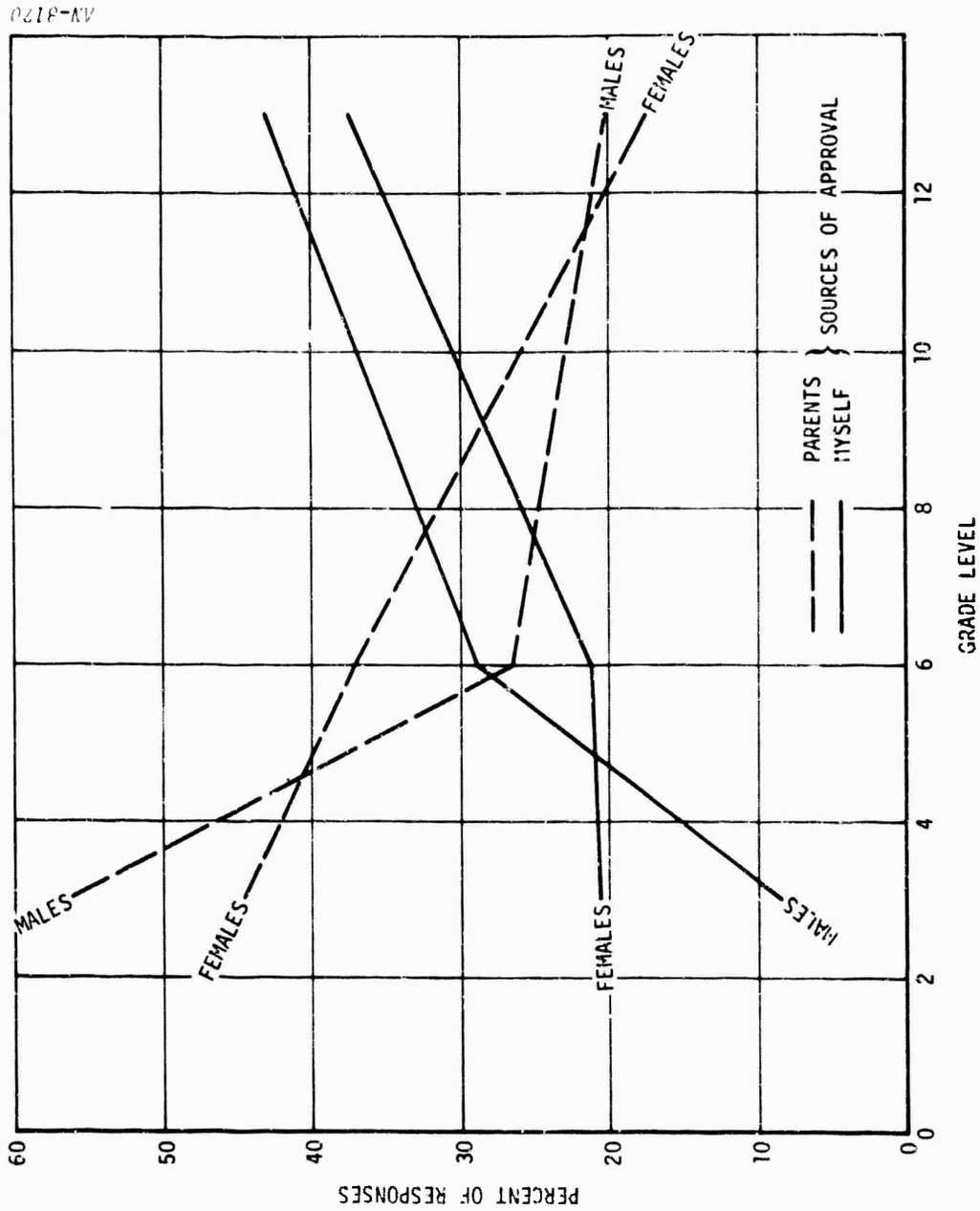


Figure 4. Relative Influence of "Self" and "Parents" At Three Grade Levels

that "self" and "parents" exercise over the behaviors of the individuals in our test populations; the increasing frequency of the term "self" may well reflect the process of "internalization" (or in sociological terms "interiorization").*

Implications for behavior modification immediately suggest themselves. For instance, data collected so far indicates that the parents, and particularly the mother, are overwhelmingly the significant figures in the life of a child. It follows that if one wishes to be effective in modifying the behavior of a disturbed child, he must deal with the parents, either by minimizing their impact or modifying their behavior. This, indeed, is what child therapists do: more time is spent with the parents of a disturbed child than with the child himself. Or, looking at the Cuban data, one might hypothesize that if the behaviors of Cuban women are to be modified, the Church would be a potent force; whereas for Cuban men it would be less so. Evidence for this statement comes from the frequent mention by Cuban females of church and church-related reinforcers.

The Power Structure Analysis is also capable of detecting cultural differences in sources of reinforcement. For instance, "Anglo" university students, both male and female, cite "myself" as source of approval far more often than Cuban subjects do (see Table 6). Note too that males, in both cultures, cite "myself" more often than do their female counterparts; the degree of difference between males and females on this dimension might be thought of as an index of the cultures' belief in the "equality" of the masculine and feminine roles.**

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* The comments on "value internalization" and the "socialization process" are based on the findings of our research with two populations of elementary school children. These experiments were designed to answer two major questions: (1) How old must our subjects be to use the standard IBM card form of the instrument? and (2) Can we detect the changes which accompany (or constitute) the socialization process? A complete report of this phase of the research is contained in Appendix III.

** The literature is replete with evidence that supports this hypothesis; e.g., see Area Handbook for Cuba, Special Operations Research Office, American University, 1961, p. 138.

TABLE 6

FREQUENCY OF OCCURRENCE OF "MYSELF" AS SOURCE OF APPROVAL OR DISAPPROVAL

| Ref. Code | Subject Population | Total N | f of "Myself | % of N "Myself" |
|---|---|---|---|---|
| A1 | Stanford Positives | 700 | 258 | 36.9 |
| A2 | Stanford Negatives | 695 | 226 | 32.5 |
| B+ | UCLA Positives (all Ss) | 1169 | 387 | 33.1 |
| B- | UCLA Negatives (all Ss) | | NOT AVAILABLE | |
| B+ | UCLA Female Positives | 506 | 151 | 29.8 |
| B+ | UCLA Male Positives | 663 | 235 | 35.4 |
| | CE1 - CUBAN DATA | | | |
| I & III | Cuban Positives (all Ss) | 259 | 36 | 13.9 |
| II & IV | Cuban Negatives (all Ss) | 241 | 41 | 17.0 |
| I | Cuban Male Positives | 150 | 31 | 20.7 |
| II | Cuban Male Negatives | 140 | 24 | 17.1 |
| III | Cuban Female Positives | 109 | 5 | 4.6 |
| IV | Cuban Female Negatives | 101 | 17 | 16.8 |

A behavior may be reinforced by two completely different sources in the same culture, and the ECHO power structure analysis can detect this fact. For example, the UCLA students saw "getting married" as a good thing to do. When asked, "Who would approve?", the men said "myself" and the women said "my parents" (see Table 7).

TABLE 7

UCLA STUDENTS: "IT'S A GOOD THING TO GET MARRIED"

| | Gender of Ss | | |
|---|---|---|---|
| SOURCE OF APPROVAL | MALES | FEMALES | |
| FAMILY | 1 | 10 | 11 |
| MYSELF | 9 | 1 | 10 |
| | 10 | 11 | 21 |

$\chi^2 = 13.61$ with $\nu = 1$ is significant at $\alpha = .001+$

The Power Structure Analysis element of FCHO technique appears to be a powerful tool for describing and understanding populations. The usefulness of this review will be greatly increased in the future when the relationship between specific values and sources is better understood. Subsumed in this relationship is an understanding of which values go together in natural clusters or constellations. Exerting pressure for change on one element of a cluster will cause a reaction in the other elements of the cluster; understanding the relationship between values will permit greater accuracy in predicting change (and therefore greater accuracy in influencing change). Source:value relationships are endogenous to this value cluster problem.

## IX. DATA PROCESSING

This section is divided into three subsections, each of which treats a different facet of the data processing procedures used in Phase I. The first subsection explicates the "Operational Package" which is used to transform the raw inputs into value hierarchies and "power structures"; the second subsection lists the library programs which have been developed for general use under the terms of the ECHO contract. Possible applications of recent advances in computer technology are considered in the last subsection.

Automatic data processing by high-speed computers is an important element of the ECHO methodology which allows reliable, unbiased data analysis while minimizing time and cost. All of the computer operations in the project were completed on a CDC 3600 computer, operated by the Computer Center of Santa Barbara, a General Research Corporation subsidiary. The computer programs used in Phase I of Project ECHO are of two types: Operational Package Programs and Library Programs.

### A. "OPERATIONAL PACKAGE" PROGRAMS

Each of these 39 programs performs the standard analytical computations that all raw ECHO inputs undergo as part of the "Operational Package" processing.

KOUNTEM--computes the frequency of all category:source combinations. The program was modified to allow comparison of different classifications of the same data cards. Each of the eight versions provides information about

1. The number of cards (N) in the data pool
2. The number of responses in each category, i.e., the prevalence of the value in the hierarchy of the target populations
3. The relative importance of each source associated with a given value

TRANSVES--compares any two classification systems which are based, in whole or in part, on the same set of responses. The output from this program answers the question, "What did two different groups of Ss say about the same cards?" This program has 28 versions now in operation.

SUBJSOUR--identities the frequency of sources cited by each subject. Information from this output can be used in answering questions about the power structure impinging on any given subject in the population.

POWERSTRC--quantifies the relative "power" each source has over a given behavior in the population's "collective repertoire."

Example: Male and female college students expect different people to approve if they "get married," as the following POWERSTRC output demonstrates. (Table 7, above, is an abridgement of this output.)

| Source of Approval | Ss Gender | |
|---|---|---|
| | Male | Female |
| Myself | 9 | 1 |
| Parents | 1 | 10 |
| Mate | 2 | - |
| Society | 1 | - |
| Totals | 13 | 11 |

WRECKEM--Computes the frequency of every combination of descriptions assigned during several classifications of the same data. This process facilitates the comparison of several groups' opinions of the same cards in cases where more than two teams classified the same data. Representing the data in matrix form when there are more than two nominally scaled dimensions is not feasible.

B. LIBRARY PROGRAMS

Several other programs were written especially for the CDC 3600 computer used in the data analysis portion of the project. This library includes the following programs:

1. Central Tendency Statistics
   a. mean ($\bar{x}$)
   b. mode
   c. median
2. Dispersion (Variability) Statistics
   a. sample variance
   b. sample standard deviation
   c. third moment about the mean
   d. single factor analysis of variance
3. Correlation Statistics
   a. Pearson Coefficient of Correlation (p)
   b. Spearman's Rho ($\rho$) for Ranked Data
   c. Kendall W for Ordinal Data
4. Chi-Square Tests
   a. r•K multifactor Chi-Square Test with (r - 1)(K - 1) degrees of freedom
   b. Single-sample Chi-Square Test with (K - 1) degrees of freedom
5. "Student's 't' Test" for Sample and Population Data

C. OTHER POSSIBLE APPLICATIONS OF COMPUTER TECHNOLOGY TO THE ECHO METHODOLOGY

Three computer innovations have been considered as being of possible value to the ECHO methodology: (1) Computerizing the classification process; (2) generating the exact vocabulary of our subjects in concordance form; and (3) identifying the common syntactical style(s) of the population. The latter two ideas hold promise as possible beginnings of a computerized persuasive message generation system.

The possibility of computerizing the classification system has been investigated and rejected. Indigenous classifiers appear to be an important element of the ECHO methodology; even without this technical constraint, the cost of such an operation would be prohibitive.

## X. SUMMARY OF MAJOR PHASE I FINDINGS

A brief synopsis of some Phase I results follows.

### A. SAMPLE SIZE REQUIREMENTS

Outputs from 15-20 people have been used to accurately reflect the value structure of a 100 to 200 person group. Insofar as this larger group is representative of a still larger group (a university, ten-year old children, a country), the very small sample can yield information, in a brief period of time, formerly available only from experts who had spent years studying that population. ECHO information is current; the "expert" may be obsolete without knowing it. The accuracy of the generalized results varies as a function of target group homogeneity, representativeness of the sample, motivation and fatigue of the indigenous classifiers, and the prevalence of the value under study. The more prevalent the value in the target group's value hierarchy, the fewer subjects are required to detect this fact. Conversely, a large number of subjects are needed to pinpoint values held by small segments of the population under study.

### B. MEASURES OF PREVALENCE AND INTENSITY

Evidence to date indicates that frequency of mention (how often a given value is cited) reflects the prevalence of the value in the target population's macro-value structure. In addition, frequency may imply intensity, but this conclusion must be reached with caution, because high frequency can also be caused by saliency (i.e., the particular value stands out clearly to the subjects) and "comfort" (i.e., the value is well-accepted and the subjects feel comfortable in talking about it).

### C. TIME FACTORS IN DATA COLLECTION PROCEDURES

U.S. adult Ss require 20 to 35 minutes to answer 20 ECHO questions. A group of third grade pupils took approximately one and a half hours to do the same thing. (An equivalent group of sixth graders, however, completed the task in the same time as adults.)

D. HOW MANY VALUES CAN A SINGLE EXPERIMENT DETECT?

The number of categories in a classification system is a function of the number of cards, i.e., the framework required to organize the cards varies directly with the number of cards classified. It also varies with the "set" of the classifiers, which may be influenced by natural tendencies, assumptions, or instructions.

E. QUANTIFYING DIFFERENCES IN SOCIAL PERCEPTION

Differences in how two populations view the same behavior can be detected and quantified by having a single batch of data classified by Cs from both groups.

F. REDEFINING "VALUE DEFINITIONS"

Meanings assigned by a group of indigenous Cs can be redefined by having several other groups of Cs, from the same population, classify the data.

G. IMPORTANCE OF A PARTICULAR VALUE IN THE S's VALUE HIERARCHY

The opinions of individual Ss about the importance of a value may show wide variability. Ss' rankings of item "importance" (I) are directly related to the sequence of response; (I) values are statistically independent of categories, i.e., importance rankings are evenly distributed among all categories.

H. DIFFERENTIATING BETWEEN POPULATIONS AND SUB-POPULATIONS

Value hierarchies discovered by ECHO differentiate between different populations (e.g., Cubans and U.S. college students) and between sub-populations in a single culture (e.g., males and females).

I. VALUE OF INDIGENOUS CLASSIFIERS

Experiments in which teams from different populations classified data from a single population demonstrated the value of indigenous classifiers; these individuals are able to impart subtle meanings and differentiation to the data that "experts" often overlook.

J. CLASSIFICATION PROCEDURES

The current operational procedure for categorizing the data requires that (1) each data pool be classified by two different teams of Cs; (2) the categories be ranked on an "importance scale" by the Cs; and (3) the cards be sorted into a predetermined set of categories as a test of classifier reliability.

The data are divided into positive and negative (i.e., good and bad thing to do) samples, and classified as separate samples rather than as a single "mixed" sample. Categories from a single-sample classification system are preferred in validity tests over those from "mixed" classification systems.

Data from 20 to 30 subjects (200-300 cards) can be classified by one team at one sitting before fatigue and boredom introduce added variance to the process. Classifier reliability, i.e., the agreement between two teams of indigenous classifiers, is high under the conditions described above.

K. INDICATORS OF CLASSIFIER EFFICIENCY

Several potential indicators of classifier efficiency are under consideration. Identifying and training good indigenous Cs should greatly improve the efficiency of the data analysis procedure.

L. ABILITY OF ECHO TO OPERATE IN NON-ENGLISH-SPEAKING CULTURES

The ECHO methodology, as we know it now, is capable of operating effectively in literate non-English-speaking, Occidental populations (e.g., Spanish/Cuban). The ability of the method to generalize beyond Judeo-Christian cultures to other cultures (e.g., Thai) will be evaluated in Phase II. The structure of Oriental languages and the impact of a different religious philosophy may require a modification of the ECHO methodology.

M. OPERATIONAL PROCEDURES FOR ILLITERATE SUBJECTS

ECHO inputs can be collected from nonhostile illiterate subjects by oral interviews. However, the data collection interview can be an extremely time-consuming procedure. For example, subjects have taken an hour and 20 minutes to give 10 "good" and 10 "bad" responses. This seems to be a function, not of difficulty, but of the subject's desire to talk to someone who will listen.

Several methods of gathering and classifying oral interview data are under consideration.

N. WHAT IS THE MINIMUM AGE OF SUBJECTS WHO CAN USE THE WRITTEN INSTRUMENTS?

School children as young as 8 years old are capable of handling the IBM card form of the ECHO instrument; however, they require 1 to 1-1/2 hours to complete 20 cards.

O. SENSITIVITY TO DYNAMIC CHANGES

The ECHO methodology appears to be capable of detecting dynamic changes in the macro-value structure of populations. This will provide a sensitive instrument for tracing the internalization of particular values and the socialization process in a culture.

P. "POWER STRUCTURE" ANALYSIS

Perceived sources of positive and negative reinforcement operating on a population (the "power structure") can be identified and quantitatively described by the current ECHO analysis system.

## XI. IMPLICATIONS AND FURTHER STUDIES

The project to date has been designed to perfect the methodology and to determine its feasibility. The results have seemed impressive, but the number of subjects on some of the critical tests has been small. Should ECHO be used in the field, the stakes may be very high; prudence dictates that new tests be made and the old ones replicated. The following topics are among those which must, or might, be given consideration in future research efforts.

### A. MODIFYING THE METHODOLOGY FOR USE WITH ILLITERATE POPULATIONS

All subjects to date (with the exception of those participating in the East Los Angeles pilot study) were literate in English or Spanish; applying the ECHO technique to illiterate populations will require some major modifications in the methodology. These modifications seem warranted in view of the large proportion of the potential subject populations which is functionally illiterate. Several questions must be answered: How can data be collected from illiterates? What system of data classification can be developed to make use of indigenous classifiers and the subtle meanings they can impart to the final classification system? How can tentative findings be fed back to the population for validation? Several potential solutions to these problems immediately suggest themselves. Data, for instance, could be collected in oral interviews, but what influence will loss of subject anonymity have on the type of values the Ss mention?

For every potential modification of the current methodology there is an effect; experiments must be undertaken to discover the optimal way (given certain economic, efficiency, and social criteria) of collecting and classifying meaningful data from functionally illiterate subjects.

### B. UTILIZING "SECONDARY" DATA

The current ECHO methodology makes use of approximately 60 to 70 percent of all the data collected, i.e., about 60 to 70 percent of the

data falls in the five most frequently mentioned categories of each system. The remaining data probably hold much significant information particularly about small subcultures, fringe groups, and socially unpopular or forbidden behaviors. In addition, the individual responses within the five major categories may yield important information.

C. VARIATIONS OF THE PROJECTIVE SURVEY QUESTIONNAIRE

The ECHO technique is not limited to a single form of the projective survey question; the principle underlying the technique can be used in many different ways to discover many different types of data.

The majority of our experience has been with the question: "What is a good/bad thing to do and who would approve/disapprove?" Some preliminary work has been done with the question: "What is a good/bad thing that could happen and what (or who) would be chiefly responsible for its happening?" The first question seeks to identify values held by the target population, while the latter attempts to tap the population's expectations and perceptions of causation (internal or external causes). Several variations of the ECHO question have been formulated, and research will be needed to evaluate their effectiveness in achieving their intended aims (e.g., detection of areas of conflict between an individual and his society or sources of conflict between small subcultures and the larger society).

D. USE OF CHILDREN AS INDICATORS OF PARENTS' CULTURE

Phase I pilot studies indicate that children eight years old and older are capable of handling the standard IBM form of the questionnaire; however, little is known about their ability to classify the data. Experiments to ascertain this information should be initiated. By breaking the classification process down into subtasks, and using children as Cs, one should be able to identify the potential sources of difficulty when the classifiers are functionally illiterate or minimally literate. Research with children is preferable, in some cases, to experiments with

adult Ss: children are reliable (e.g., not one single child S failed to complete all 20 cards; a number of Ss in every other population did leave several cards blank), children are less suspicious and more cooperative, and test populations of children are usually available over a long period of time (e.g., one semester, one school year). ECHO data collected from children also appear to be useful as indices of the culture's social control system and the value system of the parents' society. Research should be undertaken to discover (1) the extent to which data can be collected and classified by children and (2) the nature of the linkage between children's perceptions of their parents' society and reality.

E. CREATION OF MESSAGES FROM ECHO OUTPUTS

The value hierarchies produced by the classifiers are independent declarative sentences: "It is a good thing to ...." or "It is a bad thing to ....". No attempt was made during Phase I research to link different values together to form credible messages: pilot work with ECHO messages during the summer of 1966 indicated clearly that credible messages can be generated from the classifiers' outputs. Which values go together to form credible persuasive communications must be discovered; likewise, the relationships between the source (implicit or explicit) of the communication and the values that should be included in the message must be investigated. Successful completion of this research could produce a technique for generating messages which are superior, in credibility or persuasiveness, to those generated by experts. Couching the communications in the vocabulary and syntax which are popular with the target population should increase the power of the messages. The data needed to complete this operation are produced through: (1) the actual data collected from Ss and (2) the classifiers' definitions of the categories. Computerized concordance and parsing programs, when applied to ECHO data, have potential as objective, unbiased sources of guidance for writers of persuasive messages.

F. BEHAVIOR MODIFICATION AND ATTITUDE CHANGE

Messages produced in the manner described above might be used to modify the behavior of certain populations. Applying the ECHO outputs to behavior and attitude change tasks will require a more sophisticated technique.

# APPENDIX I

## A DETAILED STATEMENT OF HISTORY

The ECHO methodology has been tested and refined on several different subject populations. The purpose of this appendix is to trace the development of ECHO, describing the basic methodology employed with each test population and the impact which each study had upon subsequent applications of ECHO.

Sections A and B describe the pilot work of Summer, 1966. The rest of the appendix describes the project since January 1967.

### A. GENERAL RESEARCH CORPORATION SECRETARIES

#### 1. Subjects (Ss)

Twenty female secretaries served as subjects. The population was divided into two samples of 10 Ss, the first group serving in the data collection phase and the second group in the message session.

#### 2. Data Collection Procedures

In an individual, verbal interview, each subject was instructed to make as many responses as possible to the following questions:

1. What could a person like yourself, a secretary in an organization like General Research, do that would be a good thing to do and someone would praise you for it? Who would be the person or persons that would praise you?

2. What could a person like yourself, a secretary in an organization like General Research, do that would be a bad thing to do and someone would reprimand you? Who would be the person or persons that would reprimand you?

These responses were recorded in writing by the interviewers.

3. Classification Procedure

The 10 Ss generated 52 responses to the positive question (1) and 72 responses to the negative question (2). The interviewers classified the responses by creating categories which represented responses of similar content.

4. Messages

a. Message Construction

Only those categories mentioned by at least half of the subjects were considered in preparing the two ECHO messages. These were the following categories:

| | No. of Ss | No. of Mentions |
|---|---|---|
| Positives: | | |
| Personal behavior | 6 | 16 |
| Attitude toward work | 7 | 13 |
| Attitude toward boss | 5 | 11 |
| Negatives: | | |
| Attitude toward work | 10 | 21 |
| Personal behavior | 6 | 16 |
| Attitude toward boss | 7 | 11 |
| Security | 5 | 6 |

The interviewers created one of the ECHO messages (ECHO +) by linking together statements taken directly from the selected categories. Literary style modifications were kept to a minimum. The second ECHO message (ECHO -) was composed by changing positive statements into negative ones in such a way that the generated message would hopefully still sound plausible to persons outside of the subject population. An example: "Take the initiative; guess ahead what he will need instead of waiting to be told" was changed to: "It is not appreciated as much as many girls think for a secretary to look for work on her own initiative. Don't try to anticipate problems and begin work before it has been asked for."

Two "expert" messages were also written, one by the head secretary at General Research and the other by a secretary at the University of California at Santa Barbara.

b. Message Session

The subjects in the second group were shown the four messages, unlabeled as to origin, in individual, verbal interviews and asked to answer the following questions:

1. These four messages were written by four different persons. Tell us, judging from what they wrote, what type of person do you think each of them is?

2. Only one of these messages was written by a person with actual practical knowledge of secretarial work. Which one do you think it is?

3. Which writer would be the most helpful source of advice to a beginning secretary?

5. Results and Implications

The results were encouraging, even though the small number of subjects in the population, and the characteristics of the investigation, limited considerably the statistical significance of the results. However, the logical consistency of the approach and the realization that it was possible to write sensible messages on the basis of the data obtained indicated the feasibility of the basic idea and the possibility that the method could be developed into a useful tool.

During this test, it was realized that in order to have an unbiased selection of categories and to make full use of the information contained in the data it should be classified by members of the same population. This prompted the second study, which was made with students at University of California, Santa Barbara (UCSB).

## B. HIGH SCHOOL AND COLLEGE STUDENTS

### 1. Subjects (Ss)

One hundred students enrolled in an introductory sociology course during the 1966 summer session at UCSB served as Ss. They were divided into two equal groups (ECHO I and ECHO I'), each group consisting of about 35 high school juniors and about 15 college students. Both groups received the same treatment except that the Echo I' group was tested one week after the Echo I group.

### 2. Data Collection Procedure

The ECHO I subjects were divided into two equal sections, both sections receiving identical instructions and treatment except that the order in which the questions were presented was reversed for the two sections to control for order effect.

Each was given ten blue and ten brown IBM cards. They were instructed to indicate their academic status by printing an "H" ("high school student") or an "O" ("other") in the lower left-hand corner of each card. They were asked to write legibly and, beginning with the brown cards, to answer the following question (negative condition):

> For a person like yourself, in his everyday life, give a specific example of something important that could happen, that would be an unfortunate, unfavorable and undesirable thing to have happen, and that, if it happened to you, you would be unhappy.

This question was first read aloud, then written on the blackboard, and finally restated in a less formal manner.

After the students had written their first answer to this question, they were instructed to print (in the lower right-hand corner of the card) who or what would be wholly or mostly responsible for this event. At

this point the students were told that they would have ten minutes to complete as many of the brown ("negative") cards as they could.

After the students had worked for 10 minutes on the brown cards, they were instructed to put them aside and to take out the blue cards. The same procedure was employed with a different question:

> For a person like yourself, in his everyday life, give a specific example of something important that could happen that would be a fortunate, favorable and desirable thing to have happen and that, if it happened to you, you would be pleased.

Again, the students were instructed to indicate the "source," i.e., the person who would be mainly responsible for this thing happening. They were given 10 minutes to complete as many blue cards as they could.

The students were then instructed to put the blue cards aside and to rate the brown cards in terms of their importance using the "I" box (upper left-hand corner of the card). The instructions were as follows:

> If you had one wish and you could make sure that one of these things would never come true...then write in the upper left-hand corner of the card the number 1. Now look at the remaining cards and do the same thing. The biggest number will then be the one thing that you would allow to happen if one thing had to happen.

In this manner, the subjects assigned importance numbers to first the brown cards and then the blue cards.

The final task was the assignment of an "uncertainty" or probability (P) estimate to the cards. The instructions were as follows:

> Now take the brown cards again and spread them out. Ignore the number you have put in the "I" box. Look at the answers and, taking them in any order, ask yourself the following thing about the event you have specified: "How likely is this to come to be true?" Think of it in this way: If a hundred people like yourself all had the desire for this outcome, how many

do you think would get their wish? Write that number in the upper right-hand corner of the card.

In this manner, the subjects assigned uncertainty values to all of the events. Similar instructions were given for the blue cards.

Each card was completed as shown in Fig. 5.

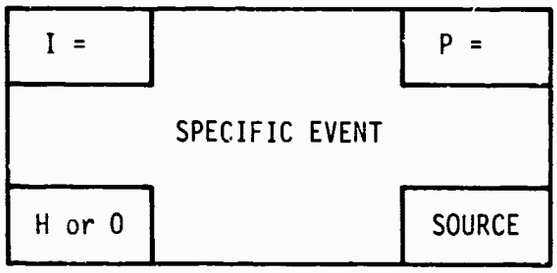


Figure 5. Data Collection Card Used in ECHO I Study

3. Classification Procedure

Three persons indigenous to the subject population (i.e., students from the class) served as classifiers and sorted the responses in the following manner:

1. Each classifier was given one-third of the blue IBM cards (positive responses) and instructed to put together those cards which had the same meaning.

2. The first classifier to complete this initial sorting made labels for the categories he had created. When the others had finished their sorting, the first classifier read each of his labels aloud and the others handed him their cards which they believed fell into the same category. In this manner, the three separate classification systems were combined to make one.

3. Each category was then discussed individually. The cards were read aloud and the classifiers were asked to decide which of the responses actually belonged in the category. When it seemed appropriate, categories were broken down into smaller categories. The resulting classification system consisted of 15-20 categories describing the subjects' responses to the positive question. The brown cards, i.e., responses to the negative question, were subsequently classified in the same manner by the same procedure.

4. Results and Implications

No message session was employed because this study was designed to examine the relationships between the subjects' expectations and the uncertainty and importance they attached to those attitudes. Several mathematical relationships were proposed but the ordinal nature of the importance and uncertainty measures prohibited useful mathematical manipulation of the variables.

However, the results did show that, in principle, a classification method employing indigenous classifiers could be developed in such a way as to fully use the information collected via the ECHO methodology.

In addition, ECHO appeared to be an effective tool for discovering and analyzing the different systems of social control of the various subgroups within the subject culture.

C. DEVELOPMENT OF ECHO DATA COLLECTION INSTRUMENT

1. Materials

IBM cards were chosen as the data collection instrument because of easy manipulation in the classification session, efficient sorting and later retrieval of information, and direct access to computer operations without transferring data. Data collection packets were made up as follows:

1. Twenty IBM cards were presented to each subject: 10 were printed with the positive questions: "What is a good thing to do? Who would approve?" and 10 with the negative questions: "What is a bad thing to do? Who would disapprove?"

2. The cards were prepunched with numbers identifying the subject, the population from which he was drawn, the valence of the assigned evaluation (positive or negative), and the sequence in which the S wrote his responses.

3. Ranking instruction cards were included in the packets, instructing the Ss to rank their responses to each question from 1 to 10 in order of decreasing importance.

4. Role instruction cards, placed first in the packets, instructed the subjects to assume specific roles in answering the ECHO questions.

5. Biographical information cards, placed last in the packets, requested information about the S's age, sex, marital status, academic status, and length of attendance at the school.

## 2. Application of ECHO Data Collection Instrument--UCLA Pilot Study

### a. Data Collection Conditions

#### (1) Role Assignments

Each person may play several different roles concurrently. For example, a man might be a student, a son, a husband, and an employee at the same time. He will have different systems or hierarchies of values and attitudes to correspond with these different roles. For example, in his role as a husband, attitudes and actions related to his relationship with his wife might be of greatest importance while, in his role as a student, studying and getting good grades will predominate. Therefore, in trying to assess the person's value system, it is necessary to define the context, or role, in terms of which he is to respond; that is, to indicate the value system and its attendant role in which we are interested.

The UCLA subjects were studied in terms of two different roles: some of the subjects were instructed, via printed role instruction cards placed first in their packets, to answer the ECHO questions in terms of their roles as "students at UCLA"; others were given no specific role instructions and hence could assume any role they desired. This second condition was termed the "general person role".

(2) Sequential Conditions

To control for any possible sequential effects which might result from the order in which the positive and negative questions were answered, the Ss were divided into two groups. Group A answered the 10 positive questions first and the 10 negative questions second; Group B the reverse.

(3) Ranking Conditions

All the subjects were instructed to rank their responses in order of importance. Three ranking conditions were employed in an effort to determine at what place in the tests the subjects should rank their responses. The Ss under ranking condition I completed the cards in deck 1, completed the cards in deck 2, ranked deck 1, and ranked deck 2. Ranking condition II Ss completed deck 1, ranked deck 1, completed deck 2, and ranked deck 2. For ranking condition III, positive and negative cards were intermixed in decks 1 and 2. These subjects completed deck 1, completed deck 2, ranked deck 1, and ranked deck 2. The way in which the Ss were grouped by role, sequential condition, and ranking condition, is shown in Table 8.

TABLE 8

DESIGN OF DATA COLLECTION CONDITIONS--UCLA PILOT STUDY

| | Ranking Condition | | |
|---|---|---|---|
| Role Condition | I | II | III |
| Student | A(N = 20) | A(N = 20) | N = 17 |
| | B(N = 20) | B(N = 20) | |
| General Person | A(N = 20) | | |
| | B(N = 20) | | |

b. Subjects

One hundred thirty-seven students enrolled in an undergraduate psychology course at UCLA served as subjects. The subjects were predominately upper classmen (juniors and seniors) and their ages ranged from 18 to 47 years.

c. Method

(1) Mat s

Each subj eceived a packet consisting of 20 printed, prepunched IBM cards, 2 ranking instruction cards, and a biographical information card. The subjects under the "student role" condition also received role instruction cards.

(2) Procedure

After the packets had been distributed and the instructions read by the investigator, the subjects were permitted to complete their packets at their own speed. The instructions to the subjects, which were read aloud by the investigator, were as follows:

INSTRUCTIONS TO THE SUBJECTS

> The purpose of this study is to develop methods for improving communications between different cultures. Any such interculture communication is necessarily based on an understanding of the value systems inherent in each culture. We are currently investigating an instrument with which we hope we will be able to discover and examine the value system for any cultures. We plan to test the effectiveness of our methodology by comparing the culture which has developed in this group with a somewhat similar culture which has developed within another group of students.
>
> Each of you should have a sealed envelope and a pen. These are the only materials you will need. You will be asked to give ten responses to each of the following questions: "What do you think a person, like yourself, could do that would be a good thing to do and that someone would approve of your doing?" "Who would approve of your action?" Likewise, "What do you think a person, like yourself, could do that would be a bad thing to do and that someone would disapprove of your doing?" "Who would disapprove?"

When we tell you to begin, you are to open the envelope by tapping it down on the left side so that the cards within are down on the left. Then tear off the right edge. Take out the deck of cards which is numbered with a "1". Do not remove anything else from the envelope. Take the rubber band off the cards but be especially careful that you do not change the order of the cards. Writing or printing as neatly as possible give a specific example of a good or bad thing to do, according to the question which is printed on the card. Write that answer on the lines which have been provided following the question. Then write the title or position of the person who would approve or disapprove of your action on the lines which have been provided following that question. When you have answered all ten cards in deck 1, put them back into the envelope and take out deck "2". Again, we ask you not to change the order of the cards. Follow the same procedure as before in writing your answers on these cards. When you are finished, return these cards to the envelope and take out the yellow "Biographical Information" card. Answer each of the questions on this card by placing an "x" in the appropriate box. We wish to thank you all again for donating your time to help make this study a success.

Do you have any questions? If a problem should arise while you are working, please raise your hand. You may begin.

In response to requests for clarification, the investigator gave the Ss the following example: "If a fireman were asked 'What is a good thing to do?' and 'Who would approve?', he might answer, 'A good thing to do is to keep my fire engine in good running condition and the fire chief would approve of this act.'" In addition, the subjects asked whether or not they could list themselves as sources of approval or disapproval. The investigator answered that they could indeed list themselves or anyone else as sources.

3. Results of UCLA Pilot Study of Data Collection Instrument

a. Evaluation of Data Collection Instrument

The data collection packet, consisting of printed, prepunched IBM cards, is an efficient means of collecting responses to the ECHO questions. The Ss easily handled the 20 cards, responding to all of them in 20-30

minutes. No sequential effect arising from the order of presentation of positive and negative evaluations was discovered.

However, an ordinal effect was found relating the order in which specific responses were written and the importance estimates assigned by the subject to those responses. In general, the subjects tended to write the most important responses first. See Appendix II.

The instructions to the subjects proved to be adequate in that almost all subjects correctly followed the prescribed procedure. However, two changes were made in the instruction for future studies:

1. No examples of the desired responses will be given as any such example might bias the Ss' responses.
2. The instructions will indicate that the Ss may list themselves as sources of approval or disapproval if they wish.

b. Data Collection Sessions at Carnation and Prudential

(1) Subjects

These two groups, studied concurrently, consisted of clerical employees. The compositions of the two groups differed slightly. The 54 Carnation subjects (39 secretaries and 15 clerk-typists) on the average, were older and had more education than the Prudential subjects. In addition, they were more homogeneous, in terms of age, education, and length of employment, than the Prudential subjects. The Prudential subject population consisted of women employed at Company job levels 3, 4 and 5, the majority working as clerks. Of this group, 93 were chosen randomly to serve in the data collection phase of the study.

(2) Data Collection Procedure

(a) Materials

Each data collection packet consisted of 20 IBM cards. Ten of the cards had printed on them: "What is a good thing to do?" "Who would approve?" and the other ten cards read: "What is a bad thing to do?" "Who would disapprove?" Each card was prepunched with group and subject identification numbers and a number to identify the sequence in which the cards were filled out. Ranking instruction and biographical information cards were also included in the packets. The former instructed the subject to rank the cards in each deck in the order of decreasing importance. The latter elicited information regarding the subject's age, sex, education, length of employment, and job title.

(b) Procedure

The packets were distributed and the subjects instructed to work at their own speed in answering the questions printed on the cards.

All the subjects, with the exception of 12 Carnation subjects, were instructed to list good and bad things to do in terms of their roles as employees. The 12 Carnation subjects were instructed verbally to answer the questions in terms of their roles as persons, i.e., in terms of their roles in private life, rather than restricting themselves to work-oriented responses.

The following instructions were read to the subjects.

INSTRUCTIONS TO THE SUBJECTS

Before we begin, we want to assure you that your answers will be considered confidential and that no company personnel will have access to them. In addition, your anonymity is assured as there is no possible way in which we could identify any of you from your answers. We wish to emphasize that these questions are not designed as tests of your ability or intelligence. Also, there are no right or wrong answers as we merely want your opinion.

Each of you has a sealed envelope and something to write with. These are the only materials you will need this evening. You will be required to list ten responses to each of the following questions: These questions are: "What do you think a person like yourself, in your position at this company, could do that would be a good thing to do and that someone would approve of your doing?" and "What is the job title or position (NOT THE NAME) of the person who would approve of your doing that thing?" By this, we mean--who would be aware that you had done this and who would be "pleased"? "What do you think a person like yourself in your position at this company could do that would be a bad thing to do and that someone would disapprove of your doing?" and "What is the job title or position of the person who would disapprove of your doing that thing?" For example, the person who approves or disapproves might be your friends, your boss, employer, supervisor, your mother, or yourself.

Open the envelope by tapping it down on the left side so that the cards within it are down on the left. Then tear off the right edge. Take out the deck of cards which is numbered with a "1". Do not remove anything else from the envelope. Take the rubber band off the cards but be especially careful that you do not change the order of the cards. Writing or printing as neatly as possible give a specific example of a good thing or a bad thing to do, according to the question which is printed on the card. Write that answer on the lines which have been provided following the question. Then write the title or position of the person who would approve or disapprove of your action on the lines which have been provided following that question. When you have answered all ten cards in deck 1, put the rubber band back around the cards, making sure that the piece of paper with the large number "1" is attached to them, and put the cards aside. Then take the deck of cards with the large number "2" out of the envelope and remove the rubber band. Again, we ask you not to change the order of the cards. Follow the same procedure as before in writing your answers on these cards. When you are done, replace the rubber band and the "2" and put the cards aside. When you have finished answering the cards in deck "2" you will be ready to begin the next step in this survey. You will find two white cards in your envelope. These cards will instruct you to rank your answers in terms of how important each answer is to you. Rank deck "1" first. You can do this in the following manner. Spread the cards out on the table in front of you so that you can read the ten actions you wrote. Pick the action which you think is the most important and put a "1" in the box in the lower left-hand corner of the card. Now, find the action which is second in importance to you and put a "2" in the box.

You will put a "3" in the box on the card on which you wrote the action which you think is third in importance. Continue in this manner until you have ranked all ten cards. When you are done, you will have numbered the cards from 1 to 10 with a "1" on the most important card and a "10" on the least important card. Please recheck the cards to make sure that no cards have the same number on them. When you are finished, replace the rubber band and paper numbered with the large "1" and put these cards aside. Then, you are to rank the ten cards in deck "2" in the same manner. After you have ranked both decks of cards take the yellow card out of the envelope. Answer each of the questions on the Biographical Information card by placing an "x" in the appropriate box. This is the last part of tonight's session. When you are finished, put all the cards back in the envelope and bring them down to the front of the room.

Do you have any questions at this time? If any problems should arise while you are working, please raise your hand. You may begin.

## D. DEVELOPMENT OF DATA CLASSIFICATION METHOD--UCLA PILOT STUDY

### 1. Classification Teams

Two teams of three persons each were chosen from the subject population to serve as indigenous classifiers. One team consisted of two males and one female while the other team was made up of two females and one male.

### 2. Procedure

#### a. Initial Sorting

One team of three classifiers received 1143 positive cards while the other team received 1088 negative cards.

Each classifier (C) was given one-third of the cards to be classified by his team and was instructed to read all the cards and, then, to put together those cards which had the same meaning. This initial sorting resulted in several small stacks of cards representing different types of responses or categories.

b. Creation of Larger Categories

The members of the classification teams worked together in this phase of the session. Taking turns, each C picked up one of his stacks of cards and read the cards. The other Cs then handed him all of their cards which they felt belonged in the category under discussion. In this manner the three separate sets of categories created in the initial sorting were combined to form one classification system.

c. Refinement of Categories

The Cs discussed each individual category, reading all of the cards, and occasionally divided large categories into smaller ones.

d. Assignment of Category Labels

The Cs labeled the categories, creating titles which, in the form of a response to the original ECHO question, would represent all of the responses within each category.

e. Estimation of Category Importance

The C's final task was to rank the categories from 1 to N, where N equals the number of categories, in order of decreasing importance.

3. Evaluation of Data Classification--UCLA Pilot Study

The method itself was workable and seemed logical in that the classification progresses from the creation of small, exclusive stacks of cards to larger, more general categories.

The use of three classifiers per team appeared to be an efficient arrangement. Small-groups research has proven that triads are superior to dyads in making decisions since there is a majority when an odd number of persons are employed. Three also seems a good number as any more, say five, would have made the group too big, resulting in less direct interaction among the members.

The classification session, lasting roughly 12 hours because of the large number of cards, was clearly too long. The team which sorted the positive responses created 69 categories from the 1143 cards while the other team created 71 categories from the 1088 negative cards.

The length of the session, the enormousness of the task itself, and the lack of regular breaks led to the development of extreme fatigue and boredom among the classifiers. Therefore, the reliability of the resultant classification systems was questioned.

In addition, the classifiers created such a large number of categories that the categories themselves represented specific actions rather than generalized attitudes and hence, were too specific and detailed to represent the more generalized attitudes of the subject population. The multiple classification process discussed later would have resolved this problem. No conclusions were reached on the efficacy of classifying positive and negative responses together or separately.

4. Data Classification Sessions at Carnation and Prudential

a. Classification Teams

Two teams (CA and CB) of three Cs each were employed to classify the 1042 responses from Carnation. Two teams ($P_1$ and $P_3$) of 3 Cs and one team ($P_2$) of 2 Cs, due to the unexpected absence of one classifier, were employed to sort the 1671 cards from Prudential. The classification sessions for the two different subject groups were held concurrently.

b. Distribution of Cards

Carnation. Classification team CA received 516 positive and negative cards while team CB classified 526 positive and negative cards.

Prudential. Classification team $P_1$ sorted 599 positive cards; team $P_2$ sorted 472 negative cards; and team $P_3$ sorted 600 positive and negative cards.

c. Procedure

(1) Initial Sorting

As in the UCLA classification session, the classification team members worked independently in their initial sorting of the cards.

(2) Creation of Larger Categories

The team members were brought together for this phase in which the individual classifiers' stacks of cards were combined to form larger categories.

The investigators circulated among the various classification teams to prevent any one member from dominating his team's discussions and to keep the session moving smoothly.

(3) Refinement of Categories

Taking turns, the Cs read all of the cards in each category. Where they felt it was necessary, the Cs refined a category by omitting or adding cards or breaking it down into two smaller categories. The final classification systems contained the following numbers of categories: Carnation--team CA created 28 categories and team CB created 30; Prudential--team $P_1$ created 22 categories, team $P_2$ created 29 categories, and team $P_3$ created 20 categories.

(4) Assignment of Category Labels

The Cs labeled the categories, creating titles which, in the form of a response to the original ECHO question, represented all of the responses within each category. As these labels were general, the Cs also listed actions and attitudes as examples of the behavior represented by the category titles.

(5) Estimation of Category Importance

The Cs ranked their categories from 1 to N (where N equals the total number of categories) in order of decreasing importance. As a test of importance ranking reliability, Carnation's team CA ranked by importance the categories created by team CB. The Spearman's Rank-Difference correlation between the two rankings of the CB categories resulted in a significant Spearman rho = .79, $\alpha = .01^{++}$.

Both teams of Carnation classifiers ranked as most important the categories created from responses of 1[illegible] Carnation data collection subjects who were assigned "general person roles" rather than being restricted, as were all of the other Ss, to work-oriented responses. This result led to some discussion regarding the assignment of roles. It was felt that, perhaps, the most important attitudes would be elicited if the Ss were allowed to assume the roles which they, themselves, considered the most important parts of their lives.

## E. APPLICATION OF ECHO METHODOLOGY AT STANFORD

### 1. Subjects

Seventy-one men and 1 woman enrolled in the Graduate School of Business at Stanford University served as subjects. The subjects ranged in age from 22 to 40 years.

### 2. Data Collection Procedure

#### a Materials

Data collection packets identical to those employed in the UCLA pilot study were prepared.

#### b. Data Collection Conditions

(1) Role Assignments

Half of the Ss were instructed by role instruction cards to assume roles as "students at Stanford" in completing their packets. The others were instructed to assume their more general roles as "persons in society".

(2) Sequential Conditions

Group A Ss received the 10 positive cards first and the 10 negative cards last. The reverse was true for the Group B Ss. The distribution among the Ss of the role assignments and sequential conditions is shown in Table 9.

(3) Ranking Conditions

All the Ss were instructed to write deck 1, rank deck 1, write deck 2, and rank deck 2. (This is identical to ranking condition II employed in the UCLA study). The use of this sequence was based on the assumption that the Ss would be best able to compare and rank their responses immediately after writing them.

TABLE 9

DESIGN OF DATA COLLECTION CONDITIONS--STANFORD

| | Sequential Control | | |
|---|---|---|---|
| Role Condition | A(+, -) | B(-, +) | Total |
| Student Role | N = 18 | N = 18 | 36 |
| General Person | N = 18 | N = 18 | 36 |
| Total | 36 | 36 | 72 |

c. Procedure

After the data collection packets had been distributed, the instructions were read aloud to the subjects.

INSTRUCTIONS TO THE SUBJECTS

The purpose of this study is to develop methods for improving communications between different cultures. Any such inter-culture communication is necessarily based on an understanding of the value systems inherent in each culture. We are currently investigating an instrument with which we hope we will be able to discover and examine the value system for any culture. We plan to test the effectiveness of our methodology by comparing the culture which has developed in this class with a somewhat similar culture which has developed within a class of students at UCLA.

Each of you should have a sealed envelope and a pen. These are the only materials you will need. You will be asked to give ten responses to each of the following questions:

"What do you think a person, like yourself, could do that would be a good thing to do and that someone would approve of your doing?" "What is the position, with respect to yourself, of the person who would approve of your action?" Likewise, "What do you think a person, like yourself, could do that would be a bad thing to do and that someone would disapprove of your doing?" "What is the position, with respect to yourself, of the person who would disapprove?"

You will write your responses on the IBM cards which are in the envelope. You are to open the envelope by tapping it down so that the cards within it are down at the left end of the envelope. Then tear off the right edge of the envelope, forming a packet for the cards.

After you have read the special instruction card which is the first card in the packet, take out the deck of cards which has been marked with a number "1". Be especially careful that you do not disturb the order of these card while you answer the questions on them. When you have answered all ten cards, follow the instructions at the back of deck "1". After you have finished, replace the rubber band around deck "1" and go on to deck "2", following the same procedure.

Upon completion of deck "2", fill out the biographical data card and then put all the materials back into the packet.

Bring the packet to the front of the room and hand it to one of us as you leave. We wish to thank you for your cooperation. Are there any questions? You may begin.

3. Data Classification Session

a. Classification Teams

Two classification teams, each consisting of three men selected from the subject population, were employed in the classification session.

b. Distribution of Cards

One team sorted the 710 positive responses while the other team sorted the 695 negative responses.

C. Procedure

The data classification procedure was identical to that employed at UCLA, progressing from the initial sorting to the creation of larger

categories to the refinement and labeling of the categories and, finally, to the ranking of the categories in terms of importance. The resultant classification systems consisted of 29 positive categories and 31 negative categories.

## F. DEVELOPMENT OF A VALIDITY TEST--UCLA PILOT STUDY

### 1. Purpose of Validity Test

The validity test, or "message session", was designed as an evaluation of the effectiveness of the ECHO data collection instrument in determining the prevalent and important attitudes within the subject culture's value system. Subjects were instructed to compare and evaluate actions and attitudes represented by lists of category titles taken from the data. Their reactions to these lists indicated the degree to which the lists, and hence the original data, actually represented the actions and attitudes which were important to them.

### 2. Construction of Lists

A "message" consisted of a list of category titles from one classification session. In this study, the titles were selected on the basis of category frequency, i.e., the total number of responses in each category.

The original UCLA positive categories were ranked by frequency and two lists were constructed based on those rankings: Message I included the five most frequent categories (ranks 1-5) and Message II the second five most frequent categories (ranks 6-10). The original Stanford positive categories were also ranked by frequency and two messages (III and IV) constructed in a similar fashion. Lists were also based on the five most frequent negative categories from both the Stanford and UCLA subject populations.

### 3. Presentation of Lists

The lists were presented in printed test booklets. Each page of a booklet included the lists to be compared, the question stating the

criteria for comparison, and an answer blank in which the code number of the selected list could be written. The arrangement of the lists on each page was varied as was the order in which the pages were arranged in the booklets. Booklets were passed out to Ss in random order. These controls were introduced to prevent any confounding effects which might arise from the order in which the lists were presented and fatigue or boredom which might occur toward the end of the session.

4. Procedure

The 70 subjects were told that the lists were written by their peers in an attempt to describe their actual and idealized self-images (concepts known to the class). Half of the subjects were instructed to compare lists I and III and to select the one which best described their idealized self-images and to compare lists II and IV on the same basis. The same two pairings of lists were presented to the other half with instructions to compare them on the basis of their actual self-images. The subjects were also presented with two negative messages and instructed to select the one which they and their peers would be most likely to disapprove. Finally, individual negative category titles were listed and the subjects indicated the persons (sources) who would be most displeased if they did the things listed.

5. Evaluation of Validity Test Session

1. The validity test appeared to be a logical method for evaluating the effectiveness of the data collection instrument. The procedure was adequate in that the subjects were able to discriminate between the various lists and to follow the instructions in making their comparisons.

2. The use of a printed test booklet was an efficient method for presenting the lists to be compared and for recording the subjects' responses.

3. On the basis of the success of the procedure and the inherent logic of the validity test design, similar tests were employed at Carnation and Prudential.

## G. VALIDITY TESTS--CARNATION AND PRUDENTIAL

### 1. List Construction

Three methods of selecting the categories to be included in the messages were tested in the Carnation and Prudential message sessions which were held in the same week:

1. Categories which the classifiers ranked as most important.
2. Categories containing the responses which the subjects ranked as most important.
3. Categories that had the highest frequencies (i.e., the greatest number of responses within them.)

In addition, "experts", persons who had intimate and detailed knowledge of the subject culture but were not part of it, were asked to list the attitudes which they felt were most prevalent within and important to the subject population. These lists were similar in form to the ECHO-generated messages and were termed "expert messages." The "experts" employed in this study were a member of the personnel department and a supervising secretary.

### 2. Criteria for List Comparison

The standard form of the list comparison question was as follows: "Which of the messages lists the actions and attitudes which you feel are most important?"

### 3. Message Session Method

#### a. Subjects

Ninety-eight Prudential employees participated in the first message session. In the Carnation message session, 15 Ss were secretaries and 16 held non-secretarial positions.

b. Standard Procedure

The messages were printed on sheets which were organized into test booklets. The standard sheet had printed on it the messages to be compared (two or four messages), the question stating the criteria for comparison when different questions were to be answered, and an answer blank. The order in which the messages were arranged on any one sheet was varied to control for possible ordering effects. Likewise, the order in which the sheets were arranged in the test booklet was varied to control for effects of ordering, fatigue and boredom.

The test booklets were distributed randomly among the subjects who were instructed to read the messages and answer the question(s) by writing the code number of the selected message in the answer blank. The subjects were permitted to work at their own speed and to leave the room upon completion of the test.

Special test booklets were prepared for different subgroups. For example, the Carnation subjects were divided into two groups, secretaries and non-secretaries, and different messages, based on secretarial and non-secretarial data respectively, were prepared for them.

c. Variations in Message Session Procedure

To examine the effectiveness of the ECHO instrument in discovering the power-structure, or hierarchy of sources of reinforcement, the message session subjects were presented with individual category titles and instructed to indicate the person who would be most likely to approve or disapprove of each action or attitude. The resultant distribution of the sources of approval and disapproval attributed to a specific category was later compared with the original source distribution.

An attempt was made in the Carnation and Prudential message sessions to test the efficacy of creating a hierarchy of values on the basis of category frequencies alone. The subjects were instructed to select

individual category titles in a paired comparison format. The frequencies of selection were compared with the original ranking of the categories by frequency.

4. Results and Evaluation

a. Statement of Criteria for List Comparison

One result of the Carnation and Prudential validity tests was the discovery of the need to define the role of the subject and to clearly indicate the person whose opinion is being sought.

The exact wording of the list comparison question greatly influenced the manner in which the subjects responded. For example, when asked to select the "most important" messages, the Carnation subjects were confused about the role they should assume. That is, one message might be more important to a subject in terms of her role as an employee while another might be more important to her in her role as a mother. It was necessary, therefore, to define "importance" in terms of the role the subject was to assume in making her selection.

The following are examples of ways in which the message comparison question was stated:

> Which of the messages described actions and attitudes which you feel are most important to doing your job in the Company?

Though this question was effective in assigning the employee role, another problem arose. The subjects asked: "Important to whom? To me? To my boss?" It was necessary, therefore, to indicate not only the role, but also the person whose opinion was sought.

> Which of the messages describes the actions and attitudes in doing your job which are most important to your immediate superiors (i.e., your boss, supervisor and manager)? That is, which message lists the actions which they would be most likely to approve of your doing?

This question not only defined the subject's role as an employee, but it also identified the person whose opinion of importance was being sought.

> Which message lists the actions and attitudes which you believe are the most important aspects of doing your job and to being satisfied and personally content in your work?

This question was effective in assigning the subject's role and in eliciting his personal opinion.

A second validity test was held at Prudential to reevaluate the new message selection criteria. When the roles were clearly defined, the subjects chose the ECHO-generated frequency messages. These findings were applied in all subsequent sessions.

b. Evaluation of List Construction

(1) Importance Rankings

The subject's rankings of their responses in terms of importance were found to be ineffective as a means of ranking the attitudes held by the whole group since the individual importance ranks were randomly distributed throughout the categories (see Appendix II).

This study, while not conclusive, indicated that the importance rankings assigned to the categories by the classifiers were not representative of the hierarchy of attitudes held by the subject population. This conclusion was reached when the subjects regularly rejected the messages created on the basis of classifiers' rankings.

(2) Category Frequencies

Selection of those categories containing the highest frequencies appeared to be the most effective means to date for discovering some prevalent attitudes within the value system of the subject population.

## H. DEVELOPMENT OF CROSS-CLASSIFICATION PROCEDURE--UCLA

### 1. Purpose

The cross-classification or triangulation procedure was designed to accomplish two goals: (1) To objectively redefine the meanings of category labels created by the classifiers; (2) to quantify differences in social perception.

The end result of a classification session was a system of category titles which defined the individual responses within the categories. These titles were limited as they represented the meanings attributed to the responses by only one team of classifiers. In the triangulation procedure, at least three different teams classified the same data. In this manner, the meaning of a category title was redefined in terms of the category labels assigned by the other classification teams to the responses which were included in the first category. These different labels represented different ways of verbalizing the content of the responses and served to make the description of those responses much more detailed than the category title resulting from one classification system.

For example, the $M_2$ sample was classified by classification teams $M_2$, $M_3$ and $F_4$. The highest ranking category (in terms of frequency) created in the $M_3$ classification was Category 52, "Be a good student." The category labels assigned by the $M_2$ Cs to the responses in $M_3$'s category 52 included: "Get good grades and do well in school", "Be accepted and make good in graduate school", "Improve my personal and physical being", "Be a better person and relate to my environment better", and "Find a satisfying occupation". Likewise, the category labels assigned to the same responses by the $F_4$ Cs included: "Do better in school because of outside pressure", "Go to some sort of graduate school", "Improve sphere of knowledge", "Realize minor goals", "Graduate within allotted time", "Have more self-confidence", and "Be more livable". It can be seen that cross-classification leads to a more detailed and specific definition of the meaning of $M_3$'s category label "Be a good student".

To quantify differences in social perception, the compositions of the different teams classifying the data were varied. For example, a team of men and a team of women, when classifying the same responses, created different categories presumably due to the differences in their interpretations of the data. Cross-classification is a means, then, for discovering differences in social perception between different subcultures or groups within the subject population.

2. Data Base

The data samples were chosen randomly from the positive responses made by the subjects in the UCLA data collection session. The responses made by 15, 15, and 22 female subjects constituted three female samples, $F_1$, $F_2$, and $F_3$, respectively. The three samples of male positive responses ($M_1$, $M_2$, and $M_3$) were generated by 15, 15, and 30 male subjects, respectively.

In addition, the $M_1$ and $M_2$ samples were combined as were the $F_1$ and $F_2$ samples. These combinations resulted in two "new" samples of 30 subjects each which were also classified.

The samples containing 15 subjects each were considered sufficiently large on the basis of the Stanford sample size experiments. In addition, each of these samples consisted of approximately 150 cards, small enough to prevent the confounding effects of fatigue.

3. Procedure

a. Composition of Classification Teams

Five all-male classification teams, each one composed of three classifiers (teams $M_1$, $M_2$, $M_3$, $M_4$, and $M_5$) and four all-female teams of three classifiers each (teams $F_1$, $F_2$, $F_3$, and $F_4$) were employed in the classification of the samples drawn from the UCLA positive data. Table 10 indicates which samples were classified by each of the classification teams.

TABLE 10

CLASSIFICATION OF UCLA SAMPLES

An "X" indicates that the team (in a specific row) classified the sample (in a specific column).

| Classification Team | Sample $M_1$ | $M_2$ | $M_3$ | $F_1$ | $F_2$ | $F_3$ | ($M_1$ and $M_2$) | ($F_1$ and $F_2$) |
|---|---|---|---|---|---|---|---|---|
| $M_1$ | X | | | | | | | |
| $M_2$ | X | X | | | X | | | |
| $M_3$ | | | X | | | | X | X |
| $M_4$ | X | | | | | | | |
| $M_5$ | | | | X | | | | |
| $F_1$ | X | | | X | | | | |
| $F_2$ | | X | | X | X | | | |
| $F_3$ | | | | | | X | X | X |
| $F_4$ | | X | | | | | | |

b. Method

Each of the classification teams followed the standard classification procedure: initial (individual) sorting of cards; formation of teams and creation of larger categories; refinement of categories and assignment of labels. The Cs did not rank the categories.

4. Results

a. Time Factors

The length of time taken to complete any one classification is affected by the size of the task (i.e., the number of cards to be classified),

the length of time necessary for the team to learn the classification procedure, monotony, boredom, fatigue, motivation, and skill.

b. Optimal Conditions

- The classification sessions should not exceed three hours in length, and there should be substantial rest periods between sessions.
- Two hundred fifty to 300 cards is the optimal number of cards that can be handled efficiently by one team of three classifiers in one session.

I. CUBAN STUDIES

1. Purpose

The application of the ECHO methodology to a somewhat alien culture in a language other than English was seen as a logical step in the process of developing the ECHO instrument for eventual use with a completely foreign culture.

2. Subjects

Two groups of Cuban refugees living in the United States served as subjects. The first group, CE1, was composed of 11 women and 14 men; the second group, K, included 10 men and 9 women. All the subjects, whose ages ranged from 17 to 69 years, were literate and most of them had at least a high school education. The two groups will be considered together, as both received the same experimental treatment and conditions.

3. Data Collection Session

a. Materials

Data collection packets were in standard form; all the materials were printed in Spanish. As with previous groups, the presentation order of the positive and negative cards was varied. The subjects received

biographical information cards which requested information about sex, age, marital status, education, occupation, and length of residence in the United States.

b. Procedure

A man indigenous to the subject group read the instructions in Spanish to the subjects. The standard data collection procedure was followed in the distribution and completion of the packets.

4. Data Classification Session

The standard classification procedure was employed. The several variations in the composition of classification teams and the samples of data classified are shown in Table 11.

5. Validity Test

a. Construction of Lists

Several "Frequency" messages were constructed based on the classification systems shown in Table 11. In addition, the "Frequency" message from the Stanford positive data was included.

b. Procedure

Pencil and paper test booklets were prepared, each page containing two lists printed in Spanish and an answer blank. The subjects were instructed to select from each pair of lists "the one which most exactly describes the things which you believe are most important to you". The booklets received by 12 male subjects contained message pairings which differed slightly from those prepared for the 13 females.

6. Results and Implications

a. Data Collection Session

The Cuban study represented the first application of the ECHO methodology with persons speaking a language other than English. After the

TABLE 11

CLASSIFICATION OF CUBAN SAMPLES

An "X" indicates that the specific classification team (row) classified the specific sample (column)

SAMPLE

| | CE1 Male Positives | CE1 Male Negatives | CE1 Female Positives | CE1 Female Negatives | CE1 Male Positives & Negatives | CE1 Female Positives & Negatives | K Male Positives | K Male Negatives | K Female Positives | K Female Negatives | CE1 & K Female Positives | CE1 & K Female Negatives | CE1 & K Male Positives | CE1 & K Male Negatives |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CE1 Males | X | X | X | X | X | | | | | | | | | |
| CE1 Females | X | X | X | X | | X | | | | | | | | |
| K1 Males | | | | | | | X | X | | | | | | |
| K1 (yellow) Females | | | | | | | | | X | X | | | | |
| K1 (pink) Females | | | | | | | | | X | X | | | | |
| K (2 males, 1 female) | | | | | | | | | | | | X | | |
| K (yellow) Males | | | | | | | | | | | X | | | |
| K (pink) Males | | | | | | | | | | | | | X | X |
| K (white) Males | | | | | | | | | | | | | | X |

data collection questions had been translated into Spanish, no problems arose from the use of a foreign language, as it was not necessary to translate the responses or category titles into English. All statistical and computer manipulation of the data utilized the code numbers assigned to the categories, and in this way, the meaning or context of the category labels created by the indigenous classifiers was unaltered.

b. Classification Session

The cross-classifications, e.g., the classification of male responses by female classifiers, revealed attitudinal differences between males and females in the subject culture. Although the females were often astounded by and unable to classify some of the male responses, they were able to accept those responses as normal and understandable when they were presented in the context of the classification system created by the males, i.e., they were given the cards, with the male category labels attached, and were asked if the classifications were appropriate.

c. Validity Test

As a result of the validity test, some evidence was found regarding the question of whether positive and negative responses should be classified together (i.e., mixed prior to the classification session) or separately. The Cuban males were presented with two lists: Message I, male positive data classified by males, and Message V, combined male positive and negative data classified by males. Likewise, the female subjects were instructed to compare: Message III, female positive data classified by females, and Message VI, combined female positive and negative data classified by females. In selecting the most important list, both groups selected the list based upon the separate classification of positive responses. That is, they rejected the lists which were generated from the classification of combined positive and negative responses; the results were significant beyond the 0.10 $\alpha$ level.

## J. OPERATIONAL EVALUATION OF ECHO METHODOLOGY--NORTHWESTERN UNIVERSITY AND NURSES

### 1. Purpose

Two new subject populations were tested as an operational evaluation of the ECHO methodology which had been developed and refined through previous applications.

### 2. Subjects

The two samples consisted of 68 students enrolled in an undergraduate psychology class at Northwestern University and 52 female nursing students. Both groups of subjects were predominantly freshmen and sophomores and ranged from 18 to 22 years old.

### 3. Data Collection Session

#### a. Materials

Data collection packets were prepared, each consisting of 10 IBM cards printed with the questions "What is a good thing to do? Who would approve?" and 10 cards printed with the questions "What is a bad thing to do? Who would disapprove?" A biographical information card, placed last in the packet, solicited information regarding the subject's age, sex, marital status, and academic status, and the number of years he had attended the school at which he was then enrolled. In addition, the subject was instructed to write on the biographical information card the person whose approval and disapproval was most important to him.

The Northwestern subjects were randomly divided into two equal groups (Group R and Group S) and the Nurses into two groups (Group P and Group Q). These divisions were made merely to decrease the sizes of the samples, and, hence, the number of responses to be classified by each team.

b. Procedure

The packets were distributed among the subjects who were instructed to work at their own speed in answering the questions printed on the cards. Importance rankings of the responses were omitted as they were found, in the Carnation and Prudential studies, to be random and unreliable estimates of the importance hierarchy of attitudes.

4. Data Classification

a. Classifiers

Seven teams of classifiers were chosen randomly from the Northwestern subject population. The composition of the teams was as follows:

| Team Number | Description |
|---|---|
| 1 | Two males, one female |
| 2 | Two males, one female |
| 3 | One male, two females |
| 4 | Two males, one female |
| 5 | Two males, one female |
| 6 | Three females |
| 8 (sic) | Three females |

Eight classification teams, each consisting of three women, were chosen randomly from the Nurses subject population.

b. Cross-Classification--Distribution of Samples

The data collection sessions resulted in four Northwestern samples (R+ and S+, positive responses, and R- and S-, negative responses) and four Nurses samples (P+ and Q+, positive responses, and P- and Q-, negative responses). Tables 12 and 13 indicate which samples were classified by each of the classification teams.

TABLE 12

CLASSIFICATION OF NORTHWESTERN SAMPLES

An "X" indicates that the team (in a specific row) classified the sample (in a specific column). "N" equals the total number of cards in each sample.

| Classification | Sample | | | |
|---|---|---|---|---|
| Team | R+(N = 330) | R-(N = 325) | S+(N = 347) | S-(N = 340) |
| 1 | X | X | | |
| 2 | X | X | | |
| 3 | | | X | X |
| 4 | | | X | X |
| 5 | | X | | |
| 6 | X | | | |
| 8 (sic) | | | X | |

c. Procedure

Standard data classification procedure was employed with both groups. However, a reliability estimate was introduced in the Nurses classification. A third team of classifiers was given the cards in each sample and instructed to sort them into the categories previously created by another team.

5. Validity Tests

a. Construction of Lists

Frequency messages (lists) were based on each of the classification systems. In addition, frequency messages were constructed from Stanford, Cuban, and UCLA data. Finally, two sex-specific messages were based on

TABLE 13

CLASSIFICATION OF NURSES SAMPLES

An "X" indicates that the team (in a specific row) classified the sample (in a specific column).

An asterisk * indicates the sorting of data into prepared categories. (Reliability estimate)

"N" equals the total number of cards in each sample.

| Classification Team | Sample P+(N = 249) | P-(N = 257) | Q+(N = 250) | Q-(N = 259) |
|---|---|---|---|---|
| 1 | | X | | X* |
| 2 | X | | X* | |
| 3 | | X* | | X |
| 4 | X* | | X | |
| 5 | | X | | |
| 6 | X | | | |
| 7 | | | | X |
| 8 | | | X | |

the separate distributions of the male and female responses among the categories created by team 6.

b. Procedure

The test booklets consisted of various combinations of the messages, presented two per page. From each pair of lists, the Ss were instructed to select the one list which, in their opinion, was more important overall.

In order to present different combinations of lists, the Northwestern subjects were divided into three male and three female groups and different booklets were prepared for them. Likewise, two different booklets were prepared for the Nurses subjects. The booklets were distributed and the subjects instructed to complete them at their own speed.

6. Results

The results were encouraging and interesting, as the validity test Ss were able to discriminate between lists of attitudes on the basis of the sex and school of the data collection subjects from whose responses the lists were generated.

In addition, the applications of the ECHO methodology to the Nurses and the Northwestern students reconfirmed the logic and efficiency of the procedure itself. The method as tested was the culmination of the various development changes which resulted from previous studies. As of this writing, additional data are being collected from these populations.

K. ELEMENTARY SCHOOL CHILDREN

Data were collected from two groups of school children (3rd and 6th grades) to answer two specific questions. First, can the IBM card form of the ECHO instrument be applied to children, and what is the minimum age for Ss using this form? And secondly, can the ECHO technique detect and describe the process of "value internalization," i.e., the socialization process and the sources of reinforcement which determine its course? The following tentative findings are indicated:

1. Third Graders

"Above average" school children (ages 8-8 1/2), in the last quarter of the third grade are capable of handling the IBM card form of the ECHO questionnaire. The Ss understood the questions, were easily motivated, and were very conscientious in completing the questionnaire. Children, in fact, seem to be more motivated than adult Ss--every child completed

all 20 questions; adults sometimes fail to finish the 20 questions. A drawback, however, is that third graders require 1 hour to 1 hour and 20 minutes to finish the questionnaire, while the average adult S requires only 20 minutes to complete 20 questions and rank the cards on an "importance hierarchy".

Third grade Ss who were identified as being "average" or "below average" by the teacher were not able to handle the IBM form of the instrument in an acceptable time period. These same Ss, however, were able to answer the 20 ECHO questions when the task required answers to be listed on an 8 1/2" x 11" piece of lined paper. These findings suggest that all "normal" American fourth graders could easily handle the IBM card instrument.

2. Sixth Graders

Sixth graders (ages 11-12) were tested with the standard 20 question ECHO instrument. The data were compared with data collected from third graders in an effort to identify and quantify the changes in values which occur during the 3-year period between 3rd and 6th grade. This experiment indicates:

1. The ECHO instrument can detect shifts in the prevalence and intensity of values in a culture.

2. The method can also identify the "power structure", i.e., sources of reinforcement, which shaped these changes. In effect, this tells the researcher what (or who) influenced each Ss' evaluation of the person, object, or concept under study.

3. Changes in the "power structure" can also be used to detect the "internalization" process, i.e., the process of adopting the beliefs, norms, and values of one's referent culture. Techniques for representing this information quantitatively and graphically have also been developed.

4. Taken together, findings (1) and (2) indicate that "developmental" investigations can be executed by the ECHO technique within a relatively short period of time, i.e., it is not necessary to wait for time to pass to study changes in values if it can be inferred that the differences between two age groups of children in the same culture are due to the culture's socialization process.

L. ILLITERATE SUBJECTS

A pilot study designed to evaluate the feasibility of an oral interview form of the ECHO questionnaire is currently in progress.

1. Subjects

Mexican-Americans living in the "East L.A." area of Los Angeles acted as subjects. Each subject was interviewed by two researchers; responses were recorded on IBM cards. Use of this particular population permits the continued evaluation of the instrument's ability to work in an "alien culture" and at the same time provides information about the problems inherent in testing illiterates.

2. Findings

Potential problems in applying the ECHO technique to illiterates include:

1. Loss of S anonymity--this is particularly confounding in societies where extreme ingratiation is a cultural trait.

2. Excessive time requirements--these Ss required one to two hours to answer 20 questions verbally; literate Ss can answer 20 written questions in twenty minutes.

3. A method of classifying the data which utilizes indigenous classifiers must be developed.

4. Validity tests (message tests) for illiterate populations must be developed. Tape recorded lists, presented with rigid

experimental controls for experimenter bias, presentation effect, etc., are under consideration as a possible solution to the problem.

Possible solutions to these and other problems have been given some consideration during Phase I; however, empirical evidence has not yet been collected.

## APPENDIX II

## CONSTRUCTION OF VALIDITY-TEST MESSAGES

The format of the validity tests requires that data from the target population and data from several other populations be "echoed" back to a sample of the target population for approval or disapproval. The hypothesis is that subjects will select the data that came from their population over data from any other population. The data in this case are category titles which were generated by teams of classifiers. The classification process produces lists of category descriptions, frequencies of mention for each category, and classifiers' importance rankings of each category. Other information is available within each category: the importance ranking each S gave to the cards he submitted, the order in which the cards in a category are completed, the number of Ss who contributed to the category, and how other classifiers sorted the same cards.

Problem. What portion of the available data contains the most veridical information about the subject population's value system, i.e., which of the possible samples of the data will they say is most important to them?

Method. Generate lists of values in different ways and see which method produces preferred lists. Lists were produced in the following ways:

1. Experts submitted lists of values which they thought the population held. The first five items were included in the "Expert's" list.

2. Classifiers were asked to rank all of their categories on an importance scale. The five highest-ranked categories were selected for the "Importance to Classifiers" list.

3. The five categories with the highest frequency, i.e., the categories with the largest number of cards in them, were included in the "Frequency" list.

4. Each subject had ranked his responses on an importance scale; by taking the responses ranked "1" it was hoped that a weighing for importance could be achieved. The five categories with the largest number of "1" importance values were included in the "Importance to Ss" list.

The lists were presented in a paired-comparison, forced-choice format and Ss were asked to select the list which best reflected their views.

Results. The "Frequency" lists, (3) above, proved to be the most popular of the lists in several different validity test sessions.

Discussion. "Importance to Ss" rankings and categories proved to be statistically independent, i.e., no category came up with a preponderance of the higher "importance" ratings (see Table 14 for example). By taking the distribution of all of the cards ranked "1" we were merely sampling 10% of the population data distribution. The Law of Large Numbers, which is applicable here, tells us that the variance increases as the sample size decreases. By taking 1/10 of the responses we merely increased the variance in the frequency distribution from which we selected the five largest categories. This method of selecting categories would not be expected to produce "preferred" lists; and, in fact, it did not.

Another interesting characteristic of the "importance ranking" was discovered in the course of post-test data analysis--importance rankings are dependently related to the order in which the cards were filled out. That is, the cards filled out first were usually given the higher (I) rankings. Table 15 illustrates the dependency finding which obtained in all data checked.

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TABLE 14

DISTRIBUTION OF SUBJECTS' IMPORTANCE RANKINGS BY CATEGORY
(Stanford Positive Data)

| SUBJECTS' IMPORTANCE ESTIMATES (rank) | CATEGORY 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | Σf |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 7 | 4 | 6 | | 6 | 1 | 6 | 2 | 1 | | 1 | 1 | 10 | 1 | | | 8 | | 2 | 5 | 2 | | 3 | 2 | | 1 | | 2 | 72 |
| 2 | | 2 | 6 | 8 | | 5 | 1 | 3 | 2 | 1 | | | | 5 | 4 | 3 | 1 | 4 | 1 | 6 | 5 | 2 | 3 | [illegible] | 4 | 2 | | | 2 | 71 |
| 3 | 1 | 2 | 4 | 5 | 2 | 6 | 1 | 6 | 2 | | 1 | 3 | 3 | 6 | 1 | 1 | | 6 | 1 | 4 | 4 | 1 | | | 5 | 1 | 2 | 1 | 1 | 70 |
| 4 | 3 | 4 | 7 | 3 | 2 | 5 | 1 | 5 | | 1 | 2 | 2 | 1 | 3 | 1 | 1 | 1 | 6 | | 6 | 3 | | | | 7 | 1 | 2 | 1 | 3 | 71 |
| 5 | | 2 | 9 | 5 | 1 | 3 | 1 | 5 | | 1 | 1 | 1 | 1 | 6 | | 2 | 2 | 2 | 1 | 5 | 6 | 2 | 2 | 5 | 2 | 2 | 1 | | 2 | 70 |
| 6 | 1 | 2 | 4 | 3 | 1 | 1 | 4 | 6 | | 2 | 2 | 2 | | 5 | 3 | 1 | 2 | 7 | 1 | 8 | 2 | 2 | 2 | | 2 | 2 | | 2 | 2 | 69 |
| 7 | 1 | 5 | 6 | 1 | | 4 | 3 | 7 | 3 | | | 5 | 1 | 3 | 3 | 2 | 3 | 2 | 1 | 4 | 4 | 2 | 1 | 2 | 1 | 2 | | | 1 | 67 |
| 8 | 1 | 2 | 4 | 6 | 2 | 3 | 1 | 13 | 1 | 1 | 1 | 3 | 1 | 2 | | 1 | 1 | | 3 | 3 | 5 | 2 | 1 | 1 | 3 | 3 | 3 | | 1 | 68 |
| 9 | | 1 | 3 | 5 | 3 | 3 | 1 | 6 | 1 | 2 | | 3 | 1 | 3 | 2 | 3 | 1 | 3 | 2 | 5 | 3 | | | 1 | [illegible] | 4 | | 2 | 5 | 66 |
| 10 | 1 | | 2 | 2 | 2 | 2 | 1 | 7 | | 2 | | 8 | | 2 | 2 | [illegible] | 1 | 2 | 4 | 3 | 9 | 1 | 1 | | 4 | 2 | 1 | 1 | 4 | 68 |
| Σf | 9 | 27 | 40 | 44 | 13 | 38 | 15 | 64 | 11 | 11 | 7 | 28 | 9 | 45 | 17 | 18 | 12 | 40 | 14 | 46 | 46 | 14 | 10 | 13 | 33 | 19 | 10 | 7 | 23 | 692 |
| $\frac{\Sigma (f \times rank)}{\Sigma f}$ | 5.22 | 4.26 | 5.02 | 4.82 | 6.77 | 4.58 | 5.80 | 6.06 | 4.55 | 6.36 | 5.14 | 7.18 | 4.78 | 4.31 | 5.47 | 6.56 | [illegible] | 4.28 | 7.50 | 5.43 | 5.78 | 5.07 | 5.30 | 4.69 | 7.24 | 6.58 | 5.40 | 6.71 | 6.22 | |

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TABLE 15

CORRELATION BETWEEN ORDER AND IMPORTANCE OF ITEMS

| Subjects' Importance Estimates | Response Sequence Number 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 18 | 6 | 12 | 5 | 9 | 5 | 1 | 4 | 4 | 8 | 72 |
| 2 | 13 | 18 | 6 | 4 | 7 | 3 | 3 | 9 | 4 | 4 | 71 |
| 3 | 7 | 16 | 7 | 11 | 7 | 4 | 2 | 8 | 4 | 4 | 70 |
| 4 | 5 | 7 | 11 | 13 | 8 | 1 | 5 | 2 | 6 | 7 | 71 |
| 5 | 7 | 6 | 5 | 8 | 9 | 8 | 10 | 8 | 5 | 4 | 70 |
| 6 | 4 | 4 | 11 | 8 | 4 | 11 | 8 | 1 | 14 | 4 | 69 |
| 7 | 6 | 2 | 5 | 7 | 7 | 7 | 12 | 10 | 4 | 7 | 67 |
| 8 | 2 | 4 | 5 | 6 | 9 | 8 | 13 | 5 | 8 | 8 | 68 |
| 9 | 7 | 4 | 4 | 2 | 7 | 8 | 8 | 10 | 11 | 5 | 66 |
| 10 | 2 | 4 | 4 | 7 | 4 | 6 | 5 | 11 | 8 | 17 | 68 |
| NA | 2 | 2 | 3 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 22 |
| | 73 | 73 | 73 | 73 | 73 | 70 | 69 | 70 | 70 | 70 | 714 |

Chi Square = 180.961 with 81 degrees of freedom is significant at the $\alpha$ = .005+ level. Therefore, reject the null hypothesis of independence.

Classifier's Rankings of Importance. The reliability with which different teams of classifiers rank the same categories in the same order of importance appears to be high. For example, the correlation between the importance rankings of two different teams of Company C classifiers was found to be +.79; the data and statistical tests which support this statement are contained in Table 16.

The relationship between categories ranked on importance by the Cs and ranked on frequency of mention is not so striking, as the data in Table 17 illustrate. The failure of the "Importance to Cs" technique can probably be attributed to Cs variance; the "Frequency" technique minimizes (but does not eliminate) the variance between Cs.

TABLE 16

CLASSIFIERS' IMPORTANCE RANKINGS
(Two Groups of Secretaries Classifying Data
from the Second Group)

| | Rank Assigned by First Group | Rank Assigned by Second Group | Difference, d, Between Rank No's | $d^2$ |
|---|---|---|---|---|
| Aa | 12 | 13 | 1 | 1 |
| A | 20 | 15 | 5 | 25 |
| B | 26 | 11 | 15 | 225 |
| C | 10 | 8 | 2 | 4 |
| D | 18 | 22 | 4 | 16 |
| E | 24 | 24 | 0 | 0 |
| F | 15 | 19 | 4 | 16 |
| G | 22 | 16 | 6 | 36 |
| H | 5 | 4 | 1 | 1 |
| I | 23 | 18 | 5 | 25 |
| J | 9 | 14 | 5 | 25 |
| K | 1 | 5 | 4 | 16 |
| L | 19 | 20 | 1 | 1 |
| M | 16 | 21 | 5 | 25 |
| N | 29 | 26 | 3 | 9 |
| O | 6 | 6 | 0 | 0 |
| P | 2 | 2 | 0 | 0 |
| Q | 11 | 9 | 2 | 4 |
| R | 13 | 12 | 1 | 1 |
| S | 25 | 27 | 2 | 4 |
| T | 28 | 28 | 0 | 0 |
| U | 8 | 7 | 1 | 1 |
| V | 4 | 1 | 3 | 9 |
| W | 17 | 25 | 8 | 64 |
| X | 21 | 17 | 4 | 16 |
| Y | 27 | 29 | 2 | 4 |
| Z | 3 | 23 | 20 | 400 |
| BB | 30 | 30 | 0 | 0 |
| DD | 14 | 10 | 4 | 16 |
| CC | 7 | 3 | 4 | 16 |

$N = 30$ $\Sigma d^2 = 960$

Spearman's Rho ($\rho$) for correlation between rankings:

$$\rho = 1 - \frac{6\Sigma d^2}{N(N^2 - 1)} = 1 - \frac{5760}{(30)(899)} = 1 - \frac{5760}{26970} = 1 - .21 = .79$$

TABLE 17

RELATIONSHIP OF CLASSIFIERS' IMPORTANCE RANKINGS OF CATEGORIES TO CATEGORY FREQUENCIES

| Cs | Data | Spearman Rho | Significance of Rho | |
|---|---|---|---|---|
| P1 | Prudential + | $\rho = 0.36$ | $t = 1.724$<br>$df = 20$ | N.S. |
| P2 | Prudential - | $\rho = 0.03$ | $t = 0.156$<br>$df = 27$ | N.S. |
| P3 | Prudential ± | $\rho = 0.83$ | $t = 6.308$<br>$df = 18$ | +<br>$\alpha = .001+$ |
| CA | Carnation ± | $\rho = 0.42$ | $t = 2.36$<br>$df = 26$ | +<br>$\alpha = .05+$ |
| CB | Carnation ± | $\rho = 0.18$ | $t = 1.008$<br>$df = 28$ | N.S. |

An important use of Cs rankings of categories will be as a check against spurious f rankings. Although the multiple classification method normally reveals small categories that could be considered to be the breakdowns of larger categories, Cs rankings could be used as a check against the possibility that all three teams used the same category widths but disagreed about the classifications.

# APPENDIX III

## ELEMENTARY SCHOOL STUDIES

The experiments reported here were designed to answer two major questions: (1) How old and literate must our subjects be to use the standard IBM card form of the ECHO questionnaire? (2) Can the ECHO technique detect, and perhaps quantify, the process of "value internalization" or "socialization"?

Subjects

Group A: female and male students in the third grade at a public elementary school in Santa Ana (Orange County), California.

Group B: female and male students from a sixth grade at the same elementary school.

Method. A standard twenty-card instrument containing the questions: "What is a good/bad thing to do?" and "Who would approve/disapprove?" was completed by each S. The order of presentation (good/bad or bad/good) was reversed for half of each sample to control for sequential effect.

Standard instructions, modified for the younger populations, were read to both groups.

### A. AGE AND LITERACY REQUIRED TO USE THE ECHO INSTRUMENT

Problem. How old and literate must subjects (Ss) be to use the standard IBM card form of the ECHO questionnaire? Can children comprehend the task? Do children generate data that are meaningful?

Bavelas[1] and Kalhorn[2] found that fourth graders (ages 9 to 10) were the youngest subjects capable of handling a written form of the questionnaire. Third graders were excluded from Bavelas' studies because

their handwriting was illegible. All of his subjects, including preschoolers who were given oral interviews, were able to comprehend the task and generate the requested responses.

Findings. Second-semester third grade students whom the teacher rated as "average and above" were able to handle the standard ECHO instrument; "below average" students, however, could not satisfactorily handle the IBM cards even though they could give acceptable responses when given an ordinary piece of writing paper.

These third grade students required one and a half hours to complete twenty cards as compared to an average adult time of 20 minutes. The sixth graders completed the task in approximately the same time as adults.

Conclusion. Children with a fourth grade education or more are capable of handling the standard ECHO instrument. Third graders can answer the questions but they require a long time to complete the task. This finding will vary from culture to culture, but it suggests that the current ECHO methodology can be used at the lower levels of education.

B. MEASUREMENT OF "SOCIALIZATION"

Problem. As children mature, they appear to internalize the values of the subculture in which they live. Adults commonly have sets of values which cause them to behave in particular ways because they view the behavior as being "right" or "wrong". No outside agency is required to reward or punish such behavior. An assumption is that the behavior and the values attached to it were learned in such a way that the enforcing agency is transferred from the outside (e.g., from "mother") to the inside ("self"). The internalization process presumably occurs over time. The question of when that occurs might be answered by determining the difference in responses to the question "Who would approve/disapprove?" for various behaviors by children of different age groups.

Hypothesis. Children in the sixth grade, having progressed farther in the socialization process, will respond to the question "Who would approve/disapprove?" with the concept "self" significantly more often than children in the third grade; the converse is true for the concept "parent(s)".

Results. The number and percentage of "myself" responses to "Who would approve/disapprove?" for each group is shown in Table 18.

TABLE 18

"MYSELF" AS A SOURCE OF APPROVAL OR DISAPPROVAL IN TWO POPULATIONS OF ELEMENTARY SCHOOL CHILDREN

| | % Time "Myself" was Source | | |
|---|---|---|---|
| | Good Thing | Bad Thing | Mixed |
| Male Third Graders | 8.3 | 13.3 | 10.8 |
| Female Third Graders | 20.1 | 20.0 | 20.4 |
| Male Sixth Graders | 29.4 | 19.3 | 24.7 |
| Female Sixth Graders | 21.3 | 19.0 | 20.1 |

Figure 6 includes the data from Groups A and B and from an adult group. The curves indicate clearly that the socialization process moves sharply in the period between the third and sixth grades.

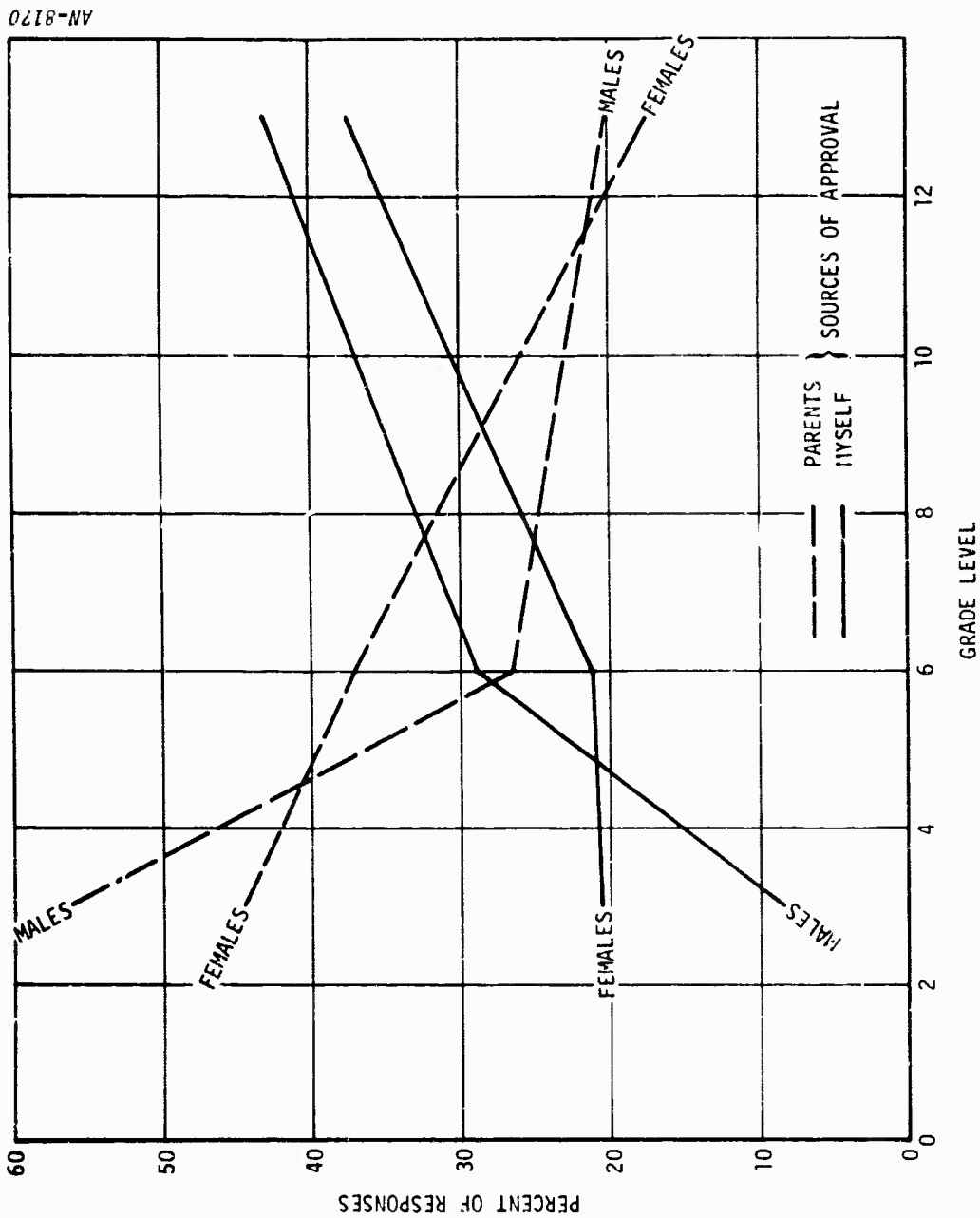


Figure 6. "Socialization": The Internalization of Value Systems

# APPENDIX IV

## DETAILED DESCRIPTION OF METHOD

The following detailed description of the basic ECHO methodology as of June 1967 is a consolidation of material appearing in earlier sections of this report. It is presented in this form for convenience. It includes only one form of the projective question; additions and changes are expected.

### A. DATA COLLECTION SESSION

#### 1. Data Collection Packets

##### a. Data Collection Cards

Data collection packets were prepared prior to the session, each packet consisting of 20 IBM cards which were prepunched with the following information:

1. A number identifying the population from which the sample was drawn
2. A subject number
3. A sequence number to indicate the order in which the subject wrote his responses
4. A plus ("+") or minus ("-") to indicate whether the question on the card was "positive" or "negative".

Of the 20 data collection cards per packet, 10 had printed on them the following "positive" questions: "What is a good thing to do?" and "Who would approve?" Likewise, the 10 "negative" cards had the questions: "What is a bad thing to do?" and "Who would disapprove?"

A sample data collection card is shown in Fig. 7.

WHAT IS A GOOD THING TO DO? _____

_____

_____

_____

WHO WOULD APPROVE? _____

☐ Go on to the next card in this packet ⇨

Figure 7. Sample Data Collection Card

b. Sequential Controls

To control for the possible confounding effects of the order in which the positive and negative cards were presented, half of the subjects in each sample received 10 positive cards first and then 10 negative cards; vice versa for the other subjects.

c. Role Instructions

When subgroups within a sample were to be assigned a specific role, role instruction cards were placed first in the packets so that the subjects would encounter them before they responded to the data collection cards. For example, 120 of the UCLA Ss were instructed to respond to the questions in terms of their roles as students at UCLA while the other 30 Ss were instructed to respond in terms of the general role as person in society.

d. Biographical Data Cards

The final card in each data collection packet was the Biographical Information card with questions appropriate to the population. The Carnation and Prudential subjects, for example, were asked about sex, educational background, age, job title, and length of employment with the company. The biographical data card employed with the UCLA and Stanford samples asked about the subject's age, sex, marital and academic status, and the length of time he had attended that school.

2. Data Collection Methodology

The data collection packets were distributed randomly to the subjects. After the instructions were read to them, the subjects were instructed to open their packets and begin. They were allowed to proceed at their own speed and were asked, upon completion, to put all the materials back into the packets and to return the packets to the experimenters.

The instructions to the subjects were basically the same for all the sample studied. The format was as follows:

INSTRUCTIONS TO THE SUBJECTS

> The purpose of this study is to develop methods for improving communications between different cultures. Any such interculture communication is necessarily based on an understanding of the value systems inherent in each culture. We are currently investigating an instrument with which we hope we will be able to discover and examine the value system for any culture. We plan to test the effectiveness of our methodology by comparing the culture which has developed in this group with a somewhat similar culture which has developed within another group of secretaries [or students].
>
> Each of you should have a sealed envelope and a pen. These are the only materials you will need. You will be asked to give ten responses to each of the following questions: What do you think a person, like yourself, could do that would be a good thing to do and that someone would

approve of your doing? Who would approve of your action? Likewise, what do you think a person, like yourself, could do that would be a bad thing to do and that someone would disapprove of your doing? Who would disapprove?

When we tell you to begin, you are to open the envelope by tapping it down on the left side so that the cards within are down on the left. Then tear off the right edge. Take out the deck of cards which are numbered with a "1". Do not remove anything else from the envelope. Take the rubber band off the cards but be especially careful that you do not change the order of the cards. Writing or printing as neatly as possible give a specific example of a good or a bad thing to do, according to the question which is printed on the card. Write that answer on the lines which have been provided following the question. Then write the title or position of the person who would approve or disapprove of your action on the lines which have been provided following that question. When you have answered all ten cards in deck 1, put them back into the envelope and take out deck "2". Again, we ask you not to change the order of the cards. Follow the same procedure as before in writing your answers on these cards. When you are finished, return these cards to the envelope and take out the yellow "Biographical Information" card. Answer each of the questions on this card by placing an "x" in the appropriate box. Again, when you are finished return the card to the envelope and all your materials to one of us. At that time you may leave. We wish to thank you all again for donating your time to help make this study a success.

Do you have questions? If a problem should arise while you are working, please raise your hand. You may begin.

B. CLASSIFICATION SESSION

The classification session was devised as a method for reducing the vast amount of data (20 separate responses per subject) into a usable and logical form.

Persons indigenous to the subject population interpret the individual responses made by the subjects and put together those responses which are similar in content and meaning. It is essential that indigenous classifiers be employed in this task, as persons alien to the subject population

and, hence, alien to that group's value system, would make different interpretations of the data. The goal of the classification procedure is to reduce the masses of individual responses into a set of statements (categories) which describe the important attitudes held by the subject population.

1. Determination of Number of Classification Teams and Length of Session

Teams of three persons each were chosen randomly from the subject population to serve as classifiers. The number of teams depended upon the total number of cards to be classified. Through trial and error, it was determined that 250-300 was the optimum number of cards that could be handled by a group of three classifiers. In cases where a group of classifiers worked with more than 300 cards, boredom and fatigue developed with the result that the classifiers became less critical in their discriminations and tended to hurry through the classification task. For example, teams from UCLA were given over 800 cards to sort. The process took approximately twelve hours and the resultant categories appeared to the investigator to be rather unreliable. Whenever large numbers of cards are to be processed, the classification should be spread over a larger period of time by having work sessions of no longer than three hours, with a substantial break between sessions.

2. Procedure

In the first part of the classification session, the three classifiers worked independently. Each was given about 100 cards, i.e., one-third of the deck of cards assigned to his team, and was instructed to stack together all the cards which, in his opinion, said or meant the same thing.

The resultant stacks of cards, then, represented one category or type of response. This preliminary sorting task took roughly one hour to complete.

In the second part of the session, each team of classifiers was brought together. The different teams were physically separated from each other so that one group would not disturb another. The experimenters circulated among the teams of classifiers, being careful not to make any suggestions which might bias the classifiers' decisions. The experimenters were there, for example, to make sure that no one member dominated the team's discussions and to expedite the process.

This phase of the session began with one team member choosing one of his stacks and reading aloud some of the cards it contained. The other two classifiers then added to that stack any of their cards which they felt had the same meaning as those being read. The classifiers took turns reading their cards aloud. At the end of this phase, all of the classifiers' separate stacks of cards had been combined to form larger categories of response.

In the final phase, the classifiers were instructed to reexamine the newly-created categories and, where necessary, to break them down into finer, more exclusive categories. They then labeled each category, giving it a title which, in the form of a response to the original question, would describe all of the responses within the category. In addition, the Carnation and Prudential classifiers were instructed to rank the resultant categories from 1 to 10 in terms of importance. This ranking was later omitted from the classification procedure but should be retained as a control over eccentric classifications.

Typically, the classification session lasted about three hours and resulted in sets of 20-30 categories of response.

3. Reliability Estimates

As one method for checking the reliability of a team's classification system, a second team of three classifiers was given the list of categories created by the first team and instructed to re-sort the cards

into those categories. The degree to which the cards were sorted into the same categories by the two different teams determined the degree of reliability of the first team's classification.

Another estimate of reliability consisted in having a second team of classifiers indicate their agreement or lack of agreement with the categories created by the first team. That is, the members of the second team were given each category (stack of cards) created by the first team and asked whether or not the cards did in fact belong together and whether or not the category title created by the first group was representative of the responses in that category.

4. Cross-Classification Systems

Several variations in the types of data classified and the composition of the classification teams are possible. The variables include:

1. Data--sex variable
   a. Male subjects' responses only
   b. Female subjects' responses only
   c. Male and female subjects' responses mixed

2. Data--age variable
   a. Responses from subjects representing different age groups can be classified together or separately

3. Data--positive and negative responses
   a. Responses to the "positive" and "negative" questions can be classified together or separately

4. Classifiers--sex variable
   a. All males
   b. All females
   c. Males and females

5. Classifiers--age variable

   a. Teams of classifiers can consist of only persons of a specific age group or of persons of different ages

6. Classifiers--indigenous or alien

   a. Although indigenous classifiers are essential to the original interpretation of the data, it would be interesting to discover how persons alien to the subject population would view the data. In this manner, differences between the value systems of the subject population and the alien culture might be discovered.

Various combinations of these variables are possible and several have been used to date. These cross-classifications reveal important differences between subgroups within the subject population.

5. Classification of Sources

The power structure of the subject population is represented by the sources of approval and disapproval of the actions listed by the subjects. The sources can be grouped or classified in various ways, e.g., in terms of their relationships to the subjects or their status in the organization. Indigenous classifiers are needed, particularly with foreign populations, to determine the hierarchy of the sources and for other groupings of sources.

C. MESSAGE SESSIONS

The message session was designed to test the sensitivity of the ECHO method; to determine whether the subject's responses to the ECHO questions do in fact represent attitudes which are important and prevalent in the value system of the subject culture. Lists of the category labels which represent such attitudes were called "messages". Basically, the message session format was as follows: A new group of subjects was chosen from the subject population. These subjects were asked to compare various messages, e.g., ECHO versus expert; ECHO positive versus ECHO

negative, and to select the message which listed the actions and attitudes they considered to be most important on the basis of certain pre-stated criteria, e.g., in terms of their roles as students or secretaries. Hence, the message session tested the effectiveness of the ECHO instrument in discovering prevalent attitudes within the subject population and also served as an examination of ECHO's ability to discriminate between different subgroups within the subject culture.

1. Message Construction

a. ECHO Frequency Messages

The categories within each classification system were ranked in terms of their frequencies, i.e., the total number of responses in each category. The categories which were highest in rank were included in the message and their labels were listed in order of decreasing rank. Different frequency messages were constructed based on the various classification systems.

b. Expert Messages

Experts, persons who had intimate and detailed knowledge of the subject culture but were not part of it, were asked to list the attitudes which they felt were most prevalent within or important to the subject population. These lists were similar in form to the ECHO-generated messages.

2. Criteria for Message Comparison

As the message session was designed to be a test of the data collection method, it was necessary that the question, i.e., the statement of the criteria on which the subjects were to base their comparisons of the messages, parallel the data collection question to which the original responses were made. The standard form of the question was as follows: "Which of the messages lists the actions and attitudes which you feel are most important?" However, it was discovered early in the study that

the exact wording of that question greatly influenced the manner in which the subjects responded. Hence, it was necessary to assign a specific role, e.g., as a student or employee, to define the context in which the subjects were to make their comparisons of the messages. In addition, the question itself must clearly identify the person whose opinion is being sought. The question: "Which message lists the actions and attitudes which you believe are the most important aspects of doing your job and being satisfied and personally content in your work?" was effective in assigning the subject's role and in eliciting his personal opinion rather than that of his supervisor or co-workers.

3. Message Session Method

a. Standard Procedure

The messages were printed on sheets which were organized into test booklets. The standard sheet had printed on it the messages to be compared (two or four messages), the question stating the criteria for comparison when different questions were to be answered, and space for the answer. The order in which the messages were arranged on any one sheet was randomized to control for any possible ordering effects. Likewise, the order in which the sheets were arranged in the test booklet was randomized to control for effects of ordering, fatigue, and boredom.

The test booklets were distributed randomly among the subjects who were instructed to read the messages and answer the question(s) pertaining to them by writing the code number of the selected message in the answer blank. The subjects were permitted to work at their own speed and to leave the room upon completion of the test.

In some cases, special test booklets were prepared for different subgroups. For example, the Carnation subjects were divided into two groups, secretaries and non-secretaries, and different messages, based on secretarial and non-secretarial data respectively, were prepared for them. Similarly, the male subjects in the Cuban and Northwestern groups

received test booklets containing messages based mainly on the male responses while the females in those two groups received messages created from female responses.

b. Variations in Message Session Procedure

To examine the effectiveness of the ECHO instrument in discovering the power structure, or hierarchy of sources of reinforcement, the message session subjects were presented with individual category titles and instructed to indicate the person who would be most likely to approve or disapprove of each action or attitude. The resultant distribution of the sources of approval and disapproval attributed to a specific category was later compared with the original source distribution, i.e., the sources attributed to the same category by the data collection subjects.

An attempt was made in the Carnation and Prudential message sessions to test the efficacy of creating a hierarchy of attitudes on the basis of category frequencies alone. The subjects were instructed to make paired comparisons between individual category titles and the frequencies with which the categories were selected were later compared with original ranking of the categories by frequency.

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13. ABSTRACT

The ECHO technique utilizes a "projective survey" format, the method projective because the subjects (Ss) are permitted to define some variables which are usually predetermined by the investigators; and a survey because groups rather than individuals are the object of concern. The value of this type of attitude survey and the theoretical logic underlying its development are explicated here.

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