FACILITATING INDIA'S FAMILY PLANNING PROGRAM THROUGH TELEVISION: A STUDY OF SOURCE EFFECTIVENESS

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ABSTRACT

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By

Helen Elizabeth Parris

The present study investigated the relative effectiveness of two types of sources used on television to impart a family planning message to adults in the villages of Delhi State, India, provided with television sets. The sources were a village opinion leader and an urban medical expert. Television effectiveness was measured in terms of changes in (1) knowledge, (2) attitudes, and (3) motivation to seek additional family planning information (information-seeking behavior). These television effects were measured immediately before and after exposure to television and again four weeks after exposure.

Methodology

Two experimental television treatments (programs) essentially equated on all factors other than the source variable were professionally produced for television and were recorded on half-inch video-tape for playback in the

experimental villages. Twenty experimental villages were randomly selected from among the Delhi State villages receiving television and those villages were randomly assigned to one of the two comparable television treatments. Ten adult males were selected randomly as experimental subjects from each sample village.

The degree of each subject's modernity was measured prior to treatment. The dimensions of modernity measured are (1) education, (2) mass media exposure, (3) cosmopoliteness, (4) political knowledgeability, and (5) community participation. The degree of each subject's perceived homophily with the source (similarity in certain attributes) and perceived source credibility were measured immediately after treatment.

Based on relevant theory and research, it was predicted that low modern subjects would perceive the village source as more homophilous with themselves and more credible than the urban source. Low modern subjects would, therefore, tend to obtain higher scores on measures of the television effects as a result of exposure to the village source. It was likewise predicted that high modern subjects would perceive the village source as more homophilous with themselves than the urban source. However, finding urban values more salient than rural, high modern subjects would perceive the urban source as more credible and tend to obtain higher scores on measures of the

television effects as a result of exposure to the urban source. A two by four experimental design was followed to collect the data.

Summary of Major Findings

As predicted, both high and low modern subjects perceived the village source as decidedly more homophilous with themselves than the urban source. Also as predicted, subject's degree of perceived homophily with the source to whom he was exposed was related to his level of modernity: the more modern the subject, the more homophilous his relationship with the source tended to be. Contrary to prediction, all subjects tended to perceive both sources as highly credible relative to the measures used.

As predicted, low modern subjects exposed to the village source gained significantly more knowledge of family planning than their counterparts exposed to the urban source. Contrary to prediction, high modern subjects exposed to the village source also gained significantly more knowledge than their counterparts exposed to the urban source. In other words, all subjects tended to gain significantly more knowledge from the village source than from the urban source.

Contrary to prediction, differences in the effectiveness of the alternate treatments were not related to levels of modernity on any of the television effects measured.

The present experiment demonstrated the efficacy of experimental research in a village setting as a viable means of determining those approaches to television programming which are effective in accomplishing specified developmental objectives.

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Regrettably, the following pages of scientific reporting do not reveal the human story behind my research collaboration in India. It is a gratifying story of urban/rural, Indian/American cooperation in a world where intersystem cooperation is a highly valued yet often elusive phenomenon.

I am particularly indebted to India's Central Family Planning Institute (CFPI) for serving as my official collaborating agency; to All India Radio-Television for contributing personnel services and technical facilities for the professional production of two experimental television programs; to the Development Department of the Delhi State Administration for coordinating the activities of our investigation team in the experimental villages; and to the Electrical Engineering Department of the Indian Institute of Technology, Kanpur, for the loan of portable videotape equipment, without which a television laboratory experiment could not have been conducted in the field.

I am most grateful to four scholars for their academic guidance: Dr. Charles Schuller, my academic advisor, fostered and perceptively directed my interdisciplinary approach to the study of rural developmental television from the first days of our association. By

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The United States Agency for International Development (USAID/New Delhi) funded the study and the Ford Foundation made an initial contribution toward its implementation. I am indebted to both of these organizations and, in particular, to Mr. Michael Jordan, Population Development Officer of USAID, who served as project administrator. Mr. Jordan's deep personal interest in the project was an important factor in its successful execution.

My deepest appreciation is extended to the two "sources" (they shall remain anonymous) who willingly made a contribution to scientific knowledge by appearing in the experimental television programs. Also most deserving of my appreciation are those village respondents who kindly

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CHAPTER I

THE NATURE AND SCOPE OF THE STUDY

The Background and Purpose of the Study

The Government of India is in the process of developing a television communication system for the purpose of accelerating India's rate of educational, social, and economic growth. The use of television for rural development will be emphasized.

In addition to the existing television facility in the capital city of Delhi, during the Fourth Five-Year Plan (1969-1974), television stations will be set up in Bombay/Poona, Srinagar, Kanpur/Lucknow, Madras, and Calcutta. The Indian Government will provide television receivers for community viewing to approximately 400 villages in the proximity of each television station.

Also India will soon receive broadcasts transmitted by satellite. An agreement between the Department of Atomic Energy (DAE), the Indian agency for space affairs, and the National Aeronautical and Space Administration (NASA) of the United States, provides for a synchronous satellite to be stationed over the Indian Ocean in 1974 for a period of one year. NASA will be responsible for the space segment

of the satellite and the DAE will be responsible for the supply and maintenance of all ground receiving equipment.

Approximately 2,800 villages in seven lesser developed and widely scattered regions of India will receive television directly from the satellite on specially equipped receivers. Although these regions are represented by six different language groups, linguistic barriers to communication can be surmounted to some extent, since the satellite will have the capability of transmitting two audio channels simultaneously with the video channel. Three separate rural programs, each presented in two languages, will be offered by satellite on a time-sharing arrangement.

The television stations at Delhi and Bombay and a television facility at the headquarters of the Indian Space Research Organization (ISRO)[1] at Ahmedabad will be equipped to generate programs to the satellite for national distribution. All of the television stations previously mentioned will be capable of receiving and redistributing satellite broadcasts in addition to broadcasting locally produced programs to their respective audiences. At the conclusion of the one-year DAE-NASA experiment, ISRO plans to launch its own satellite and continue to expand the country's satellite broadcasting service.

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[1]ISRO is the agency which administers the Indian space program and serves a comparable function to that of NASA in the United States.

Presently, the television facility in Delhi is the only television broadcast operation in India. In 1967, eight years after the Delhi television station commenced broadcast service, approximately 80 villages of Delhi State were provided with community television receivers by the Indian Government. At that time, a bi-weekly agricultural program was included in the station's evening program schedule. The rural Delhi television program, a continuing "experiment" in rural adult education, offers timely information to farmers concerning agricultural innovations. The Delhi television signal is now being strengthened to cover all of Delhi State and parts of five neighboring states within a radius of 40 miles from the transmitter. Additional villages within the expanded coverage radius are soon to be provided with television receivers.

India's commitment to television technology provokes serious consideration of the kinds of programs that will be transmitted. Sarabhai (1969, p. 2) Chairman of the DAE, stated that in a country with limited economic resources, such as India, it is necessary "to gain insights on the manner in which television can be used as a direct instrument for promoting the development tasks of Government, so that the medium can be regarded as an investment rather than an overhead." Specifically, Sarabhai and other Indian communication officials want to know what can be done to

optimize the effectiveness of television, particularly in rural development. (Approximately 80 per cent of India's total population is rural.) They are interested in programming innovations which, when systematically applied to program design, can capture the interest of villagers and at the same time move villagers incrementally toward self help and village development. And they realize that the best time to discover improved procedures for program design is now, before the expansion of television technology.

There are few studies that offer mass media practitioners insights into the practical tasks of program development. Theoretical propositions about persuasive messages, mostly of Western origin, have rarely been tested on Eastern soil. Referring to family planning communication research, Rogers (1970, p. 15) commented, "Especially ignored in past research have been message variables. . . . We know precious little about the effectiveness of one-sided versus two-sided message treatment (e.g., is it better to admit that a family planning innovation has some disadvantages along with its advantages?), the use of fear appeals, and the credibility of various message sources . . . "

Several studies, reviewed later in this chapter, have been conducted in India to determine whether television can be effectively used as an educational medium in rural development. Based on these studies there is a good deal

of evidence to suggest that television can be an effective teaching tool. But, given that television is and will be used increasingly in rural development, it is important to discover those message strategies which when systematically incorporated in television programming can lead to the accomplishment of specified educational objectives.

The present study is the first television study conducted in India to investigate the relative effectiveness of comparable television programming treatments. Specifically, the purpose of the study was to discover whether a village opinion leader[2] and an urban expert[3] are differentially effective in delivering developmental information and advice through television. The content used in preparing television materials for evaluation concerned family planning. The locus of the study was those villages of Delhi State that have been receiving television for more than three years.

The Need for Studying Television Source Effectiveness

"The effectiveness of a communication is commonly assumed to depend to a considerable extent upon who delivers it" (Hovland and others, 1965, p. 19). Since Indian

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[2]An opinion leader is an individual who has the ability to influence other individuals' attitudes in a desired way and with relatively high frequency (Rogers, 1969a, p. 88).

[3]An expert is an individual who has special skill or knowledge in a subject.

television will be called upon to play a vital role in rural family planning education, the question of who should convey family planning messages on television is of considerable importance. The question of appropriate message sources is of immediate concern to personnel who design the rural Delhi television program.

In 1970, more than three years after its inception, the rural Delhi television program was expanded from a 20 minute bi-weekly program to a 30 minute program offered three times a week. In addition to regularly scheduled agricultural features, the program now offers features encouraging family planning, improved nutrition, sanitation, and the like.

Traditionally, the rural program has relied heavily on the use of urban experts to convey agricultural information. Occasionally, agricultural opinion leaders from the Delhi State villages are invited to appear on the program to discuss agricultural innovations. But, for the most part, agricultural experts from the Indian Ministry of Agriculture and the extension division of a local agricultural university have been featured.

The decision to use experts to impart technical information may be a valid one. Many of the Delhi State farmers have witnessed high yields of grain produced on university demonstration plots and they recognize the desirable consequences of agricultural innovation--although

farmers differ in the extent to which they adopt these innovations. When the intent of a television communicator is to impart technical information about an innovation, and when there is evidence to suggest that, in general, members of the viewing audience are not adversely disposed toward the innovation, but, rather, need information related to its application, then the use of an expert source on television may have merit.

However, when the intent of a television communicator is to encourage social change, it may be found that, among some types of villagers, a village opinion leader appearing on television is a more effective message source than an urban expert. Messages intended to evoke changes in traditional patterns of behavior usually convey value judgments and may be controversial. Such messages may be more effectively communicated by a television source whom the viewer perceives to hold values similar to his own. The message incorporated in the present investigation pertained to the benefits to be derived from adoption of the small family norm[4] and was categorized as serving a social change function. It was in the context of such a message that television source effectiveness was studied.

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[4]The small family norm is a prescribed social behavior concerning the desirability of having a family of few children, specifically two or three, rather than many children.

The present assessment of the message source variable as a determinant of desired television viewer response is of practical as well as theoretical importance. If an urban expert and a village opinion leader should be found to have a significantly different impact on rural Delhi television viewers, then such information can be taken under advisement by television personnel who plan and design the rural Delhi television program. As a result of a number of experiments similar to the present one, testing the source proposition in various contexts in Delhi State and other rural regions of India slated for television, it may be possible to supply program personnel with widely applicable guidelines concerning appropriate source selection. Systematically applied to program design, these guidelines could help to increase the goodness-of-fit of family planning and other developmental messages to specified target audiences of rural Indian adults.

An Overview of the Research Question

The present investigation pertained to the relative effectiveness of two types of television sources used to impart a family planning message to adults in the villages of Delhi State which are provided with community television receivers. The sources were a village opinion leader in matters pertaining to family welfare and an urban medical expert. The research question was to determine whether

one of these two types of sources is more effective than the other in producing desired viewer response. Effectiveness was measured in terms of changes in (1) knowledge of content, (2) attitudes toward family planning, and (3) motivation to seek additional family planning information (information-seeking behavior). These variables constituted the "television effects." A television effect is a response of a receiver to a television message. The differential effectiveness of the sources was assessed through viewer response measured at the time of exposure to television and again four weeks after exposure.

In cooperation with All India Radio-Television (AIR-TV),[5] two experimental television programs (experimental treatments) were designed. The programs were essentially equated on all factors other than the experimental factor: the sources used to impart the family planning message. Both programs were 14 minutes in length; both contained the same concepts and the same number and sequence of concepts. Audiovisual relationships and the quality of production were held constant in both. Only the sources presenting the message were systematically varied in the alternate experimental programs.

The programs were recorded on two-inch video-tape and were subsequently re-recorded on one-half inch video-tape.

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[5]AIR-TV is the television branch of the Ministry of Information and Broadcasting.

The re-recorded programs were shown on television in the experimental villages by means of portable video-tape equipment.

The research of Rogers and others (1969a) supported the contention that a village opinion leader appearing on television would be perceived by low modern viewers as more like themselves in certain attributes than an urban expert. Sharing a life-style relatively similar to these viewers, the village opinion leader would present the message in terms of the viewers' experience. The village opinion leader would, therefore, be perceived by low modern viewers as more credible than the urban expert. Credibility is the degree to which a communicator is perceived as a competent and trustworthy source of information.

Low modern viewers would, thus, tend to score higher on measures of the television effects as a result of exposure to the village source rather than the urban source.

High modern viewers, although perceiving the village leader as more like themselves in certain attributes than the urban source, would, nevertheless, perceive the urban source as more credible. That is, high modern viewers, often influenced by communication coming to their village from outside sources, and holding the norms of their village less salient than other villagers, would respect the judgment

of an urban expert in matters pertaining to family planning. High modern viewers would, therefore, tend to score higher on measures of the television effects as a result of exposure to the urban source rather than the village source.

The two sources used in the alternate television programs were as nearly equated as possible in age, communication ability, and personal dynamism. Both sources were committed to family planning and themselves raised small families. However, the sources differed radically in terms of years of schooling, place of residence, and occupation. Subjects' perceptions of these differences in the sources' cultural orientation was of primary concern in the research investigation.

Each subject in the sample was exposed to one and only one experimental television treatment. By using videotape equipment to present the television treatments, it was possible not only to randomly select subjects for treatment in each experimental village, but also to randomly select the villages for treatment and to randomly assign villages to the experimental treatments. By employing such randomization procedures,[6] the sampling equivalence of the treatment villages was established and measures obtained across treatments could be compared.

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[6] Randomization is a selection procedure which gives each unit in the population an equal chance of being included in the sample. It is a way to insure that treatment groups do not differ except by chance.

Had the treatments been broadcast, control over television exposure could not have been assured. Thus, only by means of portable video-tape equipment was it possible to focus on the question for study.

Explanation of the variables for study will be provided following a discussion of the research method employed in the present research and the substantive content used in developing the experimental television treatments.

The Study in Perspective

The Research Method

The present study was a field experiment.[7] It differs from field experiments previously undertaken in India to assess the effectiveness of television in one fundamental way: the present experiment incorporated what Campbell and Stanley (1963, p. 13) refer to as a true experimental design[8] as compared with quasi-experimental designs[9] customarily used.

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[7] A field experiment is an experiment conducted in a setting approximating a natural environment rather than an artificially created environment.

[8] A true experimental design is a research design in which units in the population are randomly assigned to treatments, or to treatment and control groups, and in which all factors other than the experimental factor are systematically controlled. True experimental designs attain a high degree of internal validity. Internal validity is the degree to which extraneous factors that might produce effects confounded with effects of the experimental stimulus are controlled.

[9] A quasi-experimental design is a research design in which units in the population are systematically assigned to

Television (and radio) studies conducted in India to date have assessed programs that are broadcast. Since community television receivers have been placed in approximately 80 villages of Delhi State by the Indian Government, it is not possible for a researcher to control television viewing by randomly assigning television villages to a control group and then refusing viewing privileges to persons in those villages for the sake of experimentation. Therefore, in studies planned around regularly scheduled broadcasts, control villages are systematically selected from among those villages that have not been provided with community receivers. Experimental and control villages are often matched in size, accessibility to transportation facilities, and other factors which are believed to be related to the television effects. Although matching helps to equate comparison groups on a few relevant factors, the groups are never equated on all relevant factors.

Whenever villages are systematically rather than randomly selected, the sampling equivalence of treatment and control groups cannot be established and the possibility is always present that selection factors might produce effects confounded with the effect of the experimental treatment. Thus in assessing regularly scheduled

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treatments, or to treatment and control groups. Researchers use quasi-experimental designs when full control over the scheduling of the experimental stimulus is not possible.

broadcasts, researchers are faced with a situation in which a relatively high degree of experimental control is lacking.

A number of field experiments using quasi-experimental designs have been conducted in India to assess the effectiveness of radio or television in combination with group discussion. Neurath (1960) conducted the first major field experiment designed to assess the effectiveness of radio rural forums.[10] Responses from forum members in 20 villages were compared with responses from individuals in 20 villages without forums. Control villages were of two basic types: those with radio but no forums, and those with neither radio nor forum.

Using gain scores from pre- and post-broadcast measures, Neurath found impressive gains in knowledge of innovations in forum villages as opposed to small gains in both types of control villages. He also found that gains in knowledge were not restricted to the literate members of the forums; the illiterates started at lower levels of information but actually gained more.

As part of a cross-cultural study, Roy and others (1969) compared radio forum and non-forum villages. Taking observations over a period of 12 months, Roy found that knowledge changes and positive changes in adoption of

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[10] Radio rural forums are village organizations which give their members a chance to discuss innovations following regularly scheduled broadcasts.

agricultural and health practices were significantly greater among forum participants (and among the rest of the heads of household in forum villages) than among respondents in the control villages.

In 1960, shortly after the Delhi television station initiated broadcast service, 71 tele-clubs (the television counterpart of the radio rural forum) organized in the lower-middle income neighborhoods of Delhi were evaluated (UNESCO, 1963). Findings revealed that television combined with group discussion is an excellent means of imparting knowledge and stimulating plans for action concerning the responsibilities of citizenship.

These and numerous other channel combination studies conducted in India reveal that radio forums and tele-clubs can be a catalyst for social and technological change. It has also been found that television broadcasts, unsupported by interpersonal communication, can be an effective developmental aid.

In 1967, shortly after tele-clubs were organized in the villages of Delhi State, it became apparent that many of the farmers who watched the rural Delhi program were interested in learning how to apply agricultural innovations but were not interested in discussing the consequences of innovations which they mostly favored. Thus researchers decided to investigate the effectiveness of the rural broadcasts alone.

Mishra (1967) evaluated the impact on respondents of five agricultural programs in five television villages of Delhi State. Using a before/after design, knowledge-gain and knowledge retention were calculated. Mishra found both effects to be significant in all five programs across all villages sampled, so the programs had a measurable effect.

The National Council of Educational Research and Training (NCERT, 1968) studied knowledge of agricultural innovations, willingness to try innovations, and actual adoption as a result of exposure to seven rural Delhi television broadcasts. In an after-only design, NCERT researchers compared results obtained from a random sample of 100 farmers in the experimental television villages with results obtained from an equal number of farmers in non-television villages. Significantly higher scores were obtained on all the effects variables among respondents who were exposed to the agricultural television programs.

All of the previously mentioned field experiments, and many others conducted in India to date, have addressed the question: "Are the broadcast media, taken alone or in combination with interpersonal activity, an effective means of bringing about social change?" In these studies television programs are evaluated as a composite stimulus. Thus there is no way of knowing the contribution to television effectiveness of any given element operating within

a program. Studies investigating the relative effectiveness of television, such as the present one, assess the impact of individual program elements for the purpose of verifying program improvements.

The Substantive Content for Research

Thirteen million persons are added to the population in India each year (Patel, 1969, p. 1). Because production gains are largely off-set by population gains in the country, official priority has been given to a high-powered mass education program in family planning launched throughout India (Patel, 1969, p. 4). Television, as it expands, will be called upon to make a contribution to the educational effort.

In a study of family planning communication conducted by the Social Research Division of the Central Family Planning Institute (CFPI) of India (1969),[11] it was found that few persons sampled listened to radio to know about government policy on developmental programs. The CFPI study supports the position of Mitra (1967), who maintained that radio programs which stress the concern of India's social and political elite with the national population problem are of little interest to the village dweller. That the mass media in developing countries tend to stress national problems rather than the personal needs of individuals

[11]The CFPI is an autonomous research agency under the Ministry of Health and Family Planning of India.

who comprise the mass public is a well known fact. Reviewing the literature on mass media research in the developing countries, Rogers (1969c, p. 3) commented, "The media feature messages about development plans and projects . . . but there is little content about the specifics of new ideas in agriculture, health, or family planning."

Dubey (1969b, p. 18), commenting on the need for new approaches to mass media use in family planning in India, stated that, although the media have been generally successful in creating an awareness of family planning, their motivation-creating, action-stimulating potential has not been sufficiently exploited.

The gap between awareness and practice, between desired and actual family size, remains wide. The gap may be due to weak motivation or a high degree of ambivalence for family planning (Dubey, 1969a, p. 40). It would appear, therefore, that the most important role television can play in the family planning program is to stimulate interest in family planning and to encourage action.

Rogers (1969c, p. 3) stated that "Mass media exposure is able to create a generally favorable mental set toward change, but it is seldom able to form or change specific attitudes toward new ideas." Television's challenge is, thus, not one of trying to change individuals' deeply-seated negative attitudes toward family planning, for this objective is beyond the scope of the medium. Rather, the

challenge lies in eroding the inertia of tradition that inhibits an individual from learning that, through knowledge, he can exercise control over his environment. By deepening knowledge of the economic, health, social, and marital benefits to be derived from adopting the small family norm, an individual, over time, acquires new experience--new frames-of-reference upon which to base his judgments about family planning.

In designing the two experimental family planning programs for the present research, every effort was made to apply theoretical knowledge about effective communication. The general program objective was to encourage adoption of the small family norm. Family security now, and in the future, was the theme. The programs stressed the health, educational, and economic benefits to be derived from adopting the small family norm. An explanation of procedures used for program design and production is furnished in Chapter III.

The Variables for Study and Their Relationships

Independent Variable A: The Treatment Modes

Treatment modes are programs designed for experimental purposes in which all variables are held constant except for one variable which is manipulated.

In the present research, the source delivering the message was the manipulated variable. Treatment Mode I featured a village opinion leader in matters pertaining to family welfare. Treatment Mode II featured an urban medical expert.[12]

The television source as a variant.--Systematic selection of a village source and an urban source for alternate television treatments is valid only if the term "source" is established as a variant. That is, it must be possible to reliably discriminate between the sources based on decidedly different amounts of some common characteristics they possess. The question of establishing the present sources as variants was handled by the researcher's objective and categorical assignment of sources to treatments based on the sources' (1) level and type of education, (2) occupation, and (3) place of residence. The village source completed eight years of schooling in a Hindi medium school, was headmaster of his village school, and resides in a typical village in Delhi State. The urban source, a medical doctor, graduated from an accredited medical college, holds a prestigeous position in his profession, and resides in urban Delhi. These observable differences in the cultural orientation of the sources

[12]Hereafter the village opinion leader and the urban medical expert will be referred to as the "village source" and the "urban source," respectively.

gave the researcher reason to believe that the experimental modes are distinctly different treatments.

Subject's perceived homophily with source.--Systematic selection of sources for the alternate treatment modes based on objective assessment offers no assurance that subjects will similarly discriminate between the sources. Unless subjects can make such a discrimination, it is impossible to explain the outcomes of the research in terms of the variable manipulated in the treatment modes.

Reviewing the literature on relational concepts of communication, Rogers (1969b, p. 4) stated, "The transfer of ideas most frequently occurs between a source and a receiver who are alike." Since the effectiveness of a communication is highly related to the degree to which a receiver perceives himself as similar to a source, it was important in the present research to investigate the similarity in the relationship existing between source and subject as perceived by the subject. Specifically, it was necessary to determine whether homophily was differentially perceived between the urban source and the village source relative to the subject's assessment. Perceived homophily is the degree to which pairs of individuals who interact perceive themselves as similar in certain attributes. If subjects could discriminate between the two sources on the basis of homophily, then

the alternate treatment modes could be considered a reliable variable for experimental manipulation.

The attributes of perceived homophily which were measured are (1) education, (2) socio-economic status, and (3) modern value orientation. Explanation of these attributes is furnished in Chapter II.

The first research question was to ascertain the degree to which subjects perceived source differences on the basis of homophily. All hypotheses in the present study are stated in the null form.[13] Hypothesis I is offered in its null form as follows:

Hypothesis I: Subjects' degree of perceived homophily with source does not differ across the treatment modes.

Independent Variable B: Degree of Modernity of Subjects

Modernization is a process by which individuals anticipate and/or adjust to change which is directed toward a technologically complex style of life. Modernity is the state of an individual on the continuum of modernization.

Some individuals, by virtue of a more modern orientation toward life than their fellow villagers, are

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[13] A hypothesis can never be proved with absolute certainty, since there is always a probability, howsoever small, that statistical differences between sample means occur simply by chance. However, a null hypothesis, stating that there is no significant difference in sample means, can be rejected with certainty if statistical differences fall in the region of rejection. The region of rejection consists of a set of possible values which are so extreme that when the null hypothesis is true, the probability is very small that the sample actually observed will yield a value which is among them (Siegel, 1966, p. 13).

more receptive to new ideas and practices (Inkeles, 1969, p. 210). Television personnel may wish to tailor their programs to these relatively modern villagers in an attempt to speed up the adoption process, or they may have reason to tailor their programs to the more traditional villagers in order to establish a motivational base for future action programs in the field. If findings in the present research show that the two types of television sources are differentially effective in imparting knowledge, changing attitudes, and motivating subjects to seek further family planning information, then these findings can be of value to television personnel in selecting the appropriate type of source for reaching subgroups of viewers in their rural audience.

Under Hypothesis II, subjects' degree of perceived homophily with source across levels of modernity (high, above average, below average, and low) was tested. To obtain modernity scores, the following dimensions of modernity were measured.

1. Education
2. Mass media exposure
3. Cosmopoliteness
4. Political knowledgeability
5. Community participation

Reasons for selecting these dimensions are explained in Chapter II. Hypothesis II is formally stated in null form as follows:

Hypothesis II: Subjects' degree of perceived homophily with source does not differ across levels of modernity.

The next research objective was to find out whether subjects at the various levels of modernity differentially perceived homophilic relationships with the village and urban sources. Homophily scores were compared across treatments in order to determine whether possible differences in the degree of perceived homophily in the alternate treatments are attributable to levels of modernity.

According to theoretical prediction, subjects at all levels of modernity would perceive themselves as more homophilous with the village source than the urban source, although to different degrees. The high modern subjects would perceive themselves relatively more homophilous with the village source than the low modern subjects. Since by definition a village opinion leader is only slightly more modern than the average villager, it was predicted that high modern subjects would perceive themselves as having a somewhat better education, higher socio-economic status, and more modern values (the attributes of perceived homophily measured) than the village source. However, in comparing homophily relationships across treatment modes, the high

modern subjects would consider themselves relatively more homophilous with the village source than the urban source.

Figure 1, visually illustrates the theoretically predicted relationships between high and low levels of modernity and perceived homophily in the alternate treatment modes.

To compare the relationships between levels of modernity and perceived homophily across treatment modes, the following null hypothesis was tested.

Hypothesis III: Subjects' degree of perceived homophily with source is not a function of treatment mode/modernity interaction.

Optimal heterophily as related to modernity.--Although a high degree of similarity between individuals facilitates communication, it does not usually facilitate the flow of new ideas (Rogers, 1969b, p. 20). In a change-oriented situation in which the objective of a change agent[14] is to influence his client,[15] the change agent's orientation should be somewhat more modern and expert than that of his client. If both parties are very much alike, change cannot occur, since the client is as modern as the change agent (Rogers, 1969b, p. 13). On the other hand, if the degree of dissimilarity, or heterophily (the polar opposite of

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[14]A change agent is a person whose purpose is to influence innovation decisions in a direction deemed desirable by a change agency (Rogers, 1969a, p. 169).

[15]A client is a person whom a change agent seeks to influence.

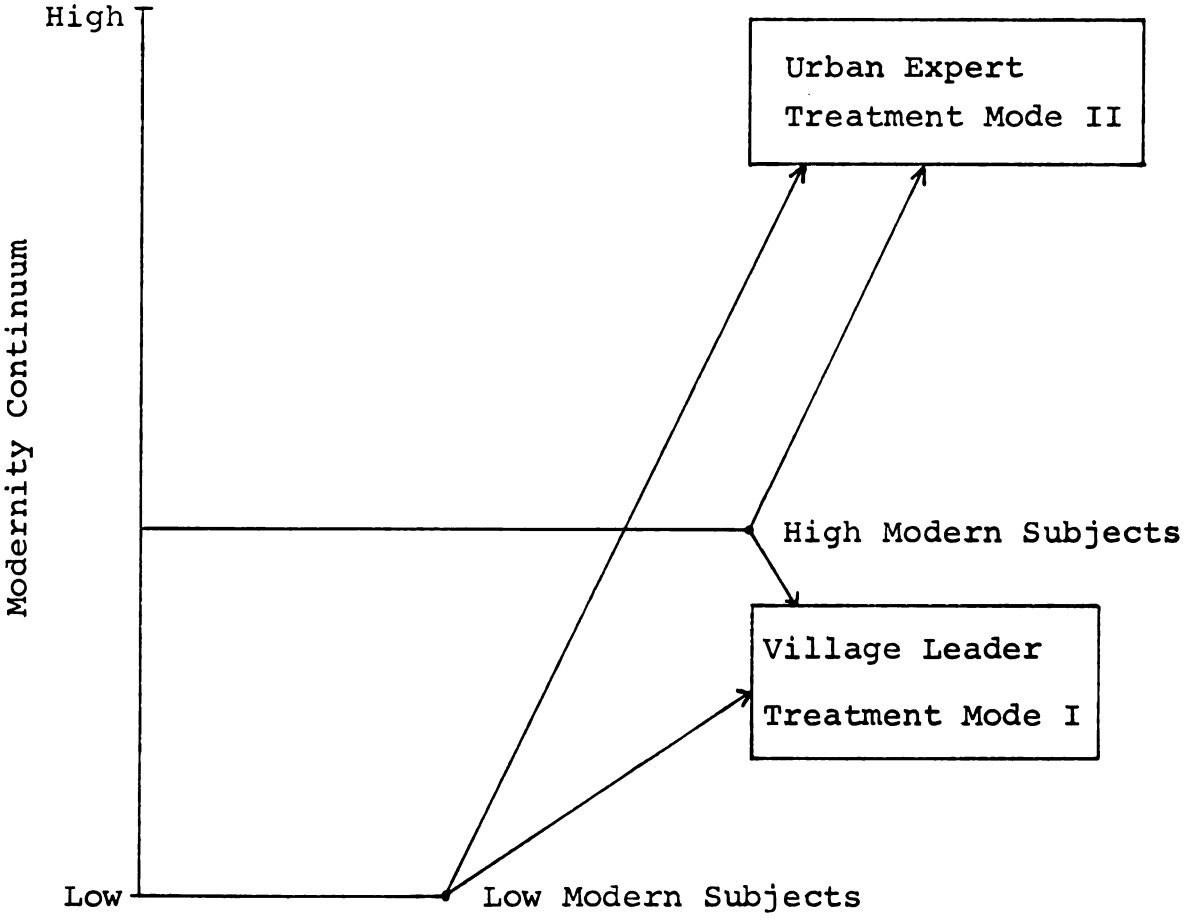

Figure 1.--Theoretically predicted relationships between high and low levels of subjects' modernity and degree of perceived homophily with sources in the alternate treatment modes.*

*The shorter the arrow, the greater is the degree of perceived homophily with the source.

homophily), between the parties is too great, meanings are not shared and messages become distorted.

Rogers theorized that there is an optimal distance between two parties in a social change situation that can lead to desired results. Rogers termed this distance "optimal heterophily" (Rogers, 1969b, p. 11). The present researcher further theorized that the heterophily distance that is optimal differs, depending on the degree of modernity of the client--the more modern the client, the greater the distance than can be spanned before reaching the level of optimal heterophily.

Applying these theoretical assertions about optimal heterophily to the present research, it was reasoned that the more modern subjects in the sample (clients), because of greater receptivity to new ideas, would be influenced by a relatively heterophilous and urban-oriented source (change agent). Prone to make independent evaluations, these subjects would tend to respect the judgment of the urban source appearing on television. They would perceive him a more credible source of information than the village source in matters pertaining to family welfare.

On the other hand, less modern villagers are usually influenced by those individuals whose attitudes, values, and beliefs conform to village norms. Opinion leaders in a village serve as role models for traditional villagers and often legitimize appeals coming to the village from

outside sources. For the less modern subjects in the sample, the village source appearing on television would be perceived as more credible than the urban source.

The researcher planned to test the optimal heterophily assertion by measuring the differential credibility of the alternate sources as perceived by subjects differing in degree of modernity and perceived homophily with the source. Optimal heterophily is visually presented in Figure 2.

Perceived Source Credibility as an Intervening Variable

Perceived source credibility is the degree to which a communicator is perceived as a competent and trustworthy source of information. The rationale for using competence and trustworthiness as dimensions of perceived source credibility and definitions of these terms are provided in Chapter II.

To test subject's degree of perceived source credibility as a function of the relationship between his degree of modernity and his degree of perceived homophily with source, the following null hypotheses are presented:

Hypothesis IV: Subject's degree of perceived competence in the source is not a function of the relationship between his degree of perceived homophily with the source and his degree of modernity.

Hypothesis V: Subject's degree of perceived trust in the source is not a function of the relationship between his degree of perceived homophily with the source and his degree of modernity.

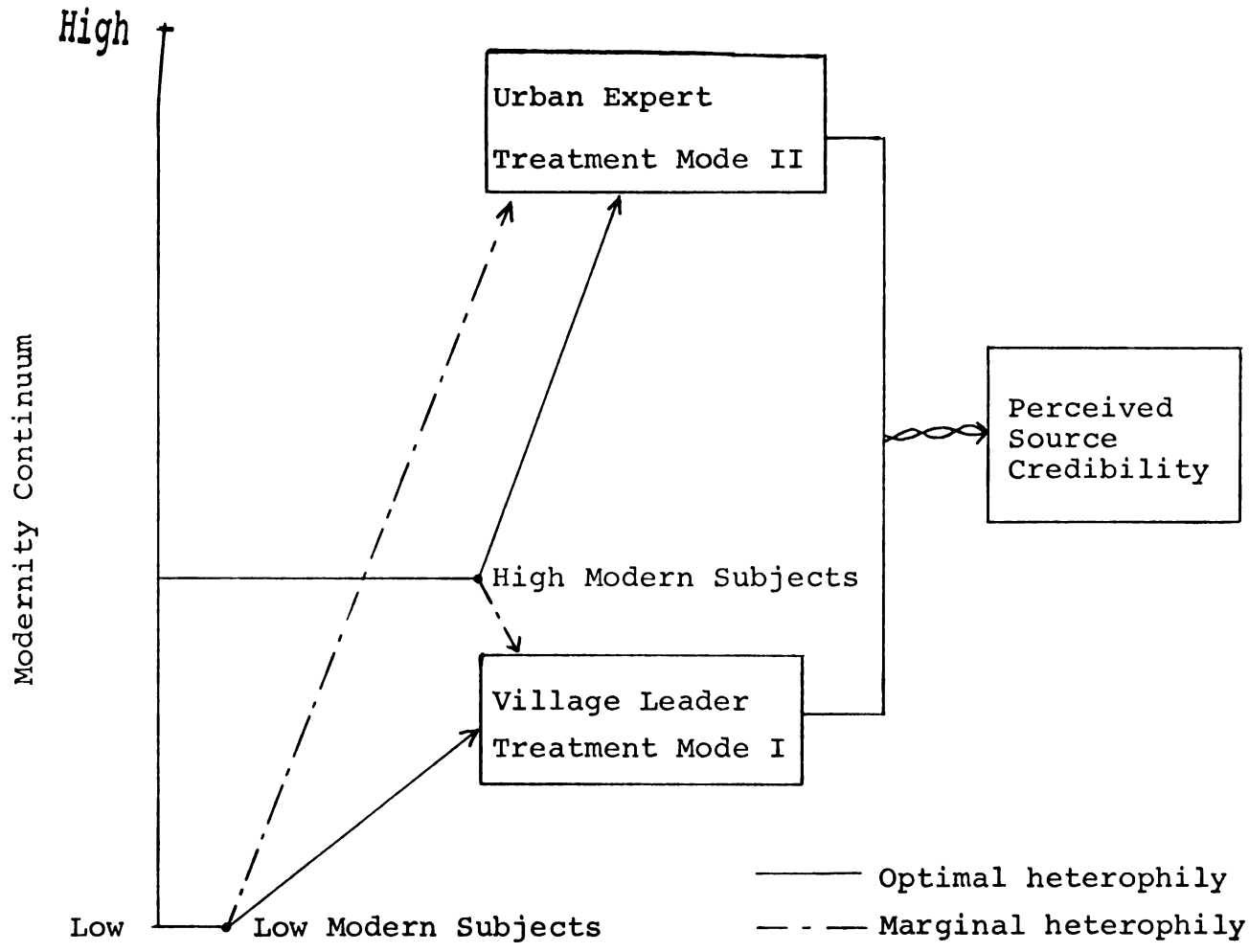

Figure 2.--The optimal heterophily assertion showing the relationships between high and low levels of subjects' modernity and degree of perceived homophily and perceived source credibility.

The Effects Variables Measuring Cognitive, Effective, and Motivational Change

The television effects in the present study are (1) knowledge-gain, (2) knowledge retention, (3) attitude change, (4) persistence of attitude change, (5) information-seeking behavior change, and (6) persistence of information-seeking behavior change. Effects 2, 4, and 6 were measured four weeks after exposure to treatment.

If differential effectiveness between the treatment modes exists, then these differences should be reflected in terms of the television effects. Although it was theoretically predicted that the village source would be perceived by subjects at all levels of modernity as more homophilous than the urban source, high modern subjects should tend to score higher on measures of the television effects as a result of exposure to the urban source. The rationale for this prediction is that high modern subjects should tend to perceive the urban source as more credible than the village source. Low modern subjects, perceiving the village source as both more homophilous and more credible than the urban source, should tend to score higher on measures of the television effects as a result of exposure to the village source.

Confirmation of the homophily and credibility hypotheses would indicate that homophily and credibility, perceptual variables intervening between the experimental

stimulus and the television effects, had a bearing on the effects obtained. The optimal heterophily assertion is disgramed in its expanded version in Figure 3.

The six television effects were compared across treatments to find out whether they are attributable to (1) the treatment modes, (2) levels of modernity, or (3) an interaction between the treatment modes and levels of modernity.

Knowledge-gain.--Knowledge-gain is defined as any pre-posttest change in a person's cognitive learning behavior resulting from a specific learning experience.

A knowledge test was administered to respondents immediately preceding and following exposure to television treatment. Since the same facts and concepts were presented in both treatment modes, knowledge-gain scores could be compared across treatments. The knowledge-gain hypotheses are as follows:

Hypothesis VIa: Knowledge-gain does not differ across the treatment modes.

Hypothesis VIb: Knowledge-gain does not differ across levels of modernity.

Hypothesis VIc: Knowledge-gain is not a function of treatment mode/modernity interaction.

Knowledge retention.--Knowledge retention is the degree to which a person is able to remember stimulus inputs acquired as a result of exposure to a specific learning experience.

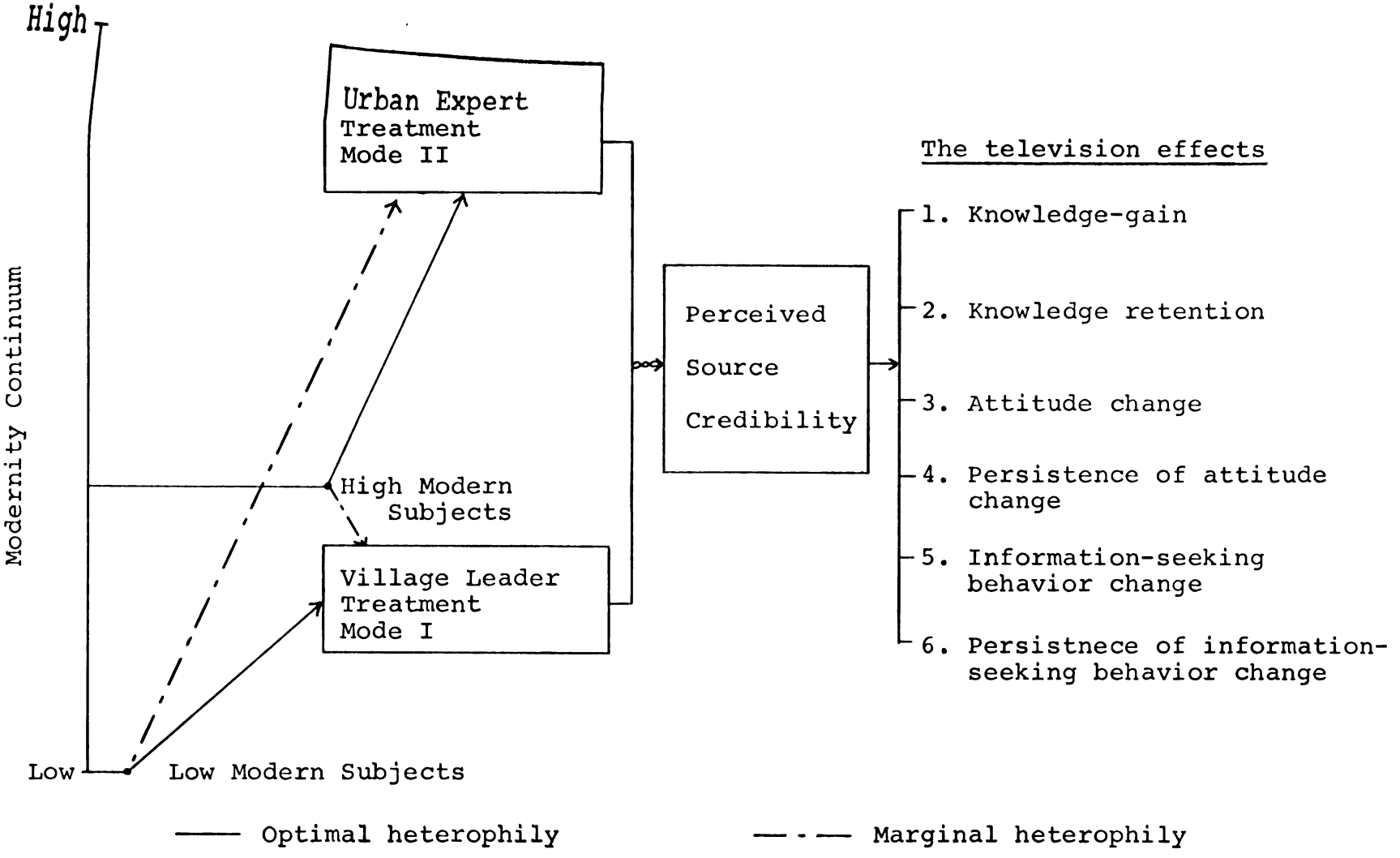

Figure 3.--The optimal heterophily assertion showing the relationship between high and low levels of subjects' modernity and degree of homophily and source credibility, two perceptual variables intervening between the treatment modes and the television effects.

Four weeks after experimentation the knowledge test was again administered in order to ascertain the differential amount of knowledge subjects remembered from the television treatments. By measuring knowledge retention, the stability of the television effects was established over time.

Hypothesis VIIa: Knowledge retention does not differ across the treatment modes.

Hypothesis VIIb: Knowledge retention does not differ across levels of modernity.

Hypothesis VIIc: Knowledge retention is not a function of treatment mode/modernity interaction.

Attitude change.--An attitude is defined as a set of interrelated beliefs or predispositions focused on an object in a situation which comprise an agenda for action (Rokeach, 1968, p. 120). Attitude change is a shift in an attitude from a previous position.

While it was not anticipated that either treatment mode would alter strongly held negative attitudes toward family planning, minor positive shifts in attitude might occur. Also, the firming of attitudes in a positive direction might occur among individuals who are ambivalent toward family planning.

Hypothesis VIIIa: Attitude change does not differ across the treatment modes.

Hypothesis VIIIb: Attitude change does not differ across levels of modernity.

Hypothesis VIIIc: Attitude change is not a function of treatment mode/modernity interaction.

Persistence of attitude change.--Persistence of attitude change is the degree to which a respondent's attitude remains stable over time.

If attitude change in a positive direction is evidenced as a result of exposure to a more homophilous and credible source, then this change may persist four weeks after exposure. The post posttest of attitudes toward family planning concepts presented in the television treatments offered further indication of the stability of attitudes over time.

Hypothesis IXa: Persistence of attitude change does not differ across the treatment modes.

Hypothesis IXb: Persistence of attitude change does not differ across levels of modernity.

Hypothesis IXc: Persistence of attitude change is not a function of treatment mode/modernity interaction.

Information-seeking behavior change.--Information-seeking behavior is the manifestation of a desire to know more about an idea or practice. Information-seeking behavior change is an increase or decrease in a desire to learn about an idea or practice.

Short-term exposure to mass media rarely results in behavioral change (Klapper, 1961). Although television viewers are not likely to adopt family planning methods

as a result of exposure to one television program, they might be motivated to seek additional family planning information from interpersonal change agents. Thus, it is important to find out whether television has the potential for creating in individuals a desire to explore new ideas, to enlarge their capacity for new experience.

Hypothesis Xa: Information-seeking behavior change does not differ across the treatment modes.

Hypothesis Xb: Information-seeking behavior change does not differ across levels of modernity.

Hypothesis Xc: Information-seeking behavior change is not a function of treatment mode/modernity interaction.

Persistence of information-seeking behavior change.--Persistence of information-seeking behavior change is the degree to which a desire to seek information remains stable over time.

There is no research evidence to indicate that motivation to seek information will persist over time as a result of exposure to an influential source. The following hypotheses are offered for their heuristic value:

Hypothesis XIa: Persistence of information-seeking behavior change does not differ across the treatment modes.

Hypothesis XIb: Persistence of information-seeking behavior change does not differ across levels of modernity.

Hypothesis XIc: Persistence of information-seeking behavior change is not a function of treatment mode/modernity interaction.

The value of the present study will depend not only on its usefulness to television practitioners in Delhi State, but also on its contribution to a body of knowledge about effective developmental communication. Studies unrelated to theory offer little more than isolated bits of information. Findings obtained from such studies can neither predict regularities in human behavior nor be generalized beyond the limits of the immediate experiment.

In the present experiment, the variables for study are related to theoretical propositions from which they were deduced. These relationships are discussed in Chapter II.

CHAPTER II

THEORETICAL FOUNDATIONS FOR THE DEVELOPMENT OF EMPIRICAL TESTS

Overview of the Research Question

The purpose of the present study was to investigate the differential effectiveness of two types of television sources used to impart a family planning message on television. The sources selected were a village opinion leader and an urban medical expert. The television effects, knowledge-gain, attitude change, and information-seeking behavior, were measured at the time of exposure to television treatment and again four weeks after exposure.

It was theoretically predicted that the low modern subjects sampled would perceive the village source as more homophilous with themselves and more credible than the urban source. These subjects would tend to obtain higher scores on measures of the television effects as a result of exposure to the village source rather than the urban source.

High modern subjects would also perceive the village source as more homophilous with themselves than the urban source. But influenced by urban values and norms, these

subjects would perceive the urban source as more credible than the village source and would tend to obtain higher scores on measures of the television effects as a result of exposure to the urban source.

The purpose of this chapter is to explicate the variables for empirical investigation and the theoretical propositions from which they were deduced. Working definitions for each variable studied will also be provided.

Measures of Individual Modernity

Modernization is a process by which individuals anticipate and/or adjust to change which is directed toward a technologically complex style of life. Modernity is the state of an individual on the continuum of modernization.

The process of becoming modern is not merely one of adjusting to conditions as they are. Rather it is one of adjustment under changing conditions, of predicting the need for change. Because one of man's basic drives is to increase order, and thus exercise control over his environment, modernization is a dynamic process. As men progress toward desired goals, technological advancement kicks the society into new gear in anticipation of new needs to be met, new goals to be achieved. In Rapoport's words (1967, p. 191), movement toward higher order implies "a struggle . . . against the chaotic tendency of nature, a struggle of creating order out of chaos, knowledge out of ignorance, insight out of illusion, freedom out of compulsion."

In the present study, the individual, rather than his social group, was the unit for investigation. The following indicators of individual modernity were taken from a larger list offered by Rudolph and Rudolph (1967, p. 3):

> 'Modernity' assumes that local ties and parochial perspective give way to universal commitments and cosmopolitan attitudes; that the truths of utility, calculation, and science take precedence over those of the emotions, the sacred, and the non-rational; that the individual rather than the group be the primary unit of society and politics.

While there appears to be a fair amount of agreement among scholars, both Western and non-Western, as to the individual attributes which constitute modernity, assessment of modernity needs to be related to the cultural context in which a study is conducted. Instruments based solely on a Western yardstick of modernity would fall short in detecting many valid indices of change taking place in the villages of India. What may appear to be a radical departure from societal norms from a non-Western point-of-view may, by Western standards, be judged as an insignificant event. As Srinivas (1964, p. 127) observed, "Change is much more serious and pervasive in small and stable societies where the same people are involved with each other in a number of relationships, than in hugh industrial societies . . . where relationships between individuals are more specialized and disparate."

In an attempt to measure individual modernity as objectively as possible, the following four models of modernization developed by Sen and Roy (1966, p. 51) were considered in the present research.

(1) Westernization: Westernization is the process in which an individual or a group internalizes the values and behavioral patterns of the Western industrial societies. This aspect of modernization can be more readily observed in large cities of India where individuals are often exposed to the values of Western societies.

(2) Urbanization: Urbanization is a process in which an individual or a group of individuals increasingly looks to the urban industrial society as its reference group.

(3) Renaissance: Renaissance . . . is a process of synthesis in which an individual or a group is highly aware of other systems, selects new ideas and practices emanating from these systems, internalizes and adopts them, but at the same time maintains strong links with tradition.

(4) Sanskritization: Sanskritization is a subprocess of renaissance in which an individual or a group goes through an initial stage of traditionalism to obtain status.

By utilizing these models in concert, individual manifestations of social and technological change may be identified. Although heavy reliance was placed on the urbanization model in the present study, some of the items used to measure modernity relate to the other three models as well.

Development of an Empirical Test to Measure Individual Modernity

Modernization is a multidimensional construct; that is, many components, taken together, comprise an individual's

degree of modernity. By pooling the items used to measure the components, a modernity score was obtained for each respondent.

The components selected to measure modernity in the present study are (1) education, (2) mass media exposure, (3) cosmopoliteness, (4) political knowledgeability, and (5) community participation.[1]

Education.--Since the type of socialization an individual undergoes determines in large measure how he will react to his environment, education emerges as a primary and, perhaps, antecedent variable in explaining modernity (Inkeles, 1969). The school serves in two fundamental ways to facilitate changes in the socialization process: It broadens knowledge through training in literacy and substantive content, and it molds values and beliefs in preparation for adult responsibilities. Because of this dual role of the school, items measuring literacy and years of schooling were accorded equal numerical value in the modernity test.

Mass Media Exposure.--Education and literacy generally facilitate mass media exposure (Rogers, 1969a, p. 328). It should be emphasized that degree of media exposure is not necessarily an indicator of modernity. The degree of exposure to radio offerings which reinforce

[1]The interview schedule for empirical measurement of all variables is furnished in Appendix A.

local norms may be directly related to a localite orientation. However, the act of listening to the radio may reflect a certain desire for contact with outside sources and for this reason, degree of exposure was measured.

Type of exposure, however, is certainly an important factor for consideration, for, as Inkeles (1969, p. 210) indicated, "Persons who manifest modernization characteristics strive to keep up with news of national and international import in preference to items dealing with sports, religion, or purely local affairs." In the modernity instrument, listening to radio programs which provide a modernizing influence was thus given twice as much weight as programs which likely reinforce the status quo. Both degree and type of exposure to radio and films were measured.

Cosmopoliteness.--Cosmopoliteness is an individual's degree of orientation toward environmental stimuli external to his own social system. Attitudinal statements representing either a high or low degree of cosmopoliteness were presented to the respondents. The statements called for dichotomous answers such as "agree" or "disagree."

Attitudinal rather than behavioral measures of cosmopoliteness were used since the latter measures may not be equally valid indices of modernity among farmers and village dwellers such as fruit sellers, for example, who make daily trips to Delhi to sell their produce. These latter individuals tend to interact in the city with other

commuters of similar status; their contacts with modern urban persons are likely to be impersonal. On the other hand, farmers make fewer trips to the city than fruit sellers. But in negotiating farm loans and securing consumer markets and farm equipment, farmers are involved in closer and more personal relationships with urban persons of the middle class who are moving upward on the modernization continuum. Since the nature of urban contact may be directly related to modernity, the present researcher decided to avoid behavioral measures of cosmopoliteness such as "degree of interaction with outside sources," and "number of trips to the city." Attitudinal items selected for measurement in the present research were those indicating preference for ideas and behaviors originating outside the village social system. These measures were considered to be valid indices of modernity for farmers and village commuters alike.

Political knowledgeability.--Political knowledgeability is the degree to which an individual comprehends facts essential to his functioning as an active and effective citizen (Rogers, 1969a, p. 56).

According to Rogers (1969a, p. 328), education, mass media exposure, and cosmopoliteness are likely to lead to a higher degree of political knowledgeability because an individual possessing these qualities has

access to more and varied information. Political knowledgeability is thus a consequent of the three primary components of modernity.

Community participation.--Community participation is the degree to which an individual takes an active part in or is a member of formal community organizations.

As previously mentioned, the move from dependence solely on familiar ties to a village frame-of-reference represents a significant break with the past for some individuals. Affiliation with village organizations which are traditional in nature, such as religious organizations, for example, received only half the weight of affiliation with organizations directed toward the achievement of modern objectives, such as farm cooperatives or village improvement societies.

The total score obtained from measurement of all five components of modernity represented a composite modernity score for each respondent. By pooling the components of modernity, it was possible to calculate each individual's degree of modernity on a continuum ranging from high to low.

Measures of Homophily

Homophily is defined as the degree to which pairs of individuals who interact are similar in certain attributes.

Typically, researchers have measured homophily through the use of objective tests. That is, researchers usually observe certain characteristics shared by individuals who interact. When characteristics such as age, race, social status, values, etc. are positively correlated between two individuals, or among members of a group, the researcher considers the result to be a measure of likeness or homophily.

Measurement of perceived homophily differs from that of objective homophily in that the perceptions of the individuals who interact are taken into account. When individuals are asked if they perceive the existence of similarities, the procedure is referred to as a measure of perceived homophily.

Review of the research literature on homophily reveals that, to date, little attention has been paid to perceived homophily. Lazarsfeld and Merton (1954), for example, used objective measures to evaluate homophily among friends and friendship groups. They found a high correlation between friendship and the observed tendency toward similarity in values and social status.

Triandis (1968, pp. 393-340), investigating similarities in the manner in which pairs of individuals cognitively process environmental events, found a direct relationship between cognitive similarity of individuals (as objectively measured by the researcher) and their ability to communicate effectively.

In developing countries, homophily is often measured in change oriented situations in which the purpose of one party, the change agent, is to influence the other party, the client. Studies of homophily in change oriented situations differ from other homophily studies in that the element of "intent" to influence the client is present. Furthermore, individuals who seek advice tend to interact with change agents slightly more modern than themselves. Almost all of the studies of homophilic relationships conducted in change oriented situations, to date, have been in the field of agricultural innovation diffusion. Most of these studies have used an objective measurement of homophily.

The Allahabad Agricultural Institute of India (1957) noted that village-level change agents with only an elementary education were more effective in inducing adoption of agricultural innovations among village persons than change agents with a high school or college education. The Allahabad study indicates that degree of similarity in formal education is directly related to effective client/change agent interaction.

In a study of Colombian peasants, Ramos (1966) found that the more social distance Colombian peasants "perceived" between themselves and the extension workers, the less favorable attitudes they held toward the change

agents, the less credibility they placed in them, and the less interpersonal communication they had with them. Ramos thus studied homophily as a perceived phenomenon.

Rogers (1969a, p. 237), in studying heterophily (the polar opposite of homophily) in three modern Colombian villages, revealed that opinion seekers tend to obtain information and advice from opinion leaders who are slightly more competent than themselves in technical knowledge and innovativeness. Rogers found that 30 per cent of the opinion seekers sought advice from individuals in their own adopter category, whereas 51 per cent of the opinion seekers went to slightly higher adoptor categories for advice. Only 19 per cent went to sources of information lower on the adoption ladder than themselves. However, the degree to which opinion seekers interact with higher adoptor categories differed among the more modern and traditional villagers. Rogers concluded that the more modern the village, the more likely it is that opinion seekers will seek advice from individuals higher on the adoption ladder than themselves.

The Present Study Compared with Prior Homophily Studies

The present study is similar in some respects to those agricultural diffusion studies conducted in a social change oriented situation. The objective of the television source was to provide the viewer with information about

the benefits of adopting the small family norm. Although the element of interpersonal communication was absent, it was asserted that the television medium, interposed between source and receiver, would not alter basic homophily/heterophily relationships with the effects. Viewers would be able to perceive similarities or differences between themselves and the television source, since television, with its elements of motion, timeliness, and spontaneity--and its appeal to both auditory and visual senses--comes closer to stimulating direct experience than any other mass medium.

The present study differs from other social change oriented studies of homophily in two fundamental ways, however. In prior research on homophily, direct interaction between client and change agent has been possible. In the present instance, the communication flow was one way, since one party functioned only as receiver and the other as sender of the message. While the viewer could psychologically interact with the television source--he could make covert evaluations of the message or express his reactions to other members of the audience--the source could not modify his own behavior in response to the viewer. Because of the lack of feedback,[2] homophily was analyzed in terms of the relationship the viewer perceived as existing between

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[2] Feedback is a response to a communication by which the sender of a message is informed by the receiver concerning the former's success in accomplishing his communication objective.

himself and the source. Thus, communication was a non-reciprocal phenomenon in the present case.

Second, client-change agent interaction often continues over a period of months or years. The parties come to know each other well, and, therefore, the researcher has reason to believe that homophily and increased interaction are causally related, or, to paraphase Heider (1958, p. 185), "that personality similarity induced liking, and liking induced the assumption of similarity."

In the present situation, the subject was exposed to the source for the duration of the television program only, and there is no way of knowing what the interaction pattern would have been in a voluntary face-to-face encounter.

However, to compensate for short-term formal exposure to the television source, the subjects were provided with a good deal of background information about the source to enable them to make homophily evaluations. Immediately preceding the experimental treatment, the research project supervisor displayed a large photograph of the source before the subjects and simultaneously informed them about the place of residence, formal education, and occupation of the source "who will tell you a story on television tonight about real families who live in a village much like your own." Also in the introduction of the program, a television "compere" (referred to as an announcer

in the United States) made similar remarks about the source. Furthermore, during the 14 minute program, subjects were able to assess the source's physical characteristics, speech, mannerisms, dress, and general demeanour. As a result of these cues, it was believed that subjects would be able to form distinct impressions about the source in order to make appropriate evaluations. These cues formed the basis for empirical measurement of homophily which immediately followed the experimental treatment.

Development of the Homophily Instrument

Homophily, like modernity, is a multidimensional construct. That is, homophily evaluations are based on any number of different attributes, such as age, sex, social status, etc., the attributes selected for evaluation depending on the context in which a communication is given and the nature of the topic discussed. In measuring homophily in the present instance, it was important to select only those attributes that relate directly to the credibility of the source, i.e., attributes thought to have a direct bearing on the subject's evaluation of the source's competence and trustworthiness.

Tests measuring both objective and perceived homophily were administered to subjects at the termination of the experimental program. The objective test served as a validity check on the perceptual test.

In the objective test the attributes that were selected are (1) education, and (2) occupation. Subjects were reminded of the source's education and occupation and were then asked to furnish the same information about themselves. It was thought that this technique of forcing comparisons would bring up to the conscious level, evaluations on the specific dimensions of homophily subsequently investigated in the perceptual test. Since objective measurement preceded subjective measurement, the former might serve to prompt the appropriate evaluations called for in the latter.

The three attributes of perceived homophily measured are (1) educational status, (2) socio-economic status, and (3) modern value orientation. Each of these attributes will be disucssed in turn.

Educational status homophily.--Educational homophily was measured as the degree to which a viewer perceives correspondence between himself and the television source in amount of formal education.

The amount of schooling a subject perceives a source as having may be directly related to the subject's assessment of the source's competence. A village person who has had no formal schooling may consider a university trained and professionally experienced medical expert to be too theoretical in his analysis of village life and rural family problems. A village person may perceive a

village opinion leader, with only a few years of formal schooling in the Hindi medium, as a more qualified source to offer advice. As Mathur (1969, p. 6), Joint Director of Family Planning for All India Radio, pointed out, "The local leaders of opinion, persons respected in the villages . . . and even trained 'dias' (midwives) who speak the same idiom as an uneducated village person, carry far greater conviction when they speak about limiting families."

The more educated village person who is motivated to seek new information from outside sources may, on the other hand, look to the medical expert as a competent and trustworthy source.

Educational status homophily was measured in terms of the amount of perceived education of the source relative to the subject's education.

Socio-economic status homophily.--Socio-economic homophily was measured as the degree to which a viewer perceives correspondence between his social and economic position and that of the television source.

For the low modern viewer, the village opinion leader may instill more confidence because he is a role model representing an acceptable way of life, yet perceived to be of sufficiently higher status that the viewer himself. On the other hand, a high modern viewer who attaches value to urban norms may perceive the medical expert as a person whose judgment he can respect and trust.

Items relating to effective income and occupational role status were used to measure degree of perceived socio-economic homophily.

Modern value homophily.--Modern value homophily was measured as the degree to which a viewer perceives correspondence between his values related to modernization and those of the television source.

In a transitional society, where social change communication is continually impinging on the village from outside sources, a villager may tend to compare his outlook toward social change with that he perceives the change agent to hold. This comparison may be made in situations in which the visual media are used as well as in inter-personal situations.

Perceived similarity in values toward social change may influence the viewer's evaluation of the source's trustworthiness in a family planning context. The high modern viewer may perceive the urban source to be a person who is sincerely interested in helping village people to plan ahead; who shares his desire for social change; who, like himself, is striving to improve his condition and provide opportunities for his family.

The traditional viewer may characterize the urban source as an urban agent of persuasion and, thereby view his motives with suspicion.

Modern values selected for measurement are (1) innovativeness, (2) achievement motivation, and (3) cosmopoliteness. A definition of each of these components is provided:

(1) Innovativeness is the degree to which an individual is earlier than others in his social system to adopt new ideas (Rogers, 1969a, p. 56).

The less innovative viewer may be influenced by the village source, whom he perceives to be only slightly more innovative than himself. The more innovative viewer may perceive the urban source as sharing his interest in new ideas and, as a result, confer more credence upon him.

(2) Achievement motivation is a social value that emphasizes a desire for excellence in order for an individual to attain a sense of personal accomplishment (Rogers, 1969a, p. 54).

The experimental programs emphasized the fact that couples who plan for their families are better able to provide opportunities for their childrens' education and for self-improvement. A villager may interpret this communication in one frame-of-reference when it is imparted by a respected village leader and quite another when it is imparted by an urban expert. As evidenced by Asch (1952, p. 420), "The meaning of any communication is partially determined by the reputation of the person who makes the statement." The traditional viewer may suspect that the source reputed to be an expert is advocating opportunities that estrange an individual from his village way of life.

The same message delivered by a village leader may be interpreted as offering opportunities that help a rural person to better adjust to his indigenous environment.

(3) Cosmopoliteness is an individual's degree of orientation toward environmental stimuli external to his own social system.

If a source is considered an outsider, his suggestions about village improvement may hold less relevance. The traditional viewer may, therefore, place more credence in a source perceived as more like himself in values pertaining to system orientation.

In measuring perceived homophily, a modified version of the Cantril ladder was used.[3] Respondents were presented with a picture of an 11-step stairway such as they might have in their houses, and were questioned according to instructions developed by Kapoor.[4] The instructions given to investigators as they relate to perceived educational homophily are as follows:

> (To respondent) Think of a person you know who is highly educated. (Pause)
>
> Have you thought of him? What is his name?
>
> This is a staircase such as you have in your house. (Show) There are many steps on this staircase. (Point them out)

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[3]This subjective rating technique was developed by Cantril (1965) to determine level of individual aspirations. By considering the best and least satisfactory life imaginable, an individual estimates his present situation relative to self-imposed limits.

[4]Dr. S. D. Kapoor, Psychologist, is Senior Research Officer for the Central Family Planning Institute, New Delhi.

I will place the educated person you mentioned at the top of the staircase. (Be sure that respondent is observing)

Now, please think of a person who has no education. (Pause)

Have you thought of him? What is his name?

I will place this person with no education at the bottom of the staircase. (Be sure that respondent is observing)

Now between these two persons, on which step will you place (name of source)? Give your answer by putting your finger on one of the steps.

Now tell me, between these two persons, on which step will you place yourself? Please put your finger on the step.

By subject's positioning of himself in relation to the source on the stairs, degree of perceived homophily with the source was established. Differential degrees of perceived homophily with source could thus be compared across the treatment modes. Furthermore, the relationships between perceived homophily, modernity, and perceived source credibility could be compared across the treatment modes.

Measures of Perceived Source Credibility

Perceived source credibility is defined as the degree to which a communicator is perceived as a competent and trustworthy source of information.

Many of the source credibility studies conducted in developing countries might more appropriately be called

"channel"[5] credibility studies. That is, the credibility of such channels of communication as interpersonal, film, radio, newspaper, etc. are compared in order to determine the relative credibility of each channel.

Ramos (1966) in Colombia, conducted a channel credibility study using the paired comparison method. Six "sources," or suppliers of agricultural information, were rank-ordered by village respondents according to the degree to which they were preceived as credible. Sources were presented to respondents in all possible paired combinations and respondents were asked to select the more credible source in each pair. In descending order of credibility, source rankings were extension agent, school teacher, radio, neighbors, salesmen, and newspapers.

The paired comparison method was used by Shankariah (1969) in India to compare the perceived credibility of seven suppliers of agricultural information in a progressive and a non-progressive village. In the progressive village, personal contact with agricultural experts was perceived as most credible, followed by radio, progressive farmers, block extension agency, demonstration, bulletins, and newspapers. In the non-progressive village, demonstration received the highest ranking with agricultural experts ranked third and radio ranked fifth among the respective

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[5]A channel is the vehicle through which a message is transmitted from a sender to a receiver.

sources of information. Shankariah reasoned that the difference in credibility ratings between the two villages may have been due to the differences in value orientation of respondents in the respective villages.

To date, perceived source credibility as an effect of experimentation has received little attention among researchers in Western countries. Traditionally, sources are objectively assigned to treatment and, thus, credibility is handled as an experimental variable.

During the 1950's, Hovland and others conducted numerous experiments using credibility as an experimental variable. In one of his classic experiments on source credibility, Hovland (1951, pp. 635-650) rated sources as of high or low credibility and systematically assigned them to treatments. The message, a persuasive appeal, was held constant across treatments and the effects studied were the recipient's evaluation of the presentation and acceptance of the opinions advocated by the communicator. Hovland found that opinions of the recipients were changed immediately after communication in the direction advocated by a credible (trustworthy) source.

In contrast to the previously mentioned study, when source credibility is treated as an effect of communication, the variable must be measured in terms of the recipient's perceptions of the source. The term, "perceived," implies that the source is evaluated on the

recipient's criteria of credibility, and not by criteria objectively assigned by the researcher. Thus, when source credibility is treated as an outcome of research, the dimensions recipients use to evaluate sources must be established and operationalized.

Credibility as a Multidimensional Construct

Perceived credibility, like perceived homophily, is a multidimensional construct measured on several dimensions; the dimensions used for evaluation of a source depending on the context in which the communication is presented and the topic discussed. Hovland (1965, p. 21) was aware of the existence of more than one dimension of credibility when he theorized:

> A recipient may believe that a communicator is capable of transmitting valid statements, but still be inclined to reject the communication if he suspects the communicator is motivated to make nonvalid assertions. It seems necessary, therefore, to make a distinction between (1) the extent to which a communicator is perceived to be a source of valid assertions (his 'experiences') and (2) the degree of confidence in the communicator's intent to communicate the assertions he considers most valid (his 'trustworthiness'). In any case, the weight given a communicator's assertions by his audience will depend upon both of these factors, and this resultant value can be referred to as the 'credibility' of the communicator.

Other researchers have considered criteria other than expertness and trustworthiness as bases for source evaluation. Krech and Crutchfield (1962, p. 231), for example, asserted that, among other characteristics,

"attractiveness" and "group affiliations of the communicator" are important in determining communicator effectiveness. Such characteristics as "sincerity," "prestige," "attractiveness," "awe," "affection," etc. have been similarly considered by researchers over the past several years.

Although it is now generally accepted that credibility is a multidimensional construct, until recently little attempt was made to disentangle the various factors contributing to differential evaluations of credibility. Berlo (1969, p. 564) realized the need to empirically determine the dimensions of credibility when, in reference to Hovland's conceptualization of expertness and trustworthiness, he stated,

> . . . No evidence has been obtained of the stability and independence of either perceived trustworthiness or expertness, nor of the independence of either from such variables as sincerity, affection, admiration, prestige, and the like. If the latter variables are in fact inherent in trustworthiness, they should be so considered. If they are independent, there does not appear to be any logical or theoretical reason to exclude them from the set of perceptions which the receiver has of a message source; i.e., to reject them as evaluative criteria which affect the influence of the source as a transmitter of information.

In factor analyzing semantic differential scales to determine the evaluative criteria of subjects in his study, Berlo (1969) found two psychologically independent dimensions of credibility. Together, these dimensions explained a large portion of the over-all variance. These dimensions Berlo termed "qualification," and "safety." A

third dimension, "dynamism," is statistically independent but may not be psychologically independent. According to Berlo (1969, p. 575), "The dynamism dimension can be conceived of as an intensifier. In other words, given an evaluation of a source as safe-unsafe or qualified-unqualified, the polarity or intensity of these evaluations of the source is intensified through perceptions of high dynamism."

Some of the evaluative adjectives in the semantic differential scales most closely associated with the qualification dimension are "trained," "experienced," "authoritative," "informed," "educated," and "expert." The safety dimension include evaluative words such as "just," "honest," "friendly," and "safe."

In comparing Berlo's empirically derived dimensions of source credibility with those conceptualized by Hovland, a considerable degree of isomorphism in meaning can be evidenced. The evaluative words generated by Berlo's subjects which come under the heading of qualification are apparently closely associated with expertness as defined by Hovland. This similarity was particularly striking, according to Berlo, when specific sources were evaluated in a relevant context, such as, for example, Jawahar Lal Nehru discussing India's neutralism. Used in a specific context, the term "qualification" can be considered approximately the semantic equivalent of expertness.

Berlo found the safety dimension, however, to be more general than trustworthiness. Trustworthiness was conceptualized by Hovland as the perceived intent of the communicator, while safety included, along with intent, an affiliative relationship between source and receiver as perceived by the receiver. It would appear, then, that whether or not a communicator's motives are perceived as sincere and honest, depends on the reference group to which the communicator belongs.

Operationalizing Perceived Source Credibility

Ideally, an analysis of credibility such as that undertaken by Berlo in the United States should have been conducted in connection with the present study. However, such an extensive undertaking in preparation for the present research investigation was not feasible. Since there was no reason to suspect that the dimensions used by Hovland would not hold in the present research context, and since it is important for media practitioners in India to know how members of their rural audience evaluate sources based on expertness and trustworthiness, these dimensions were selected for investigation with only one minor alteration.

In the present research the term "competence" was substituted for expertness. Evaluation of a source's competence applies equally well to a village opinion

leader as it does to an urban expert. A viewer may perceive a village leader as competent in matters pertaining to rural family life but not expert, since the term "expert" usually denotes specialized training. Competence was measured as the degree to which a viewer perceives a television source as informed on the topic under discussion.

As previously mentioned, Berlo's safety dimension included affiliative relationship[5] as well as intent. In the present study, however, affiliative relationship was considered an antecedent to the evaluation of source trustworthiness. If, for example, the reference group to which the source belongs is perceived by a viewer as relatively homophilous with his own, the source may be judged as a person likely to make statements based on motives related to the viewer's best interests. Thus, trustworthiness in the present research was restricted to Hovland's narrower interpretation of the term as meaning the intent of the communicator. Trustworthiness was measured as the degree to which a viewer perceives the motives of a television source as sincere and directed toward his best interests.

The dynamism of a communicator--his enthusiasm, and energy level--is also considered by Berlo to be a

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[5]An affiliative relationship is an association between a pair of individuals based on their belonging to a common reference group or groups.

possible criterion influencing perceived communicator credibility. In the present research, attempt was made to hold the dynamism factor constant. Since there was no theoretical reason to believe that dynamism is necessarily associated with a particular type of source, and since, according to Berlo (1969), dynamism may not be psychologically independent from competence and trustworthiness, selection of both television sources was made on the basis of their having personality attributes which qualified them to be called "dynamic." These attributes of the sources are discussed in Chapter III.

Both structured and unstructured questions were used to measure the dimensions of source credibility. preceding each unstructured question, respondents were asked to consider whether or not the source was competent/ trustworthy. If the answers were affirmative, subjects were then asked, "Why do you think so?" Three coding categories were devised by the researcher to establish the degree to which respondents perceived the sources as competent and trustworthy. The categories were high, above average, and average.

In the structured questions, respondents were presented with a series of statements made by the source in the program and were asked to evaluate the source on a three-point scale based on each statement. The statements served as stimulus cues to help the respondents

recall initial impressions formed of the source. Respondents' replies were forced into three categories by the interviewers. In evaluating source competence, for example, each stimulus statement was followed by, "Do you think (the source) knows enough about these things to make such a statement--by that I mean, does he know much, some, or very little about these things?"

Degree of perceived credibility was thus measured in both structured and unstructured questions with the latter type of question serving as a validity check on the former.

Measures of the Television Effects Variables

The six television effects variables measured are (1) knowledge-gain, (2) knowledge retention, (3) attitude change, (4) persistence of attitude change, (5) information-seeking behavior change, and (6) persistence of information seeking behavior change. Measures of each of these variables will be discussed in turn.

Knowledge-gain

Knowledge-gain is defined as any pre-posttest changes in a person's cognitive learning behavior resulting from a specific learning experience.

The knowledge test measured learning based on three of the lower levels of cognitive learning outlined by Bloom (1956). In ascending order of complexity, they are (1) knowledge, (2) comprehension, and (3) application.

Knowledge, according to Bloom (1956, p. 62), includes those behaviors and test situations which emphasize remembering--either by recognition or recall--of ideas, materials, or phenomena. A number of two-choice items in the knowledge test measured recognition of factual material included in the television programs. Referring to recall, Bloom (1956, p. 201) stated,

> For measurement purposes, the recall situation involves little more than bringing to mind the appropriate material. . . . The knowledge objectives emphasize most the psychological process of remembering.

Test items relating to recall measured the respondent's ability to specify correctly certain fundamental information furnished in the program, such as, for example, "A school-going child needs such things as books, school funds, stationary, and uniforms. About how much does it cost per year to give these things to a boy in the 7th class?"

According to Bloom (1956, p. 204), comprehension represents the lowest level of understanding . . . such that the individual knows what is being communicated and can make use of the materials being communicated without necessarily relating it to other materials or seeing its fullest implications. Questions testing comprehension were similar to the knowledge questions, except that they required of respondents the ability to interpret in their own words the information provided in the program. An

example of a comprehension question is "Can you name the possible reasons children fall sick?"

Bloom (1956, p. 205) defined application as the use of abstractions in particular and concrete situations. In testing for application, respondents were asked to select appropriate answers from two-choice questions such as, "Who would be more help to you on the farm, an educated son or an uneducated son?" These questions were followed by, "Why do you think so?"

Correct answers were those which conveyed the general meaning intended in the program, but credit was also given to all logical answers to the questions. Logical answers were determined by two Indian coders who are graduate students in sociology. It was assumed that respondents would be likely to give more and more logical answers after exposure to treatment. This assumption tended to be true across both treatment modes.

The knowledge test was developed prior to the production of the experimental programs. In fact, program materials were systematically designed around the specific educational objectives that were to be tested.

The knowledge test was administered immediately preceding and following exposure to treatment. Thus the differential amount of knowledge acquired as a result of exposure to the alternate treatment modes was established.

Knowledge Retention

Knowledge retention is the degree to which a person is able to remember stimulus inputs acquired as a result of exposure to a specific learning experience.

The knowledge test was again administered four weeks after the experiment in order to determine the differential amount of knowledge retained as a result of exposure to the alternate treatment modes.

Attitude Change

An attitude is a set of interrelated beliefs or predispositions focused on an object in a situation which comprise an agenda for action (Rokeach, 1968, p. 120). Attitude change is a shift in an attitude from a previous position.

Rokeach theorized that an attitude is comprised of beliefs that are states of expectancy about the environment. The statement, "I believe that . . . " is the foundation from which an individual's judgments are made. Since beliefs are functioning in the evaluation of any given stimulus object, it is beliefs which direct an individual toward a particular response.

In the present research, beliefs were focused on the object, which is the small family norm. The situation in which the small family norm was evaluated relates to the concepts presented in the experimental programs, i.e.,

the health, educational, and economic benefits derived from adoption of family planning. Both object and situation were combined in most of the items used to measure attitudes. The following statement taken from the attitude test furnishes a case in point: "It is desirable to limit the number of children you have [object] so all children can get proper education [situation]."

The scale used to measure attitudes contained statements relating to many of the major concepts stressed in the programs. The statements were either highly favorable or unfavorable toward family planning. Respondents were asked to state whether the statements were true or false. Correct answers (favoring family planning) were given a numerical score of one. Incorrect answers were given a score of zero. The summation of item scores in the scale represented the respondent's attitudinal score.

By definition, attitudes are asserted to be agendas for action. According to Rokeach (1968, p. 120), "attitudes have a behavioral component, because all beliefs comprizing them represent predispositions, which when activated, will lead to a response." While adoption of family planning methods could not be expected to result from exposure to one television program, it was considered possible for subjects ambivalent toward family planning, or those who had yet to form attitudes on the topic, to demonstrate some evidence of positive evaluation of the small family norm.

The attitude scale was administered immediately preceding and following stimulus treatment in order to assess differential change in attitudes as a result of exposure to the alternate treatment modes.

Persistence of Attitude Change

Persistence of attitude change is the degree to which a respondent's attitude remains stable over time.

Hovland and Weiss (1951) demonstrated that agreement with an opinion recommended by a trustworthy source may be fairly high immediately after exposure, but will gradually decline with the passage of time. Conversely, there is a decreased tendency over time to reject the material presented by an untrustworthy source. The researchers reasoned that, over time, the source ceases to be a mediating cue to influence evaluation of the message. The researchers termed the result of this disassociation of source from content the "sleeper effect."

In the present research, it was important to determine the degree to which possible attitude change would be differentially retained over time as a result of exposure to the alternate treatment modes. By administering the attitude test four weeks after experimentation, the stability of attitudes was assessed.

Information-seeking Behavior Change

Information-seeking behavior is the manifestation of a desire to know more about an idea or practice.

Information-seeking behavior change is an increase or decrease in a desire to learn about an idea or practice.

In family planning communication, the gap between cognitive awareness of the small family norm and adoption of family planning methods is wide (Dubey, 1969a, p. 40). However, if individuals, as a result of exposure to an optimally heterophilous television source, are motivated to seek additional information from family planning field representatives who visit their villages, then the television medium may serve as a viable supplement to interpersonal development efforts. The information-seeking behavior variable was included in the present research to discover whether television might serve as a motivation-creating link between knowledge and action.

Information-seeking behavior was measured by administering pairs of unstructured and structured questions. In the structured questions, respondents were asked if they wanted to know more about the health, educational, and economic benefits derived from planning for a family. If respondents replied negatively, it was assumed that they were not motivated to seek additional information. If they replied affirmatively, they were then asked to state all possible reasons why they wanted to know more. The information-seeking scale was administered before and after exposure to treatment. Ability to give more and more valid reasons for wanting additional information after

exposure suggested that respondents had been motivated to think about the program content and might be open to further exploration of family planning.

Persistence of Information-seeking Behavior Change

Persistence of information-seeking behavior change is the degree to which a desire to seek information remains stable over time.

The information-seeking behavior scale was administered along with the knowledge test and attitude scale four weeks after experimentation to test the differential motivational effects over time resulting from exposure to the alternate treatment modes.

Review of the Hypotheses for Study

The hypotheses for study are listed in sequential order as follows:

Hypothesis I: Subjects' degree of perceived homophily with source does not differ across the treatment modes.

Hypothesis II: Subjects' degree of perceived homophily with source does not differ across levels of modernity.

Hypothesis III: Subjects' degree of perceived homophily with source is not a function of treatment mode/modernity interaction.

Hypothesis IV: Subject's degree of perceived competence in the source is not a function of the relationship between his degree of perceived homophily with the source and his degree of modernity.

Hypothesis V: Subject's degree of perceived trust in the source is not a function of the relationship between his degree of perceived homophily with the source and his degree of modernity.

Hypothesis VIa: Knowledge-gain does not differ across the treatment modes.

Hypothesis VIb: Knowledge-gain does not differ across levels of modernity.

Hypothesis VIc: Knowledge-gain is not a function of treatment mode/modernity interaction.

Hypothesis VIIa: Knowledge retention does not differ across the treatment modes.

Hypothesis VIIb: Knowledge retention does not differ across levels of modernity.

Hypothesis VIIc: Knowledge retention is not a function of treatment mode/modernity interaction.

Hypothesis VIIIa: Attitude change does not differ across the treatment modes.

Hypothesis VIIIb: Attitude change does not differ across levels of modernity.

Hypothesis VIIIc: Attitude change is not a function of treatment mode/modernity interaction.

Hypothesis IXa: Persistence of attitude change does not differ across the treatment modes.

Hypothesis IXb: Persistence of attitude change does not differ across levels of modernity.

Hypothesis IXc: Persistence of attitude change is not a function of treatment mode/modernity interaction.

Hypothesis Xa: Information-seeking behavior change does not differ across the treatment modes.

Hypothesis Xb: Information-seeking behavior change does not differ across levels of modernity.

Hypothesis Xc: Information-seeking behavior change is not a function of treatment mode/ modernity interaction.

Hypothesis XIa: Persistence of information-seeking behavior change does not differ across the treatment modes.

Hypothesis XIb: Persistence of information-seeking behavior change does not differ across levels of modernity.

Hypothesis XIc: Persistence of information-seeking behavior change is not a function of treatment mode/modernity interaction.

CHAPTER III

THE RESEARCH METHODOLOGY

The degree to which the findings obtained from an experiment correspond with reality depends, in part, upon the extent to which systematic error is controlled. As Schramm (1967, p. 3) commented, a comparative experiment is extremely difficult to design and conduct satisfactorily "because of the problems that arise in controlling the variables so that one knows the comparison is truly measuring clear and defined alternatives."

In the present research, it is important to interpret findings in the light of factors which imposed limitations on the achievement of optimal control. Since these factors may be inherent in the design of the stimulus treatments as well as in procedures employed in conducting the experiment, both aspects of the research methodology will be discussed in this chapter as well as data analysis procedures.

Design of the Stimulus Treatments

In designing the present stimulus treatments, two major factors, which had a bearing on the results obtained, were identified and systematically treated. One crucial factor previously mentioned is the selection of television

sources to appear in the alternate treatment modes; the selection criterion being the distinctly different type of cultural orientation of the two sources. Possible failure to produce significant differences on the effects variables, if these differences truly exist, could be attributed to the fact that the characteristics which qualify the sources to be termed "urban expert" and "village opinion leader," overlap when they should be mutually exclusive.

The other factor concerns the degree to which it is possible to control all variables operating in the stimulus treatments other than the variable for experimental manipulation. If not controlled, any one of a number of variables, such as the length of treatment, the number, nature, and sequence of concepts presented, the audiovisual relationships, and the quality of production of the treatments, could interact with treatment effects and thereby obscure the presence of true effects.

A third factor, unrelated to experimental control, is the design of experimental treatments which correspond as closely as possible with programs regularly broadcast to the rural Delhi audience. Findings obtained from experimental treatments which All India Radio-TV (AIR-TV) programing officials consider appropriate for their rural audience are more likely to be taken under advisement by these officials than findings obtained from treatments employing some unorthodox approach. They also have greater

generalizability. Care was, therefore, taken to develop treatments which fulfilled the research requirements and, at the same time, were as representative as possible of operational broadcasts.

Design and Production Procedures

The producer of AIR-TV's rural Delhi program collaborated with the present researcher in the design and production of the experimental treatments.[1] The first task was to select an appropriate format, or form of presentation, for the programs, one with which the rural Delhi audience is familiar.

The decision was made to use the "interview format," a format in which discussion is led by a professional television performer, referred to in India as a "compere." Using this format, the sources presented in the respective programs were engaged in a discussion with the compere, and visual materials such as films and still pictures relating to the issues under discussion were inserted in the programs at appropriate intervals. The responsibility of the compere was to equate the content across both programs by asking the sources structured questions designed to evoke responses directly related to the information selected for inclusion in the programs. Since no novice

[1] In discussing design procedures, the treatments will be referred to as "programs."

to television could perform this difficult task, the services of an experienced compere--the compere for the regular rural Delhi program--were acquired.

The next procedural step in program design was to determine the program objective based on assessment of the family planning informational needs of rural Delhi citizens. Officials in the Ministry of Health and Family Planning and the Central Family Planning Institute in India were consulted. They advised the author that a large percentage of adults in the rural Delhi area have a general awareness of the need for family planning but they are nevertheless slow to arrive at personal commitment and adoption of family planning practices. These officials maintained that, while the move from awareness of family planning to adoption can only be consummated over time through the combined use of mass media and interpersonal channels of communication, television can, nevertheless, deepen understanding of family planning concepts and establish a climate for commitment and later adoption. The purpose of the experimental programs was thus to move subjects beyond superficial knowledge to a fuller understanding of family planning concepts.

The producer and researcher next determined a message strategy for implementing the program objective. It was decided that subjects should be encouraged to make rational decisions concerning their individual need for

adopting the small family norm. Decision-making is a process which, when applied to problem solving, negates fatalism. If individuals can be encouraged to weigh alternatives in order to arrive at a rational decision, they can move from passive acceptance of what they consider to be their fate to purposeful action. To encourage decision-making, both arguments favoring having a large and small number of children were presented in the programs. The sources suggested that subjects weigh the good and bad sides of arguments presented in "deciding the number of children it is best for you to have."

Two arguments supporting the benefits derived from having a large family were selected for brief presentation in the opening portion of the programs and were followed by three arguments supporting the benefits of a small family. The latter arguments were (1) better health through proper diet, (2) educational opportunities for the children, and (3) opportunities for economic advancement for the family. All information presented in support of each argument related to "family security now, and in the future." Family security was thus the theme of the programs. Specific information relating to each argument was next determined and sequenced. An information outline (see Appendix B) contained the educational objectives[2] of the programs and

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[2]An educational objective is a specific content item to be learned which is specified by the designer of instructional material before the material is formally prepared.

served as a guide for the compere in interviewing the respective sources.

The next step was to select appropriate examples to illustrate each content item. The decision was made to have the television sources support their arguments through reference to actual village families. Specifically, the sources, guided by the compere, would compare the life-style of two village families, one with three children[3] and one with many. The families would not appear on television but reference would be made to them through still pictures and short silent film sequences shot in the village.

Families, whose life-style met the qualifications specified in the information outline, were found in a Delhi State village which received television; that village was deleted from the population of villages from which the research sample was randomly drawn. Two brothers had married sisters, each of the two families had approximately the same number of acres under cultivation, yet striking comparisons between the families, one with three children and one with eight, were apparent on all items specified in the information outline. Still pictures and films of the families were made in their homes and fields.

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[3]From a villager's standpoint, there may be valid reasons for having several children (see traditional arguments in the information outline). Using a model family with two rather than three children might have thus reduced acceptance of the arguments in favor of family planning.

A search for a village opinion leader to appear in the Mode I program was next conducted. Selection of sources was based on objective assessment of sources' (1) level and type of education, (2) occupation, and (3) place of residence. Not only was it necessary to ascertain that the sources differed radically on these characteristics, but it was also necessary to insure that the village source was considered an opinion leader in his village in matters pertaining to family welfare.

The characteristics of a village opinion leader offered by Rogers (1969a, p. 227) served as a guide to source selection. Rogers indicated that, when compared with their followers, village opinion leaders are characterized by such qualities as (1) more formal education, (2) higher levels of functional literacy, (3) more innovativeness, (4) higher social status, (5) more cosmopoliteness, and (6) higher empathy.[4] Taken by themselves, however, these characteristics (the indices of modernity) carry no guarantee of leadership acceptance. If an individual rates too high on any one of them, he may be considered an outsider or as different in his own village and have little influence over the beliefs and behaviors of other villages. The task in the present instance was, therefore, to find a source who conformed to village norms and was highly influential in his village in matters pertaining to family welfare.

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[4] Empathy, according to Rogers (1969b, p. 13), is the ability of a person to project himself into the role of others.

Whether or not the source was a satisfied user of a particular contraceptive method was not considered germane to the research, since the program content did not relate to contraceptive practices. However, the source would need to be committed to the idea of family planning and himself have raised no more than three children. Since emphasis in the programs was placed on the benefits derived from having a small family, it was important that the source's family size be consistent with his beliefs on the topic of family planning.

After considerable investigation, an ex-schoolmaster living in a Delhi State village receiving television was selected; that village was also deleted from the population of experimental villages for sampling. The schoolmaster, referred to in his village as "Panditji," or respected teacher, was 70 years of age, had received eight years of schooling in a Hindi medium village school, was still vigorous and deeply involved in village social and educational affairs, and had raised only two children. In his manner of living, speech, dress, and general demeanor, the village leader appeared only slightly more modern than the average villager, yet the high degree of respect he enjoyed in his village qualified him as an opinion leader in family matters. The village leader agreed to serve in the research assignment.

A search for an appropriate medical doctor living in Delhi was then conducted. It was important to equate the two sources on communication skills, age, and personal dynamism.[5] For example, if one source should be much younger than the other, differences obtained on measures of the television effects might be credited to differences in the age of the sources as well as to differences in their cultural orientation.

The doctor selected, an ex-Commissioner of Health of Delhi State, was approximately the same age as the village leader and had raised three children. Like the village leader, he was highly articulate in communicating his ideas to others--although his communication ability reflected his years of training in English medium urban schools and in medical college. In his mannerisms, speech, and personal appearance, the doctor was a prototype of an urban professional man. He was poised, self-confident, and enjoyed an excellent reputation among members of the medical profession in Delhi.

In the judgment of the television producer and researcher, both sources were considered dynamic, although to a somewhat different degree: the village leader was slightly more emphatic in his speech delivery and gestures than the doctor. That is, he was observed to project

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[5] Dynamism is the amount of energy and emphasis a source projects into a communication act.

himself into his presentation somewhat more actively than the doctor. Therefore, a possible limitation in the present research is the fact that differences in source dynamism might have had a bearing on the results obtained as well as differences in the cultural orientation of the sources.

After source selection, the sources were individually exposed to the village families whose life-style they would refer to in their performance on television. It was, of course, important that the sources become thoroughly familiar with the living conditions of the families on all relevant counts. And it was equally important to discover the sources' perceptions of the realities concerning the families presented to them.

If the sources' perceptions were incongruent with each other, or with those of the producer and researcher, then the possibility that the sources would address the issues outlined and would take the same position on those issues would be jeopardized. If, on the other hand, the sources were prompted by the producer as to what to say and when to say it, they would be inhibited in speaking in their own idiom and the programs would be equated on the variable for experimental manipulation. But by asking the sources to recount their perceptions of the families immediately after exposure to them, it was possible to estimate how close to the targeted content they might come. Any incongruity would then have to be corrected through prompting.

Interviews with the sources immediately after exposure to the families revealed that their perceptions were, by-and-large, on target. The doctor required no prompting; the village leader was prompted on one issue.

Next, a television script in the Hindi dialect of the Delhi villages was developed for the benefit of the program production staff and the compere. The compere became familiar with the script but was requested to use it only as a means of coordinating his performance with that of the production staff.[6] The compere did, however, memorize the information outline in order that he could equate his questions put to the sources and thereby control source response. He was also thoroughly briefed concerning the research objectives and the need for controlling source response. Only when the researcher was certain that the compere understood the vital importance of his role, were the dates for program production scheduled with AIR-TV officials.

The two programs were produced in the studios of AIR-TV on different occasions and thus neither source auditioned the other's performance. The village opinion leader, who appeared first, followed the information outline unfaultingly. The doctor did likewise several days later. Both programs were 14 minutes in length and the production quality of both programs was comparable.

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[6]An English version of the television script is furnished in Appendix B.

The programs were recorded on two-inch video-tape and were subsequently re-recorded on one-half inch video-tape for playback in the experimental villages. The two-inch master tape was preserved for the duration of the experiment. This precautionary measure was taken so that new recordings could be made in the event that the one-half inch tapes were accidentally erased or mutilated.

Execution of the Research Design

Locale of the Study

The rural area of Delhi State is inhabited by approximately 300,000 people living in more than 275 villages which surround the Capital City of Delhi.[7] Approximately one-third of the rural Delhi citizens live in villages with a population range of 2,000 to 5,000 while a little less than one-third live in villages with a population range of 1,000 to 2,000. There are no villages in Delhi State with a population of more than 5,000 inhabitants.

Delhi state is divided into five development blocks and is bounded on the East by the State of Uttar Pradesh and on the other three sides by Haryana State. The basic occupation of the people of rural Delhi State is agriculture. These people tend to speak a common dialect of Hindi, which

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[7]These figures are taken from the Census of India, 1961, Vol. XIX, Part II, Delhi. The population of Delhi State has increased since the 1961 Census was taken probably to about 300 villages with a total population of 365,000.

probably reflects the dominant influence of urban Delhi as opposed to that of neighboring states.

Generally speaking, the influence of modern Delhi has had its greatest impact on villages in closest proximity to the city limits. Less land per capita is under cultivation in these villages, and consequently these villages are developing social patterns that are characterized by a trend away from the self-contained village unit and toward individualism and specialization. Relatively more individuals living in these villages commute daily to offices, factories, and unskilled jobs in the city. However, all villages in Delhi State are under the influence of the city and in all there are manifestations of social and technological change.

Presently, all of the Delhi State villages are electrified and most are accessible by all-weather roads. Adoption of agricultural innovations has raised the standard of living of a large percentage of the Delhi State farmers. Village schools are better attended today than they were even three years ago, commuter transportation services to the Capital City are continually expanding, and small industries are developing in many Delhi State villages.[8]

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[8]Facts concerning the rapid development of the Delhi State villages were furnished by Dr. K. N. Singh, and Dr. S. K. Sharma, Professors and Senior Extension Officers, Division of Agricultural Extension, Indian Agricultural Research Institute, New Delhi.

In spite of improvements in their standard of living, many rural Delhi citizens adhere to social and cultural traditions that have remained relatively unchanged through the centuries. Living under the joint-family system, ascription through caste affiliation, conformity to village norms, observance of age-old customs and habits, all reflect a deep sense of continuity with the past.

There is no doubt that modern technology has had an impact on the people of rural Delhi State. But to an appreciable extent, the new technologies have been assimilated into a traditional village way of life and the result is a synthesis of old and new, and indication of the capacity of the Indian agricultural village to absorb and transform outside influences into indigenously rural Indian patterns.

Selection of Experimental Villages

In 1967, the Department of Atomic Energy (DAE) of India provided 80 Delhi State villages with television receivers for community viewing. Television villages were selected by the DAE on the basis of their being (1) electrified, (2) accessible by all-weather roads, (3) agriculturally innovative, (4) progressive in character, and (5) able to provide proper facilities for community viewing.[9] The number of villages receiving television sets in each development block was proportionate to the number of villages in

[9]Although almost all of the Delhi State villages can meet most of these selection criteria today, such was not the case in 1967.

that block. All villages selected were within the 23 mile range of the Delhi television transmitter.

At the time the random sample of experimental villages was drawn for the present research, plans for the placement of television receivers in several additional Delhi State villages were being executed. The new television villages, however, were not included in the population of villages for sampling. The novelty of initial exposure to television, referred to as "the novelty effect," tends to bias viewer response since individuals usually react to the uniqueness of the experience rather than to the presentation itself. Mixing old and new television villages could, therefore, produce differential perceptions of the viewing experience, a factor that might increase error variance as well as interact with the type of exposure.

To further safeguard against novelty effects, only those television villages among the original 80 in which the sets had been working for a period of two months prior to sampling were included in the population of villages.

Although 61 television villages met the criteria for inclusion, nine of those were eliminated for various reasons. All-weather roads leading to two villages were temporarily in poor condition. Three villages were excluded because community television viewing habits were somewhat altered due to the fact that the sets were located in the

headquarters of local government agencies. Two villages had been utilized in the production of the television programs, and two villages were set aside for pilot testing. The remaining 52 villages constituted the population from which a random sample of 20 villages was drawn. These villages (listed according to their block designation in Appendix C) can be said to be representative of the type of villages which will continue to be served by television originating from the Delhi television station.

Selection of Respondents

The original plan was to randomly sample 20 couples from each treatment village, the population of couples for sampling to include only those couples in which the wives were within the reproductive age range. However, the female portion of the sample was dropped for two reasons: Preliminary investigation revealed that many village men were opposed to the idea of mixed male-female television viewing and that a request for mixed viewing might discourage the male subjects from agreeing to serve in the experiment. Second, from a theoretical standpoint, the inclusion of women is of questionable value, since the degree of homophily perceived by a female with a male television source would be low. While it is important to investigate the reactions of women to family planning television programs, the idea was dropped in the present research in favor of a male-only design.

Also, the number of male respondents per experimental village was reduced from 20 to 11. It was originally planned that each investigator should conduct two pre- and posttest interviews per experimental session. The pilot test revealed that such a procedure takes more than five hours to accomplish and is taxing on both respondents and investigators. Also, the time lapse between treatment and posttest for the second group interviewed could decrease the response validity of the design, since individuals in the second group could talk among themselves while waiting to be interviewed.

It was decided that 11 males would be randomly selected in each treatment village. Respondents who for some reason were not available for the post posttest interview would be dropped from the sample in the analysis of data. The experimental treatment was, therefore, administered to 11 respondents per village in the hope that at least 10 respondents per village could be summoned for the post posttest.

The resulting population of respondents in each village from which a simple random sample was drawn was composed of all males (1) whose wives were within the reproductive age range, and (2) who were known to be relatively consistent viewers of television. Selection of males based on their viewing habits was made in order to reduce the novelty effect. The criterion concerning the

reproductive age range of wives was necessary since the television programs were designed to encourage decision-making regarding adoption of the small family norm.

To execute sampling procedures based on these two criteria, lists of all couples of reproductive age in the experimental villages were secured from the Primary Health Centers[10] in each of the five development blocks of Delhi State. Village leaders in each experimental village were than asked to select from their village list 40 males whom they considered to be the most frequent viewers of television. From each village list of 40 males, a sample random sample of 11 males was drawn for inclusion in the experiment.[11]

Selection from 40 names made it possible to establish a wide range of response on measures of the modernity variable. Had village leaders been asked to select only 20 names from the reproductive age lists, they might have presumably selected village persons similar to themselves in degree of modernity--persons with whom they tend to interact most frequently. But it is not likely that as

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[10] A primary health center is a unit of state government responsible for administering health and family planning action programs at the village level.

[11] A simple random sample is one in which each person in the population has an equal chance to be included. It differs from a stratified random sample in that the latter divides the population into homogeneous subparts--such as men and women--and takes a random sample of each subpart or strata (Backstrom and Hursh, 1963, p. 26).

many as 40 persons in any given village are at the same approximate level of modernity. Thus 40 males per village selected from the reproductive age list was the population from which simple random selection was made.

Descriptive data concerning the caste affiliation and occupation of the respondents in the sample are furnished in Tables 3.1 and 3.2. The average age of respondents was 35.

Assignment of Villages to Treatments

Certain factors inherent in the research design made systematic random assignment[12] of villages to treatments necessary. Experimental sessions in all 20 villages could not be held simultaneously but rather were held on successive nights. When sessions are not held simultaneously, inter-session history[13] may obscure differences on the dependent variables, if such differences truly exist. Inter-session history is attenuated, to some degree, when a large number of sessions are held over time and the probability of the occurrence of unique events is thereby distributed across treatments. However, one type of

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[12] Systematic sampling is a procedure of sampling from a list of cases by randomly selecting the first case and then taking every kth case thereafter (Selltiz, 1959, p. 523).

[13] Inter-session history is an event (such as a festival or unusual news) affecting daily routines which can contribute to a rival hypothesis and obscure possible differences between treatment means on measures of the effects variables.

TABLE 3.1.--Caste Affiliation of Respondents.
(In Per Cent)

Caste Categories	Mode I (N = 100)	Mode II (N = 100)
1. Brahmin (Teachers, religious leaders)	8	6
2. Jat, Khatri (farmers, formal village leaders)	30	26
3. Vaishya (traders and businessmen)	2	1
4. Lower Castes (weavers, potters, masons and carpenters)	41	52
5. Scheduled Caste (Sweepers, servants, barbers, beggars)	19	15
Per Cent	100	100

TABLE 3.2.--Occupations from which Respondents Earned More than Half their Income.
(In Per Cent)

Occupations of Respondents	Mode I (N = 100)	Mode II (N = 100)
Agriculture in village		
Day laborer	5	1
Tenant farmer	2	2
Farmer owning less than four acres of land	14	10
Farmer owning four or more acres of land	50	45
Occupations in village other than agriculture	8	10
Occupation in city		
Unskilled laborer	2	5
Seller of produce	0	0
Artisan	3	4
Office worker	16	23
Per Cent	100	100

historical event had to be avoided if possible: If news about the experiment should happen to diffuse from an already-treated village to one scheduled for treatment, responses obtained from the subsequently scheduled village might be biased. Experimental villages in close proximity to each other were thus treated on consecutive nights to reduce the possibility of intervillage communication about the experiment.

Had the need for proximity in selection of villages been the only assignment limitation, experimental villages could still have been randomly assigned to treatments. But in this event, one treatment mode might appear on several successive occasions. Without backup in the form of auxiliary video-tape equipment--and knowing that the equipment was not guaranteed to perform effectively in such high temperatures as were experienced during the experimental period--it was decided to alternate treatment modes, rather than to gamble on simple random assignment at the risk of having to abandon the experiment with only a few sessions in one mode and a number of sessions in the other.

As it turned out, the video-tape equipment worked successfully on all occasions, but on a number of occasions, equipment failure immediately preceded or followed an experiment and led the researcher to believe that settling for systematic random assignment of villages to treatment was a wise decision.

The Pilot Test

In the pilot test not only was it necessary to try-out the questionnaire in order that necessary revision might be made before full-scale experimentation, but also to judge the effectiveness of interview procedures, test the workability of the video-tape equipment under field conditions, and assess the effectiveness of procedures used to prepare villages for the experiment.

To avoid a time lapse between exposure to treatment and posttest interviewing, it was necessary to transport to the field in one conveyance an investigation team consisting of 11 investigators, the project supervisor, an electronics technician,[14] and a general assistant. It was also necessary to install the television equipment in the home of a village leader who had agreed to host the experiment.

Community television sets provided to villages by the Indian Government are usually located in convenient gathering places such as schools. In an experiment it is important to control for extraneous activity that might

[14]It turned out that the video-tape equipment was not compatible with television sets and so it was necessary to improvise a television monitor (similar in appearance to a television set but electronically different). The improvised monitor required modulating equipment which was beyond the capability of the research team to operate. Also, in each village, power outlets differed and electrical power fluctuated widely. Thus the electronics technician served an important function in assuring consistent operation of the viewing equipment on the experimental occasions.

bias response and create differences in the application of the treatment. Thus the community television viewing location would not be conducive to crowd control and had to be avoided in favor of the home of a village leader, preferably a home at the outskirts of the village with doors that could be locked to insure privacy.

In the present experiment, an experimental laboratory was transported to the field--a procedure not required in field experiments in which the effectiveness of regularly scheduled broadcasts viewed on community receivers are evaluated. Pilot testing revealed that the novelty of setting up a laboratory in the field can create a great deal of excitement and general commotion in a village. Although the village host of the pilot test assured the researcher that the experiment would be conducted in the privacy of his home, he was unable to control the curiosity-seekers that gathered there. Lack of control for crowds could seriously jeopardize the internal validity[15] of the experiment, and means had to be found to conduct the experiment under less obtrusive conditions. It took the better part of the two-week period between the initial pilot test and the first experimental session to work out a plausible solution to the problem. The experimental schedule had

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[15] Internal validity is the degree to which all variables in an experimental design are controlled except for the experimental variable. For a detailed explanation of internal validity, see Campbell and Stanley (1963, pp. 5-16).

been set with village leaders well in advance of the pilot test and could not be moved forward. Therefore, the idea of conducting two pilot tests, one in each treatment mode, had to be abandoned in order that strategies could be altered and more systematic procedures developed for conducting the experiment.

The Assistant Development Commissioner of the Delhi State Administration took the problem encountered in the pilot test village under advisement and made the Block Development Officers (BDO's) responsible for keeping the curiosity-seekers in the experimental villages from disturbing the experiment.[16] BDO's are highly respected by village persons who turn to them for many types of assistance. Thus the BDOs' requests are not likely to be disregarded. The BDO's, assisted by Village Level Workers who are responsible for executing administrative programs at the village level, contacted village leaders and asked them to cooperate on the experimental occasions. On each experimental occasion a BDO, or his appointed

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[16]The Development Department of the Delhi State Administration is composed of officials who are appointed to carry out the policies of the political units of government at the block and village level. As a political unit, Delhi State is actually one district composed of five development blocks. The Development Commission has jurisdiction over the BDO's who are responsible for administering rural social and economic development programs at the block level. BDO's have authority over VLW's who act as the agents of the BDO's at the village level. Each VLW in Delhi State is responsible for implementing development programs in 10 villages.

representative, accompanied the research team. As soon as the research team arrived in the village, village leaders designated by the BDO gathered in front of the host's home where they remained throughout the experiment for the purpose of controlling crowds. At times when the village leaders failed to perform their function satisfactorily, the BDO gently reminded the leaders of the responsibility they had agreed to assume. Without the presence of a BDO in the pilot test village, village leaders treated their responsibility lightly.

While the BDO's and VLW's were making preparations to execute their responsibilities in the approaching 20 day experiment, other problems encountered in the pilot test had to be corrected. The pilot test revealed that a man-machine systems approach, encompassing interviewers, respondents, village leaders, BDO's, the electronic technician, back-up assistants, and the viewing equipment, had to be developed. Any approach less efficient than a highly integrated and coordinated system could result in undue harassment of the interviewers by the crowd, unnecessary delays in expediting the experiment, restlessness on the part of respondents, and general failure to achieve the objectives of the experiment.

Although the investigators, graduate students in various universities of Delhi, had had previous experience

in conducting surveys,[17] none of them had had training in experimental investigation. Immediately preceding the pilot test the investigators had received three days of training for their experimental assignment. However, the pilot test revealed that extra training would be necessary in order to cope with a number of unique circumstances encountered in conducting a laboratory experiment in the field.

For example, it was necessary to charge several investigators with the responsibility of assisting the electronics technician in setting up the viewing equipment while other investigators scouted the village with village leaders in order to locate tardy respondents. It was also necessary for investigators to learn how to pace their interviews in order that all could finish their interviews at approximately the same time, and thereby keep the respondents from talking among themselves.

The pilot test took more than five hours to complete, retaining the respondents far beyond the limits of their attentiveness. Thus procedures for setting up the equipment, pairing each investigator with his respondent,

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[17]Some of the investigators were working on a second master's degree. All were receiving training in the social sciences. Three investigators had had considerable experience in conducting rural investigations and were of invaluable assistance in training investigators who had not conducted rural interviews. All of the investigators had had considerable experience in urban interviews.

rapport building, pretesting, administering the stimulus, posttesting, and closing the session had to be highly synchronized to increase efficiency and reduce confusion and the time taken in conducting the experiment.

Measuring instruments were also revised following the pilot test. As anticipated, the interview schedule was too lengthy and items which produced little variability, or appeared to the majority of respondents as irrelevant, were deleted. The items retained in the schedule were analyzed independently by three investigators experienced in conducting interviews in the villages of Delhi State. After each investigator had considered the possible meanings respondents might attach to each item, their evaluations were compared in the presence of the researcher. In the course of four sessions, all items of doubtful validity were rephrased. A final validity check on all the items was made by the Senior Research Officers of the Central Family Planning Institute.

Also, all items were checked to make sure that the language used was that spoken in the experimental villages. A check was made on the knowledge test to ascertain that the questions corresponded with content presented in the television programs.

Conducting the Experiment

Systematic procedures developed as a result of the pilot test experience paid rich dividends on each experimental

occasion. There were exceptions to the smooth flow of events, however, and in no village were all man-machine functions perfectly coordinated.

On five out of twenty occasions, a few of the randomly selected subjects (ranging from two in one village to five in another) were not present and it became necessary for the village leader hosting the experiment to select his neighbors or other village substitutes who were available and willing to serve. Selective sampling procedures on these occasions probably increased systematic error and to some extent affected the internal validity of the design. Fortunately, however, the treatment modes were altered so that systematic error occurred in both of the modes and the number of substitutes in the two modes was approximately equal.

Some lowering of morale among the investigators occurred about halfway through the experiment. The experiment began in mid-April and ran into May, 1970, a very hot and physically enervating time of year in Delhi State. The heat and dust in the villages, the exacting nature of the task, the monotony of the daily routine, all were factors contributing to the drop in investigator morale. The project supervisor and this investigator kept close track on the performance of each investigator and every possible consideration was given to them to facilitate their work. On about the sixteenth night of the experiment, with the end of the arduous task in sight, initial

enthusiasm for the work returned and was retained throughout. The morale problem likely contributed to differences in application of the treatments and to systematic error. However, since the treatment modes were alternated, such differences occurred about an equal number of times in each treatment.

The BDO's handled their assignment effectively and the curiosity-seekers were fairly well disciplined by the village leaders. An electrical power failure in one village caused a 15 minute delay in administering the treatment and some conversation among respondents was unavoidable. The fidelity of the television picture left something to be desired on almost all of the experimental occasions. Snow often appeared on the screen and definition of the picture was never sharp, although at all times it was possible to perceive the video image.

On the whole, the administration of the experiment was fairly consistent across all 20 occasions. The efficiency procedures developed for conducting the experiment trimmed approximately one and one-half hours off the time spent in the pilot test village; the average time spent in each experimental village being approximately three and one-half hours. The need for expediting procedures in the present research cannot be over-emphasized. Unnecessary delays and confusion are detrimental to an experiment in that they allow spurious factors to confound

the effects of the stimulus treatment. But in the present instance, it was of utmost importance that delays be avoided.

The experiment took place during "rabi" harvest, a time of year when the farmers of Delhi State are harvesting their winter wheat crop. During this period, the farmers, tired from their daytime labors in the fields, are not anxious to take part in extraneous activity. That they agreed to cooperate in the present experiment, demonstrated a large amount of consideration on their part. It was important to show appreciation for their cooperation by expediting the experiment so that they would not be retained past their usual bedtime.

Although the pressures of synchronizing all procedures was a strain for the investigators, the respondents did not appear conscious of this fact and the experiment appeared to be conducted in an informal, relaxed manner. Much of the obtrusiveness experienced in the pilot test was overcome and a number of spurious factors that could have seriously jeopardized the experimental results were essentially controlled.

Administering the Post Posttest

Four weeks after the experiment, three investigators returned to the field to administer the post posttest. Approximately 65 per cent of the subjects were interviewed on the first callback. Two subsequent callbacks were

sufficient to obtain interviews from 100 respondents (ten per village) in each treatment mode, or a total of 200 respondents. The 20 respondents absent from their village on all callbacks were dropped from the sample and observations from 200 respondents, 100 in each mode, were finally used in the analysis of data.

Post posttest interviews were not scheduled at any set time of day and investigators conducted private interviews with respondents in their fields and homes. Accurate records were kept of each return visit, and of the degree of cooperation of all resource persons in the villages who assisted in facilitating the follow-up test.

Analysis of Data

Methods of Analysis

Unit of analysis.--Systematic random assignment of villages to treatments in the present study permitted the researcher to assume that the villages appearing in the alternate treatment modes were essentially equivalent. Therefore, it could be assumed that villagers were comparable across treatment modes as well, since the assignment of subjects to treatments was automatically determined by their village assignment.

Ideally, to meet the assumptions for an inferential test of significance, the unit of analysis should be the village. Analysis of variance, the parametric test used

to test most of the present hypotheses, assumes that the villagers in the sample are randomly drawn from a common pool which has homogeneous variance. In such a case, variance can be partitioned on the basis of individual villagers and the condition of a normally distributed population can be assumed. Because individuals rather than villages were used as the unit of analysis in the present research, the assumption of independence was not fully met.

Liberties are sometimes taken in using villagers rather than villages as the unit of analysis, providing the assumption of independence does not seem grossly violated. Support for the decision to use villagers as the unit of analysis in the present experiment is evidenced by the large amount of heterogeneity which existed within each village sampled and the homogeneity that existed across villages. Table 3.3 shows the range of variance within each village included in the sample, using three dimensions of modernity for illustration purposes.

Two practical considerations influenced the researcher's decision to use the individual subject as the unit of analysis: First, the 20 villages sampled would have furnished few replications in the treatment cells for two-way analysis of variance. By using individual scores it was possible to increase the number of observations per cell and thus to increase statistical

TABLE 3.3.--Degree of Intravillage Heterogeneity and Intervillage Homogeneity Indicated by Computing the Means and Range of Sources Obtained from Measurement of Three Dimensions of Modernity.

Code No. of Village	Dimensions of Modernity					
	Education		Mass Media Exposure		Cosmopoliteness	
	Mean	Range	Mean	Range	Mean	Range
Mode I						
1	4.5	0-10	13.2	8-23	5.0	0- 8
2	3.9	0-10	14.9	8-27	5.2	4- 8
3	3.0	0- 8	14.1	8-29	5.9	5-20
4	5.2	0-10	17.2	6-26	5.0	3- 6
5	7.4	0-10	15.7	1-25	4.9	1- 8
6	5.5	0-10	16.4	10-24	6.1	4- 8
7	5.7	0-10	13.8	0-25	4.9	2- 8
8	6.3	0-10	17.2	11-23	4.9	2- 7
9	3.1	0- 8	16.0	4-24	4.4	2- 8
10	8.8	0-10	19.5	11-25	4.5	2- 8
Mode II						
11	5.4	0- 8	19.1	9-36	5.7	4- 8
12	3.1	0- 6	16.3	8-22	5.0	3- 6
13	7.2	0-10	17.8	13-26	5.4	2- 8
14	7.0	0-10	18.2	9-31	5.0	3- 8
15	4.8	0-10	14.6	0-27	4.6	1- 7
16	7.3	1-10	15.7	9-21	4.7	2- 8
17	4.3	0-10	16.3	8-23	4.9	1- 8
18	7.3	0-10	17.5	8-30	6.0	4- 8
19	6.6	0-10	18.9	9-28	5.0	2- 8
20	4.7	0- 8	13.6	0-23	4.7	2- 8

precision. Second, the Delhi State villages, under the modernizing influence of urban Delhi, are relatively less autonomous and self-contained than villages located in the more remote and less accessible rural areas of India. Close contact with the city has diffused the locus of social and political power in the Delhi State villages and, therefore, a relatively wide spectrum of individual differences exists among individuals within a single village.

Analysis of modernity scores also revealed that the assumption of equal variance of the population sampled had been essentially met: the sampling equivalence of the treatment groups was essentially achieved and values of the combined modernity scores had approximately a normal distribution with only a slight negative skew[18] in each treatment mode. That equivalence was essentially achieved is demonstrated in Figure 4.

Treatment exposure.--Because randomization procedures used in the present experiment theoretically established the sampling equivalence of the treatment groups, subjects were exposed to one and only one television treatment and

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[18] Skewness is the piling up of cases at one or the other side of the distribution of values of a variable. A normal distribution of values forms a bell-shaped curve. A skewed distribution is asymmetrical. In the present case, skewness appeared in the direction of low modernity, i.e., on the left side of the curve.

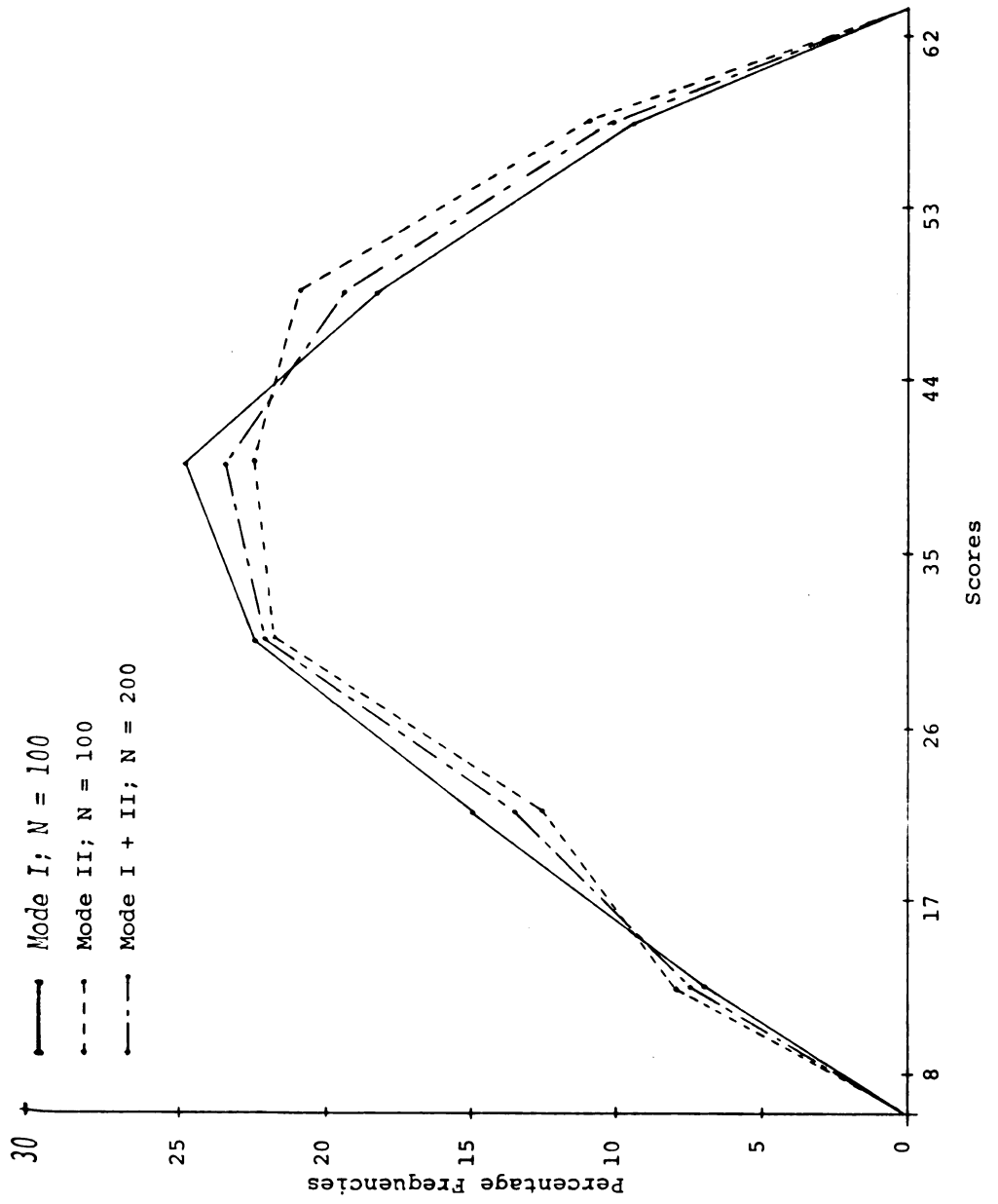

Figure 4.--Smoothed frequency polygons showing distributions of modernity scores of Mode I, Mode II, and total respondents.

mean gain scores on measures of the television effects were compared across treatments.

Comparison of treatment effects based on exposure to both treatments might have created a "carry-over effect." That is, exposure to the first treatment would have likely biased response to the second. Regarding the carry-over effect, Hays (1965, p. 379) stated that when each subject is observed under each of the experimental treatments, "there is good reason to believe that the performance of the subject on one occasion has a systematic effect on his subsequent performance under . . . another experimental condition. In the fixed effects model of analysis of variance, such systematic connections or dependencies among observations amount to a lack of statistical independence among errors, in violation of the assumption." Also exposure of subjects to both treatments would have been atypical of normal broadcast conditions in which only one rural program is broadcast per evening.

A portable video-tape recorder (playback) made it possible to control television treatment viewing. If the television treatments (programs) had been broadcast from the Delhi television station, experimental villages would have received both broadcasts and control over viewing would not have been possible.

Before-after design.--Often, when sampling equivalence of treatment groups is established, researchers refrain

from administering pretests and compare only posttest scores across treatments (after only design). The process of testing immediately preceding and following stimulus treatment (before-after design) can create an artificial situation in which the testtaker becomes wise to the experimenter's intentions and response on the first test may bias response on the second, regardless of whether the tests are identical. The bias resulting from repeated testing is known as the "testing effect."

Repeated testing does not affect the internal validity of an experimental design since the interaction between pretesting and the experimental treatment is theoretically equated across treatments. However, it can reduce the generalizability of the findings. This limitation is due to the fact that repeated testing is not characteristic of the larger population.

Had the present researcher been confident that the treatment groups would be hypothetically equivalent through randomization, no pretest would have been given. However, there was no way of knowing in advance what the possibilities of randomization might be in the Delhi State villages. (As it turned out, it was necessary to select substitutes for randomly sampled subjects in five out of the twenty villages sampled.) Therefore, the researcher opted for the more conservative approach of pretesting in order to remove differences between treatment groups by establishing benchmark data on the television effects variables.

A hypothetical example of how pretest benchmark data may remove differences between treatment groups is furnished in Table 3.4.

Statistical Tests of Significance

The homophily hypotheses.--Two-way analysis of variance, fixed effects model, was the procedure used to test the possible difference of homophily means. The treatment modes and subjects' modernity were the two independent variables. The criterion for rejecting all null hypotheses in the present research was the .025 level of significance.

Preliminary analysis of homophily data revealed that the mean distance scores on all components of perceived homophily measured tended to be considerably larger in Mode II than in Mode I. A perceived homophily distance score is the degree of difference between the subject's placement of the source in relation to his placement of himself on an 11-step ladder. On the average, the urban source was perceived as more heterophilous than the village source. Since mean scores on the homophily components covaried systematically across treatments, the components were combined to form a total perceived homophily score for each individual sampled.

A large number of subjects exposed to the village source perceived themselves as having a somewhat better education, higher socio-economic status, and more modern

TABLE 3.4.--A Hypothetical Example of Mean Effects Obtained in an After-Only and a Before/After Research Design.

			After-only	Before/After
	Before	After	Mean difference score*	Mean difference in gain scores**
T_1	$\bar{X} = 10$	$\bar{X} = 20$		$\bar{X} = 10$
			$\bar{X}_d = 10$	$= \bar{X}_{dg} = 5$
T_2	$\bar{X} = 25$	$\bar{X} = 30$		$\bar{X} = 5$

*$\bar{X}_d$ = difference in means

**$\bar{X}_{dg}$ = difference in mean gain scores

values than the source. To facilitate computer processing of the data,[19] negative scores were transformed into positive scores by adding a value of plus 10 to all scores.

Once the scores has been transformed, the homophily hypotheses were tested for statistical significance by calculating F obtained in the sample and comparing it with the appropriate critical value of alpha.

Analysis of variance disclosed the relationship of the two independent variables to the dependent variable, homophily. The experimental design was a 2x4 factoral design with two treatment modes and four levels of modernity. Observations from 200 subjects, 100 in each treatment mode, formed eight treatment cells consisting of 25 observations each as shown in Table 3.5. Table 3.5 indicates that each level of modernity occurred with each treatment mode and that the combinations occurred an equal number of times.

Hypothesis I: Subjects' degree of perceived homophily with source does not differ across the treatment modes.

Under Hypothesis I, mean homophily distance scores were compared across treatments. The test of Hypothesis I was performed to determine whether differences in perceived homophily can be attributed to the treatments, irrespective of levels of modernity. More specifically, the purpose of

[19] Data processing was handled by the Computer Center, Program Evaluation Organization, Planning Commission, Government of India, New Delhi.

TABLE 3.5.--Replications for Two-Way Analysis of Variance Tests of Hypotheses I, II, and III.

Levels of Modernity	Treatment Modes Mode I	Mode II
High	$\overline{X}$ (N 25)	$\overline{X}$ (N 25)
Above average	$\overline{X}$ (N 25)	$\overline{X}$ (N 25)
Below average	$\overline{X}$ (N 25)	$\overline{X}$ (N 25)
Low	$\overline{X}$ (N 25)	$\overline{X}$ (N 25)

the test was to determine whether subjects could discriminate homophily/heterophily differences between the village opinion leader appearing in Treatment Mode I and the urban medical doctor appearing in Treatment Mode II.

It was theoretically predicted that the mean distance score of Mode I would be significantly smaller than the mean distance score of Mode II. (To conform to statistical convention, the null hypothesis was formally stated.) Rejection of the null hypothesis and the hypothesized ordering of the means would indicate that the village source was received by subjects, on the average, as significantly more homophilous with themselves than the urban source. The critical F value was 5.15 for significance with 1 and 192 degrees of freedom.

Hypothesis II: Subjects' degree of perceived homophily with source does not differ across levels of modernity.

The test of Hypothesis II was performed to determine whether differences in perceived homophily can be attributed to levels of modernity, irrespective of the treatment modes. The levels of modernity were high, above average, below average, and low. Cut-off scores of the modernity test were values corresponding to the quartiles of the test. These values were 46/60, 36/60, and 26/60.

It was theoretically predicted that mean homophily distance would be negatively related to modernity.[20] That is, high modern subjects would perceive a more homophilous relationship with the source to whom they were exposed than would low modern subjects. Rejection of the null hypothesis and the hypothesized ordering of means would support the theoretical prediction. The critical F value was 3.23 for significance with 3 and 192 degrees of freedom.

Hypothesis III: Subjects' degree of perceived homophily with source is not a function of treatment mode/modernity interaction.

There was theoretical reason to believe that there would be no treatment mode/modernity interaction and that the null hypothesis would not be rejected. Subjects at

[20] A low numerical homophily score indicated high perceived homophily with the source.

all levels of modernity would perceive a more homophilous relationship with the village source than the urban source. The critical F value was 3.23 for significance with 3 and 192 degrees of freedom.

The credibility hypotheses.--The credibility hypotheses were presented at the conclusion of Chapter II. No attempt was made to perform statistical tests related to these hypotheses. Table 3.6 shows that there was a lack of variability of response on measures of perceived credibility. Across all subjects sampled, both sources were perceived as highly competent and trustworthy relative to the measures obtained. Since there was no possibility that degree of source credibility could have been related to degree of homophily or modernity, it was pointless to further test these hypotheses.

Pilot testing of the credibility instrument revealed what the researcher considered to be adequate variability of response. However, as mentioned previously, exhorbitant and unchecked excitement reigned on the pilot test occasion and interfered with the orderly execution of the experiment. Data obtained from interviews conducted in such an environment were quite possibly inaccurate. One might conclude that the pilot test was an excellent pretest of the experimental method, a pretest which led to reexamination and modification of procedures for efficiently conducting an experiment under field conditions. But it was not an adequate pretest of the interview schedule. In retrospect,

TABLE 3.6.--Respondents' Perceived Source Credibility Scores Obtained in the Alternate Treatment Modes.
(In Per Cent)

Code Categories	Competence Cred.		Trustworthiness Cred.	
	Mode I (N = 100)	Mode II (N = 100)	Mode I (N = 100)	Mode II (N = 100)
High	87	89	92	91
Medium	11	7	5	7
Low	1	3	1	2
Don't Know	1	1	2	0
Per Cent	100	100	100	100

the sizeable amount of variability produced from instruments other than perceived source credibility may be considered the result of careful preplanning mixed with good luck rather than the result of adequate pretesting.

It is possible that credibility differences between the sources were perceived, but that the credibility instrument failed to uncover them. Appreciable credibility differences might have been detected if the subjects had been exposed to both sources and were asked to make differential evaluations of them. Respondents may be prone to make stimulus judgments based on what they think the researcher would like to know. Unless the purpose of the research can be disguised, the researcher is likely to obtain inaccurate data. Of course, in an experiment, exposure to both sources for the sake of discriminating credibility differences should be avoided, since exposure to more than one treatment can also bias response. The fact remains, however, that a comparable measurement technique used in the present experiment might have prompted differential credibility response.

The television effects hypotheses.--The six television effects measured are (1) knowledge-gain, (2) knowledge retention, (3) attitude change, (4) persistence of attitude change, (5) information-seeking behavior change, and (6) persistence of information-seeking behavior change.

Hypotheses related to these effects are listed in sequential order at the conclusion of Chapter II.

As in the case of the homophily hypotheses, two-way analysis of variance, fixed effects model, was the procedure used to test the possible significance of differences in means obtained on measures of the television effects. The critical F value for tests of the treatment modes as a main effect was 5.15 for significance at the .025 level with 1 and 192 degrees of freedom. The critical F value for tests of the modernity and interaction effects was 3.23 for significance at the .025 level with 3 and 192 degrees of freedom.

Analysis of variance disclosed the relationship of the two treatment modes and four levels of modernity (a 2x4 factoral design) to each of the television effects. The eight treatment cells in the analysis of television effects are those previously shown in Table 3.5.

The purpose of testing the television effects hypotheses was to determine whether the effects can be attributed to (1) the treatment modes, irrespective of modernity, (2) levels of modernity, irrespective of the treatment modes, or (3) treatment mode/modernity interaction. It was theoretically predicted that high modern subjects would tend to obtain higher scores on measures of the television effects as a result of exposure to the urban source. Low modern subjects would tend to obtain

higher scores on measures of the television effects as a result of exposure to the village source. Thus interaction effects were predicted in tests of the television effects hypotheses.

In testing Hypotheses VI, VIII, and X (Knowledge-gain, attitude change, and information-seeking behavior change), pre- to posttest gain scores were used as the dependent variable. In testing Hypotheses VII, IX, and XI (knowledge retention, persistence of attitude change, and persistence of information-seeking behavior change), pre- to post posttest gain scores were used as the dependent variable. Significant gain from pre- to post posttest would indicate that differences between the treatment modes on measures of the television effects remained stable over time.

CHAPTER IV

THE RESEARCH FINDINGS

Significance Tests of Perceived Homophily

Hypothesis I: Subjects' degree of perceived homophily does not differ across the treatment modes.

As theoretically predicted, subjects, on the average, perceived the village opinion leader appearing in Treatment Mode I as significantly more homophilous with themselves than the urban medical expert appearing in Treatment Mode II.

Table 4.1 shows that the F value for the difference in treatment means is 45.10, which is greater than the 5.15 required for significance at the .025 level. Therefore, the null hypothesis, stating that subjects' degree of perceived homophily with the source does not differ across the treatment modes, is rejected. The alternate hypothesis, stating that a difference in treatment means exists, is accepted.

Means and standard deviations obtained are reported in Table 4.2. The smaller homophily score for subjects in Mode I than for subjects in Mode II signifies the existence of a greater degree of perceived homophily with the source in this mode.

TABLE 4.1.--Summary Data from Two-Way Analysis of Variance of the Homophily Effect Showing Main Treatment and Modernity Effects and their Interaction.

	Source of Variance	SS*	df*	MS*	F*
A	Treatment modes	6996.25	1	6996.25	45.10
B	Modernity	11949.59	3	3983.19	25.68
AxB	Interaction	99.43	3	33.14	0.21
	Within groups	28539.70	192	155.10	
	Total	47584.99	199		

*SS = Sum of squares
df = Degrees of freedom
MS = Mean squares
F = Sample F

TABLE 4.2.--Mean Homophily Scores and Standard Deviations in the Alternate Treatment Modes.

Treatment		N	Mean H Scores	Standard Deviations
Mode I	Village source	100	72.95	16.01
Mode II	Urban source	100	85.03	12.81
	Difference		12.08	

Hypothesis II: Subjects' degree of perceived homophily with source does not differ across levels of modernity.

As theoretically predicted, mean homophily distance is negatively related to modernity,[1] irrespective of treatment mode. The F value for the difference in homophily means across levels of modernity is 25.68, which is greater than the 3.23 required for significance at the .025 level. The null hypothesis, stating that subjects' degree of perceived homophily with source does not differ across levels of modernity, is rejected. The alternate hypothesis, stating that subjects' degree of perceived homophily with source differs across levels of modernity, is accepted.

It can be seen from the row means in Table 4.3 that, irrespective of treatment exposure, the more modern the subject, the more homophilous the subject's perceived relationship with the source tended to be. Since it is obvious that homophily distance is related to modernity, no attempt was made to evaluate the statistical significance of any given pair of homophily means.

Hypothesis III: Subjects' degree of perceived homophily with source is not a function of treatment mode/modernity interaction.

As predicted, the interaction effect between treatment modes and modernity is not significant. Table 4.1

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[1]A low numerical homophily score indicates high perceived homophily with the source.

TABLE 4.3.--Mean Perceived Homophily Distance Scores Across Treatment Modes and Levels of Modernity.

Levels of Modernity	N	Mode I	N	Mode II	N	Combined Modes (row means)
High	25	63.33	25	76.33	50	69.83
Above average	25	67.12	25	80.04	50	73.58
Below average	25	76.04	25	88.83	50	82.43
Low	25	85.33	25	94.91	50	90.12
	100		100		200	
(column means)		72.95		85.03		

shows that the F value for interaction is .21, which is smaller than the 3.23 required for significance at the .025 level. Null Hypothesis III, stating that subjects' degree of perceived homophily with source is not a function of treatment mode/modernity interaction, is not rejected. Table 4.3 shows that additivity is present in the homophily relationships reported. Mean homophily difference attributed to the alternate treatments did not depend on a particular level of modernity.

Significance Tests of the Television Effects

Major emphasis in the present study is focused on the question of source effectiveness measured in terms of (1) knowledge-gain, (2) knowledge retention, (3) attitude change, (4) persistence of attitude change, (5) information-seeking behavior change, and (6) persistence of

information-seeking behavior change. Since laboratory control procedures were employed in the present research, thereby reducing the possibility of rival hypotheses, significant findings obtained on the television effects variables can be attributed to the causal factor, subject's degree of perceived homophily with the source. Perceptual factors other than homophily may have contributed to the television effects (perceived source credibility may be one). But these factors were not uncovered in the research.

All of the television effects hypotheses were submitted to F tests in two-way analysis of variance, fixed effects model, to determine (1) treatment effects, (2) modernity effects, and (3) the effects of treatment mode/modernity interaction. These F tests furnish answers to three major questions posed in the examination of effects data: Is one treatment significantly more effective than the other? Do individuals at one level of modernity tend to obtain significantly higher scores than those at another level? Is a significant difference in performance within a treatment qualified by the level of modernity of the subjects in that treatment?

Knowledge-Gain

Hypothesis VIa: Knowledge-gain does not differ across the treatment modes.

Subjects exposed to Mode I, the village source, gained significantly more knowledge, on the average, than subjects exposed to Mode II, the urban source. The F value for the difference in treatment means is 5.88, which is greater than the 5.15 required for significance at the .025 level. Null Hypothesis VIa is, therefore, rejected and the alternate hypothesis, stating that knowledge-gain differs across the treatment modes, is accepted.

A summary of data obtained from statistical analysis of the knowledge-gain hypotheses is furnished in Table 4.4.

It may be seen from the column means reported in Table 4.5 that subjects exposed to Treatment Mode I gained more knowledge, on the average, than subjects exposed to Treatment Mode II.

Hypothesis VIb: Knowledge-gain does not differ across levels of modernity.

Modernity as a main effect in the test of Hypothesis VIb is statistically significant. The F value for the difference in knowledge-gain means across levels of modernity is 5.03, which is greater than the 3.23 required for significance at the .025 level. The null hypothesis is rejected and the alternate hypothesis, stating that knowledge-gain differs across levels of modernity, is accepted. Row means shown in Table 4.5 indicate that the less modern the subject, the larger his gain in knowledge tended to be, irrespective of treatment exposure.

TABLE 4.4.--Summary Data from Two-Way Analysis of Variance of the Knowledge-Gain Effect Showing Main Treatment and Modernity Effects and their Interaction.

	Source of Variance	SS	df	MS	F
A	Treatment modes	133.33	1	133.33	5.88
B	Modernity	341.85	3	113.95	5.03
AxB	Interaction	64.45	3	21.48	0.94
	Within groups	4165.66	192	22.68	
	Total	4705.31	199		

TABLE 4.5.--Mean Knowledge-Gain Scores Across Treatment Modes and Levels of Modernity.*

Levels of Modernity	N	Mode I	N	Mode II	N	Combined Modes (row means)
High	25	5.00	25	2.41	50	3.70
Above average	25	5.79	25	4.91	50	5.35
Below average	25	6.29	25	6.08	50	6.18
Low	25	8.87	25	5.87	50	7.37
	100		100		200	
(column means)		6.84		4.82		

*Pre- to posttest gain scores were used as the dependent variable.

A good deal of caution needs to be exercised in interpretation of the significance of the modernity effect. As Campbell and Stanley (1963, p. 15) indicated, a regression effect[2] is almost always present in experimental designs in which extreme groups are sampled. Extreme low scorers on a pretest are aided by the probability of improvement on a second test; since they rarely perform less well on a posttest, their scores tend to regress toward the total posttest group mean. The same principle tends to operate in reverse for high pretest scorers. That is, high pretest scores tend to regress downward toward the total posttest group mean.

Preliminary analysis of data revealed that the low modern subjects in the present sample, less educated and less exposed to external communication, tended to be low scorers on the pretest of knowledge. Because a regression effect was likely present in the statistical analysis of Hypothesis VIb data, modernity should not be considered as a meaningful main effect.

Hypothesis VIc: Knowledge-gain is not a function of treatment mode/modernity interaction.

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[2]A regression effect is an artifact of the statistical analysis of data which supplements the gain scores for the below-mean pretest scorers, and tends to cancel it for the high pretest scorers (Campbell and Stanley, 1963, p. 15).

Contrary to theoretical prediction, the treatment mode/modernity interaction effect did not produce a significant F and the null hypothesis is not rejected. The F value for the interaction is .94 which is smaller than the 3.23 required for significance at the .025 level. There is no significant difference in the amount of knowledge gained across levels of modernity as a result of exposure to the alternate treatment modes. For interaction to have taken place as theoretically predicted, high modern subjects would have gained more knowledge from the urban source in Mode II than from the village source. As it turned out, subjects at all levels of modernity tended to obtain higher knowledge-gain scores as a result of exposure to the village source rather than the urban source.

Knowledge Retention

The relationships of the two treatment modes and four levels of modernity to the dependent variable, knowledge retention, are reported in Table 4.6.

Hypothesis VIIa: Knowledge retention does not differ across the treatment modes.

A treatment effect in the test of Hypothesis VIIa did not obtain. The F value for the difference in treatment means is 3.23, which is smaller than the 5.15 required for significance at the .025 level. The null hypothesis, stating that knowledge retention does not differ across

TABLE 4.6.--Mean Knowledge Retention Scores Across Treatment Modes and Levels of Modernity.*

Levels of Modernity	N	Mode I	N	Mode II	N	Combined Modes (row means)
High	25	3.62	25	1.37	50	2.50
Above average	25	3.08	25	3.41	50	3.25
Below average	25	7.04	25	6.87	50	6.95
Low	25	9.62	25	4.62	50	7.12
	100		100		200	
(column means)		5.84		4.07		

*Pre- to post posttest gain scores were used as the dependent variable.

TABLE 4.7.--Summary Data from Two-Way Analysis of Variance of the Knowledge Retention Effect Showing Main Treatment and Modernity Effects and their Interaction.

	Source of Variance	SS	df	MS	F
A	Treatment modes	150.52	1	150.52	3.23
B	Modernity	847.50	3	282.50	6.07
AxB	Interaction	211.89	3	70.63	1.51
	Within groups	8561.75	192	46.53	
	Total	9771.66	199		

the treatment modes, is not rejected. Summary data obtained from statistical analysis of the knowledge retention hypotheses are furnished in Table 4.7.

Table 4.8 shows that pre- to posttest gains in knowledge resulting from exposure to the village source rather than the urban source did not remain highly stable over time. However, Table 4.8 reveals an interesting trend in the differential effectiveness of the treatment modes among low modern subjects over time. On the average, low modern subjects exposed to the village source obtained higher scores on the post posttest of knowledge than they did on the posttest administered immediately after exposure to treatment. Conversely, on the post posttest of knowledge, low modern subjects exposed to the urban source tended to revert to their pre-television position.

Hypothesis VIIb: Knowledge retention does not differ across levels of modernity.

Modernity as a main effect in the test of Hypothesis VIIb is significant. The F value for the difference in knowledge retention means across levels of modernity is 6.07, which is greater than the 3.23 required for significance at the .025 level. The null hypothesis is rejected and the alternate hypothesis, stating that knowledge retention differs across levels of modernity is accepted. Row means shown in Table 4.6 indicate that the less modern the

TABLE 4.8.--Mean Gain Scores on the Television Effects Measured at the Time of Treatment and Four Weeks Later.

Television Effects	Gain Scores	Mode I				Mode II			
		High	Above Average	Below Average	Low	High	Above Average	Below Average	Low
Knowledge	Pre to posttest	5.00	5.79	6.29	8.87	2.41	4.91	6.08	5.87
	Pre to delayed	3.62	3.08	7.04	9.62	1.37	3.41	6.87	4.62
Attitudes	Pre to posttest	.29	.00	.41	.75	.16	.20	.91	.37
	Pre to delayed	-.16	.16	.08	1.20	-.29	.29	.20	.50
Information-Seeking Behavior	Pre to posttest	.54	.25	.45	.75	.62	.66	.04	.00
	Pre to delayed	-.45	.54	-.29	1.12	-.45	-.66	2.08	1.58
		(25)*	(25)	(25)	(25)	(25)	(25)	(25)	(25)

*Numbers in parentheses indicate the size of the sample on which all means are based.

subject, the greater the retention of knowledge tended to be, irrespective of treatment exposure.

A regression effect operating as a result of a second test of knowledge would similarly operate in a third test, since delayed gain scores of knowledge were obtained from pre- to post posttest measures. Due to a possible regression effect, the modernity effect in the test of Hypothesis VIIb is not considered a meaningful finding.

Hypothesis VIIc: Knowledge retention is not a function of treatment mode/modernity interaction.

As evidenced in Table 4.7, the interaction effect in the test of Hypothesis VIIc did not produce a significant F and the null hypothesis is not rejected. There is no significant difference in the amount of knowledge retained by levels of modernity as a result of exposure to the alternate treatment modes.

Attitude Change

Table 4.9 shows that neither the main effects nor their interaction produced a significant F in tests of the attitude change hypotheses. The null hypothesis is not rejected in each case.

It is not likely that a particular type of television source can, in the short run, appreciably change attitudes in a positive direction. Table 4.8 shows very

TABLE 4.9.--Summary Data from Two-Way Analysis of Variance of the Attitude Change Effect Showing Main Treatment and Modernity Effects and their Interaction.

	Sources of Variance	SS	df	MS	F
A	Treatment modes	0.13	1	0.13	0.11
B	Modernity	10.26	3	3.42	3.11
AxB	Interaction	5.26	3	1.75	1.59
	Within groups	202.04	192	1.09	
	Total	217.70	199		

little pre- to posttest shift in attitudes in any of the eight cells reported. As Rogers (1969a, p. 145) indicated, "Mass media communication is more important in changing cognitions . . . whereas interpersonal communication is more likely to cause attitude change."

Persistence of Attitude Change

Neither the treatment effect nor the treatment mode/modernity interaction effect related to persistence of attitude change is significant. However, as shown in Table 4.10, a significant modernity effect was obtained.

Hypothesis IXb: Persistence of attitude change does not differ across levels of modernity.

Modernity as a main effect in the test of Hypothesis IXb is significant. The F value for the difference in means is 10.68, which is greater than the 3.23 required for

TABLE 4.10.--Summary Data from Two-Way Analysis of Variance of the Persistence of Attitude Change Effect Showing Main Treatment and Modernity Effects and their Interaction.

	Source of Variance	SS	df	MS	F
A	Treatment modes	1.02	1	1.02	0.59
B	Modernity	55.08	3	18.36	10.68
AxB	Interaction	5.56	3	1.85	1.07
	Within groups	316.33	192	1.71	
	Total	378.00	199		

significance at the .025 level. The null hypothesis, stating that persistence of attitude change does not differ across levels of modernity is rejected. The alternate hypothesis, stating that persistence of attitude change differs across levels of modernity, is accepted.

Row means shown in Table 4.11 indicate that the less modern the subject, the greater the persistence of attitude change tended to be, irrespective of treatment exposure. Although relatively small positive changes in attitude occurred as a result of exposure to television, the attitude change occurring among low modern subjects tended to increase with the passage of time, whereas attitudes of high modern subjects tended to revert to their pre-television position.

TABLE 4.11.--Mean Persistence of Attitude Change Scores Across Treatment Modes and Levels of Modernity.*

Levels of Modernity	N	Mode I	N	Mode II	N	Combined Modes (row means)
High	25	-.16	25	-.29	50	-.22
Above average	25	.16	25	.29	50	.22
Below average	25	.08	25	1.20	50	.14
Low	25	1.20	25	.50	50	.85
	100		100		200	
(column means)		.57		.42		

*Pre- to post posttest gain scores were used as the dependent variable.

Again the modernity effect obtained may be considered an artifact of the statistical analysis of data, i.e., a regression effect.

Information-Seeking Behavior Change and Persistence of Information-Seeking Behavior Change

The alternate treatments failed to differentially stimulate subjects to seek additional family planning information either immediately after or four weeks after exposure to treatment. Tables 4.12 and 4.13 show that neither the main effects nor their interactions are significant.

Mean gain scores obtained from tests of information-seeking behavior and persistence of information-seeking

TABLE 4.12.--Summary Data from Two-Way Analysis of Variance of the Information-Seeking Behavior Change Effect Showing Main Treatment and Modernity Effects and their Interaction.

	Source of Variance	SS	df	MS	F
A	Treatment modes	1.33	1	1.33	0.14
B	Modernity	14.83	3	4.94	0.55
AxB	Interaction	5.66	3	1.88	0.21
	Within groups	1652.83	192	8.98	
	Total	1674.66	199		

TABLE 4.13.--Summary Data from Two-Way Analysis of Variance of the Persistence of Information-Seeking Behavior Change Effect Showing Main Treatment and Modernity Effects and their Interaction.

	Source of Variance	SS	df	MS	F
A	Treatment modes	7.92	1	7.92	0.47
B	Modernity	100.93	3	33.64	1.99
AxB	Interaction	79.80	3	26.60	1.58
	Within groups	3096.45	192	16.82	
	Total	3285.11	199		

behavior are shown in Table 4.8. These means indicate very slight changes in motivation to seek additional family planning information either immediately after television exposure or four weeks later. Information-seeking behavior is a variable dealing with one aspect of motivation. It is possible that the instrument used to measure the variable failed to detect true changes in motivation.

The information-seeking behavior variable was included in the present research for the purpose of exploring the motivation-creating potential of the alternate television treatments. On the basis of one experiment it should not be firmly concluded that the treatments had no differential effect related to this variable. Only through repeated experimentation, using other instruments for measuring the variable, will it be possible to determine the effectiveness of television sources in stimulating individuals to seek further information and advise.

Significant and meaningful findings reported in this chapter are interpreted in Chapter V.

CHAPTER V

CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

The Research Summary

The purpose of the present research was to study the relative effectiveness of two types of sources used to impart a developmental message through television. The sources were a village opinion leader and an urban medical expert.

Television effectiveness was measured in terms of changes in (1) knowledge, (2) attitudes, and (3) motivation to seek additional information (information-seeking behavior). These television effects were measured immediately before and after exposure to television treatment and again four weeks after exposure.

Two television treatments (programs) essentially equated on all factors other than the source variable were professionally produced for television and were recorded on half-inch video-tape for playback in the experimental villages. Twenty experimental villages were randomly selected from the population of Delhi State villages receiving television. Ten adult males were selected randomly from each sample village. A systematic random

assignment of villages to alternate treatments was made. Thus subjects were exposed to one and only one television treatment.

Degree of subject's modernity was measured prior to treatment exposure. Degree of subject's perceived homophily with source and perceived source credibility were measured immediately after exposure. It was predicted that low modern subjects would perceive the village source as more homophilous with themselves and more credible than the urban source. Low modern subjects would, therefore, tend to obtain higher scores on measures of the television effects as a result of exposure to the village source. It was likewise predicted that high modern subjects would perceive the village source as more homophilous with themselves than the urban source. However, finding urban values more salient than rural, high modern subjects would perceive the urban source as more credible than the village source and would tend to obtain higher scores on measures of the television effects as a result of exposure to the urban source.

Summary of Major Findings

As theoretically predicted, both high and low modern subjects perceived the village source as decidedly more homophilous with themselves than the urban source. As theoretically predicted, subject's degree of perceived homophily with the source to whom he was exposed was

related to his level of modernity: the more modern the subject, the more homophilous his relationship with the source tended to be.

Contrary to theoretical prediction, all subjects tended to perceive both sources as highly credible, with only small relative differences in credibility perceived between them. Thus the credibility hypotheses were not tested for statistical significance. Perceived homophily with the source was, therefore, the only psychological variable measured which intervened between exposure to the alternate treatments and the television effects.

As theoretically predicted, low modern subjects exposed to the village source gained significantly more knowledge of family planning than their counterparts exposed to the urban source. Contrary to prediction, high modern subjects exposed to the village source also gained significantly more knowledge than their counterparts exposed to the urban source. In other words, all subjects tended to gain significantly more knowledge from the village source than the urban source.

Differential change in knowledge attributable to the alternate treatments did not remain highly stable four weeks after exposure to treatment. However, it was found that low modern subjects exposed to the village source tended to increase their knowledge of family planning over time, whereas low modern subjects exposed to the urban source tended to revert to their pre-television position.

Contrary to theoretical prediction, differences in the effectiveness of the alternate treatment modes were not related to levels of modernity on any of the six television effects variables measured.

Three significant modernity effects found in the present research related to (1) knowledge-gain, (2) knowledge retention, and (3) persistence of attitude change. Low modern subjects tended to obtain higher scores on measures of these effects than high modern subjects, irrespective of treatment exposure. These significant modernity effects probably were an artifact of the statistical analysis of data and were, therefore, not considered meaningful findings.

Significant and meaningful findings in the present research will be discussed next, followed by a discussion of the generalizability of the findings, their implications, and recommendations for future research.

The Perceived Homophily Findings

Hypothesis I:[1] Subjects' degree of perceived homophily with source does not differ across the treatment modes.

Subjects in the present experiment were capable of differentially evaluating the two television sources on

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[1]All hypotheses in the present research are stated in the null form. Rejection of a null hypothesis indicates that a significant difference in means exists at the .025 level, as theoretically predicted.

measures of perceived homophily. Subjects, on the average, perceived the village source as decidedly more homophilous with themselves than the urban source.

Hypothesis II: Subjects' degree of perceived homophily with source does not differ across levels of modernity.

High modern subjects perceived the source to whom they were exposed as decidedly more homophilous with themselves than low modern subjects. In other words, the more modern the subject, the more homophilous his relationship with the source tended to be.

Based on these perceived homophily findings, it was concluded that differences in cultural orientation of the sources that were observed by the researcher were, likewise, perceived by the subjects: Mode I and Mode II were distinctly different treatments in the eyes of the subjects.

Interpretation of Perceived Homophily Findings

The perceived homophily findings suggest that the type of interaction occurring between change agents and their clients that one might expect to find in interpersonal situations was simulated through television. The alternate types of television sources used in the present experiment performed roles as change agents,[2] each source presenting

[2] A change agent is a person whose purpose it is to influence innovation decisions in a direction deemed desirable by a change agency (Rogers, 1969a, p. 169).

the family planning message in his own particular style and speech idiom. The village source, more like the subjects in education, socio-economic status, and value orientation than the urban source, was more successful in bringing about cognitive change.

It is noteworthy that in observing agricultural change agents in the field, the Extension Division of the Allahabad Agricultural Institute of India (1957) reported that those agents similar in education to their clients were more effective in introducing adoption of agricultural practices. The effectiveness of less educated change agents was attributed to the greater degree of change agent-client interaction. Based on present findings, it appears that the type of interaction taking place between differentially qualified change agents and their clients in the field is simulated through television.

Perceived Source Credibility as an Intervening Variable

Since both sources were, for the most part, perceived by subjects at all levels of modernity as highly credible, statistical significance tests were not performed on the credibility data. One might draw two possible conclusions from the credibility data: As explained in Chapter III, it is possible that credibility differences between the sources were perceived, but that the credibility instrument failed to uncover them. Or it may be concluded that

both sources actually were perceived as highly credible relative to the measures used and that high source credibility contributed to the television effects in both treatments. This latter conclusion will be discussed further in a subsequent section.

With source credibility remaining constant across both treatments, perceived homophily with the television source appeared as the dominant factor responsible for the differential effectiveness of the two treatments. It cannot be assumed, however, that homophily is the only perceptual variable mediating between exposure to the stimulus and response. It is possible that credibility and other perceptual variables not measured in the research contributed to the television effects.

The Knowledge-Gain Effect

Hypothesis VIa: Knowledge-gain does not differ across the treatment modes.

Present findings indicate that subjects, on the average, acquired decidedly more knowledge from the village source than from the urban source. Since the village source was perceived as more homophilous than the urban source--and perceived credibility remained constant in both treatments--it is concluded that differences in the knowledge effect are directly attributable to perceived homophily with the source.

Interpretation of the Knowledge-Gain Effect

The village source presumably captured and held the attention of the viewers to a greater extent than the urban source. Analysis of the two television programs by Hindi speakers revealed that, as might be expected, the village source spoke the Hindi dialect of the Delhi State villages and that the urban source did not, although the latter source used language easily understood by the viewers.

Also, it is believed that through both verbal and non-verbal communication the village leader was able to instill in viewers a sense of mutual sharing of experience. For example, the point was raised in the television programs that there is often greater opportunity in a small family to properly educate a son so that he is more help to his father in applying new agricultural methods. In discussion of this point the village source spoke from direct and immediate personal experience. He spoke with confidence about topics he thoroughly understood from a village frame-of-reference, and he projected this confidence through television.

Furthermore, although both sources appeared to empathize[3] with their audience, it is believed that the village source reflected a greater degree of empathy than

[3] Empathy is the degree to which an individual is able to project himself into the role of others.

the urban source. The village source thoroughly understood the immediate problems and needs of the people in the Delhi State villages and he phrased each statement in terms of those needs.

McGuire (1968, p. 179) asserted, "The guiding idea [in a learning theory approach] is that an essential problem in a social influence situation is adequate reception of the persuasive message. At a minimum, it is assumed that the extent to which a person is influenced by a message will be positively related to the extent to which he attends to and comprehends its persuasive content." The greater amount of knowledge gained by subjects exposed to the village source rather than the urban source is believed to be directly attributed to the high degree to which meanings were shared by that source and his viewers. Shared meanings led to sustained attention which, in turn, led to increased comprehension and learning.

The Optimal Heterophily Assertion

The logic behind the prediction that high modern subjects would perceive the urban source as more credible than the village source and would, therefore, obtain higher scores on measures of the television effects as a result of exposure to the urban source stemmed from Roger's optimal heterophily assertion. According to Rogers (1969b, p. 13), "Optimal heterophily is the degree of source-receiver

heterophily[4] that best facilitates behavior change on the part of the receiver as a reslut of source-receiver interaction. A low degree of heterophily may reduce the source's credibility in the eyes of the receiver. A greater degree precludes effective interchange."

Rogers and others, in studying the role of change agents in social influence situations, have concentrated much of their effort in the area of interpersonal communication. It is from these studies that the optimal heterophily assertion was derived. In applying this assertion to a mass communication situation, however, the present study strongly suggests that one qualification may be required. As Roger's stated, "A low degree of heterophily may reduce the source's credibility in the eyes of the receiver." The present findings revealed that the village source was perceived as highly credible among the high modern subjects who were better educated than he and had higher socio-economic status and more modern values.

Since both sources were perceived as having high credibility relative to the measures used, it is possible to conclude that the television medium conferred upon the village source an increment of expertness that he would not have normally received in an interpersonal exchange with high modern subjects. Although he was perceived in

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[4]Heterophily, the opposite of homophily, is the degree to which a pair of individuals who interact differ in certain attributes.

the role of a village leader, the television medium enhanced his prestige. Klapper (1963, p. 105) referred to the enhancement of prestige through the mass media as the "halo effect." It is logical to assume that the halo effect operated in the case of the village leader, his credibility being raised in the eyes of the high modern subjects. Therefore, one possible interpretation of the experimental findings is that the village source was optimally heterophilous in his role as change agent on television among subjects at all levels of modernity.

The Extent to which the Research Findings can be Generalized

Conditions in a controlled laboratory experiment are not usually representative of conditions in the external environment and, therefore, experimental findings are normally limited in the degree to which they can be generalized. Because the present experiment was conducted in a field setting, normal television viewing conditions were approximated. However subjects did not gather in their usual community viewing location to watch a regularly scheduled broadcast, but viewed the program (transmitted through video-tape playback equipment) on a television receiver placed in the home of a village leader who agreed to host the experiment. Viewing conditions were thus somewhat atypical and the novelty of the experimental

setting must be taken into account in extrapolating the findings to a larger population.

Due to randomization procedures followed in the present experiment, it is plausible to assume that the 20 villages sampled reflected the characteristics of the population of Delhi State villages receiving television. In the researcher's judgment, the experimental findings extend to males in all the television villages in the present 23 mile radius of the Delhi television transmitter. As a result of simple random sampling of village males within each experimental village, a broad spectrum of individual differences among respondents obtained and helped to justify extrapolation to the larger population. Only through inclusion of females in future replications of the study, however, will it be possible to determine whether females would react in a similar fashion as males to the television treatments.

It is likely that replication of the experiment in villages in the proximity of other urban centers in India to receive television would produce similar results. Villages close to urban centers in India share certain characteristics in that the rate of social change is more rapid than in remote villages less exposed to urban influences. These rapidly changing villages are also characterized by a trend away from a strictly agricultural economy toward occupational diversification. Generally

speaking, they are the most progressive villages in India. As the new television stations are set up in India, they may take the present findings under advisement in developing programs for their respective rural audiences. However, the application of the present findings to these areas of India can be validated only through replication of the experiment in each area.

In the more remote villages of India to receive television from the satellite the gap between urban communicators and rural receivers is undoubtedly extreme. Therefore, it is likely that the present findings would be magnified. Through replications of the present study in these regions it would be possible to gain objective information concerning appropriate television source selection for broadcasts to traditional village audiences.

The present findings may extend to the film medium as well as television. Film and television differ as far as production techniques and means of distribution are concerned. But from the perspective of the viewer, film, like television, is characterized by the elements of sight, sound, and motion. The producers of films concerned with agriculture, family planning, nutrition, and related topics should find the present findings provocative in designing films for rural development.

There is also reason to believe that the findings should extend not only to family planning communication

but to all developmental topics in which the intent of the source is to encourage social change. In Chapter I a distinction was made between messages in which the intent of the communicator is to encourage the adoption of innovations that are not widely accepted by members of the target audience and messages encouraging application of innovations that are generally considered desirable.

In disseminating technical information about a topic which is generally accepted by the audience, yet requires increased knowledge for practical application, it may be found that an urban expert is a more effective source than a village opinion leader. Television programmers often apply common-sense logic in featuring experts on television when the program objective is to impart technical information.

In agriculture, for example, farmers may express a need for information about methods of preparing land for new high-yielding varieties of seed. They may wish to know about available consumer markets, and procedures for securing farm improvement loans. Persons who are closest to the primary sources of such information may be more effective than village opinion leaders in imparting such technical information.

It remains for future research to determine the more effective type of television source to use in performing different types of message functions. In the

present research it was assumed that the type of message communicated and the type of source communicating it may interact to produce the television effects. Therefore the type of message used in the present research was one intended to encourage social change. Findings in the research concerning source effectiveness should thus apply to any developmental topic in which the intent of the communicator is to encourage social change.

Implications of the Present Experiment

Relevance of the Research Findings

How can the present findings be of practical value to All India Radio-Television (AIR-TV), to the Ministry of Family Planning, and to other Indian ministries and agencies that will serve in an advisory capacity in the development of television programs for rural adult audiences? Many decisions must be made in the course of designing television programs for educational uses, such as identification of educational objectives, selection of topics, content, examples to illustrate content, and sources to deliver the messages. At each step in the decision-making process the program designer weighs a number of possible alternatives and selects the alternative that he judges to be most appropriate in the eyes of the intended audience.

While the intuitive judgments of experienced television personnel should not be taken lightly, neither

should findings derived from scientific investigation. The present findings furnish evidence about appropriate source selection which stems from objective information gathered at the village level rather than from the ground station level. As Selltiz (1959, p. 1) stated, " . . . There is no guarantee that any given research undertaking actually will produce relevant, reliable, and unbiased information. But scientific research procedures are more likely to do so than any other method known to man."

In one area of television program design, source selection, empirical evidence is now available to Delhi television program designers for their consideration in selecting appropriate sources for their tri-weekly rural program. This evidence suggests the desirability of using on the program the services of village opinion leaders for the purpose of discussing innovations that are not widely accepted or adopted by members of the rural Delhi audience.

Also, based on the present experimental findings, there is reason to believe that, regardless of the degree of modernity of rural male television viewers, a village source appearing on television may be more effective than an urban expert in achieving the developmental objectives of the rural program. There may be factors other than appropriate source selection to consider in determining whether to program to a specific subgroup in the target audience. But so far as source selection is concerned,

it appears that program designers can consider village sources appropriate for reaching television viewers at all levels of modernity.

While working in the villages of Delhi State, the present investigator found evidence of much informal leadership talent that could render a valuable service to the Delhi television station. Informal village leaders in various topical areas have expressed their interest in television, and gave the impression that they would be willing to offer their services to the television station if contacted. The investigator also learned through experience that it takes time and patience to thoroughly explain to village persons the purposes for which their services are needed on television; and, unlike urban persons, they are not normally accessible by telephone. But findings of this study suggest that the time and effort necessary to build developmental television features around informal village leaders can pay significant dividends in accomplishing purposes such as those which the rural Delhi television program is designed to serve.

Relevance of the Experimental Method of Research

The present study demonstrated the feasibility of conducting television laboratory experiments in rural India in order to discover those elements in a television communication that convey significant meaning to rural viewers.

The study revealed that it is possible to not only control spurious elements in the production of the experimental treatments, but also to employ randomization procedures in order to equate the treatment groups.

Had systematic error been unduly large in the sample, or had the alternate programs differed greatly in any respect other than the source variable, rival hypotheses would have most likely jeopardized the internal validity of the experiment and statistically significant differences in means would not have been obtained. The fact that a number of significant differences were obtained furnishes objective evidence as to the feasibility of television experimentation in Indian villages.

Experimental studies of the present type warrant the attention of mass communication researchers in India. As Campbell and Stanley (1963, p. 2) stated, ". . . The experiment is the only way of verifying educational improvements and the only way of establishing a cumulative tradition in which improvements can be introduced without danger of fadish discard of old wisdom in favor of inferior novelties." The experimental researcher in India has an opportunity to scientifically verify television programming improvements, and to add his findings to the knowledge and experience of television producers.

Attempts to create new and imaginative rural television program ideas need to be encouraged, and television

programmers need to work in a permissive atmosphere which allows them an opportunity to attain excellence. But it should be emphasized that excellence is in the eyes of the beholder. Since India is committed to the use of television to accelerate development programs, the rural viewers for whom rural programs are intended should be the ultimate judges of excellence. Through the experimental method of research, countless programming approaches can be tested on rural audiences and the objectivity of science can be brought to bear on the judgment of what constitutes effective programming for an intended audience. Continued experimental research in rural Indian television is necessary in order to keep television aligned with the country's developmental goals which television is intended to serve.

Recommendations for Future Research

The Study of Television Source Effectiveness

Guidelines produced from research findings should not be considered as final wisdom. Campbell and Stanley (1963, p. 3) maintained, " . . . We must increase our time perspective, and recognize that continuous, multiple experimentation is more typical of science than once-and-for-all definitive experiments. The experiments we do today, if successful, will need replication and cross-validation at other times under other conditions before they can become

an established part of science, before they can theoretically be interpreted with confidence."

The present study has provided insights on how to optimize the effectiveness of rural television through appropriate source selection. The ultimate value of the work, however, will be determined by the degree to which the experiment is replicated in India and other developing countries using television in rural development. In future replications of the study it will be important to determine the conditions under which one particular type of source is more effective than another. Some of the conditions it is advisable to test are other geographic locations, source characteristics, audience characteristics, and types of message communicated.

It is recommended that the present experiment be replicated in the more remote areas of rural India to be served by satellite television. At present, there is no empirical evidence to indicate what impact different types of sources may have on audiences in these regions. If in replicating the study both in isolated villages and in villages contiguous to urban centers the present findings are reconfirmed, a broadly applicable concept about appropriate source selection will have been established. Such a conceptualization could be of significant assistance in future television programming for rural India.

Selection of sources as prototypes of a village opinion leader and an urban expert should also be further investigated. In the present experiment it is possible that differences in the dynamism of the sources as well as differences in their cultural orientation contributed to the television effects. By using different village and urban sources and attempting to rigorously control for source dynamism, clues may be found as to whether dynamism interacted with cultural orientation to produce the television effects obtained in this study.

Particular emphasis in future replications should be placed on sampling female audiences. After considerable contact with persons in the villages of Delhi State, the present researcher realized that women in these villages are influential in a number of aspects of family life and that they are eager to watch television. The impressions of women concerning appropriate television sources, and other determinants of television effectiveness as well, should be investigated in future experiments.

Experiments should also be conducted to determine the differential effectiveness of rural and urban sources in performing different message functions. When the primary purpose of a program is to provide technical information rather than to encourage social change, an expert on the topic under discussion may be a more effective source than a village opinion leader.

Future Application of the Experimental Method of Research

Indian communication officials realize that an immense program preplanning effort must be undertaken to supply India's future television communication system with materials tailored to the needs and interests of rural audiences. These officials also realize that preplanning must be coordinated and must begin immediately in preparation for satellite broadcasting in 1974. In line with India's present television programming concerns, it is recommended that experimental research be undertaken as an integral part of the preplanning effort.

Experience gained in the present experiment has led this researcher to believe that approximately six communication propositions can be simultaneously investigated in one experimental effort. Through such an investigation duplication of research efforts could be minimized with a commensurate saving in time and costs.

It is further recommended that the same village, or villages, be used in the preparation of materials for all the propositions studied. As the present researcher learned, developing an atmosphere of mutual understanding and cooperation in the production village takes considerable time and patience on the part of the production/research team. Persons in the production village must be thoroughly apprised of the purposes of the production effort if the atmosphere is to be congenial for accomplishing research

objectives. By using the same production village, only one rapport building effort would be required for the preparation of all experimental materials.

Duplication of effort may also be avoided in the professional production of the experimental television programs. It is suggested that all experimental programs in the proposed series could be produced in a single production period. Such a procedure could considerably reduce the preparation time required by the technical staff of the television station and could conceivably enhance program quality.

It is recommended that the proposed experimental programs be only long enough to convey the essential proposition underlying each experimental question for study. In retrospect, it seems possible that experimental programs four or five minutes in length (rather than 14 minutes) would have been sufficient to accomplish the purposes of the present research. Short programs would also reduce the amount of time required for design and production.

It is also recommended that subjects be exposed to the comparable programs used to test each communication proposition. In the present experiment it will be recalled that subjects were exposed to one treatment only in order that response bias occurring as a result of dual exposure might be avoided. There is one decided advantage to dual (or multiple) exposure that, in the opinion of the present

investigator, compensates for lack of adherence to the more rigorous experimental procedure of permitting only single exposure. That is that by exposing subjects to dual or multiple treatments, it may be possible to discover not only the more effective programming approach, but also to explore the programming preferences of the subjects.

Village persons, particularly in remote areas of India, have an extremely limited exposure to mass media; they cannot be expected to offer critical suggestions based on prior knowledge for improving television programming. Exposure to comparable stimuli may prompt objective evaluation by providing the villager with more than one relevant referent from which he can make a selection.

In the future it is suggested that experiments be aimed at probing a variety of experimental variables that may contribute to desired television effects. The source variable experimentally manipulated in the present experiment is a variable that Hovland and other experimental psychologists at Yale University considered to be a major determinant of communication effectiveness (Hovland, 1965). While this and other variables tested by the Hovland group certainly merit continued investigation, it seems probable that additional variables might well apply in imparting developmental television messages to rural adults in developing countries. For example, through study of accepted forms of indigenous folk drama or Hindi film formats (Hindi films

are popular among rural Indians), it may be possible to delineate propositions yet to be isolated and to manipulate them experimentally. Once these propositions are isolated and experimentally tested, new channels may be found through which developmental ideas can effectively flow.

Since rural adults in India are not compelled to watch television and are known to turn away from dull, didactic programs, one of the most important television effects for future study might be attention to the message. Presently, video-tape cameras are being innovatively used by clinical psychologists to measure non-verbal responses of patients. It is likely that measurement techniques used in clinical psychology can be adapted to a rural television-viewing environment in order to effectively measure attention.

It is further recommended that findings from all viable propositions uncovered in experimental research be reported to concerned television personnel in India. Such findings would be most useful to television program designers in selecting optimal strategies from among alternatives available in program development.

Finally, it is recommended that experimental television research be conducted in other countries, Western and non-Western, which now use or are planning to use television for rural development. Through such experimentation it may be found that, under certain conditions, various

propositions underlying effective developmental communication are applicable wherever psychological and physical distance exists between urban senders of messages and rural receivers.

Indian Television Research in Perspective

How to meaningfully communicate with rural audiences cannot be learned in Delhi or Bombay, but only in the villages. As Childers (1969, p. 6) commented, " . . . It is when the software for television . . . is designed with the perspective of 'looking up from the village itself,' no less than 'looking to that village from the ground station studio,' that television for development will become the breath-takingly powerful instrument it can be." Television materials that are didactic and uninteresting to rural people will neither be learned, accepted, nor viewed. The problem is how to integrate developmental messages into programs built around all that is meaningful to members of the rural audience.

Through experimenting with comparable approaches to television programming at the village level, altering programming elements that appear to make a difference in response, and testing these approaches on a rural sample, it is possible to gain insights about effective programming from those persons who will be the ultimate judges of rural Indian television, namely the villagers. And if sufficient

insights are available before Indian television technology expands, India may well be credited as the first country to initiate a television communication system on the basis of scientific preplanning.

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APPENDICES

APPENDIX A

TELEVISION RESEARCH QUESTIONNAIRE

(English version)

APPENDIX A

TELEVISION RESEARCH QUESTIONNAIRE
(English version)

PART I

Computer-identification _____

Serial number of the respondent _____

Program number _____

Name of the village _____

Full name of the respondent _____

House number _____

1. What is your age? _____
   (Write in completed years)

2. What is your caste? _____

3. How many years have you been married? _____

4. How many sons do you have? _____
   (Write the total number of living sons, including those residing outside the village and married sons)

5. How many daughters do you have? _____
   (Write the total number of living daughters, including married ones)

MODERNITY

Education:

6. How many years of schooling have you had? _____

   Nil _____ 1

   1-4 years _____ 2

   5-7 years _____ 3

   8-10 years _____ 4

More than 10 years _____ 5

NR _____ 8

7. Can you read newspapers? _____

No, I can not read _____ 1

Yes, I can read _____ 2

NR (no response) _____ 8

DNA (does not arise) _____ 9

8. Can you write a letter? _____

No, I can not write _____ 1

Yes, I can write _____ 2

NR _____ 8

DNA _____ 9

Degree and type of mass media exposure:

9. Do you at any time listen to the radio? _____

No _____ 1

Yes _____ 2

NR/DK (don't know) _____ 8

(IF YES, ask:)

10. About how much time did you spend last week listening to the radio?

Less than one hour _____ 1

1-3 hours _____ 2

4-6 hours _____ 3

7-9 hours _____ 4

More than 9 hours (Specify No. of hours) _____ 5

DK or do not recall _____ 7

NR _____ 8

DNA _____ 9

11. What kind of radio program do you like best? _____
(Categories for coding are furnished in the Hindi version)

12. Which of the two radio news programs would you be more interested in? _____

A radio program with rural news only _____ 1

A radio program with both rural news and news of national affairs _____ 2

NR/DK/CS (can't say) _____ 8

DNA _____ 9

13. How many films did you see during the past year? _____

14. Did you read (or did anyone read to you) any newspaper in this past week? _____

No _____ 1

Yes _____ 2

NR _____ 8

DNA _____ 9

(IF YES, ask):

15. How many times did you read (have read to you) a newspaper in the past week? _____

1-2 times _____ 1

3-4 times _____ 2

5-6 times _____ 3

More than 6 times _____ 4

NR/DK/CS _____ 8

DNA _____ 9

Cosmopoliteness:

16. Some people have more faith in a modern medical doctor. Other people have more faith in a local medicine men. What about you? _____

Have more faith in medicine man (traditional) _____1

Have more faith in medical doctor _____2

In between or both _____3

DK/CS _____7

NR _____8

18. If famine should strike in U.P., will the farmers in this village help the people of U.P. by sending things from this village? _____

No _____1

Yes _____2

Only few people will help _____3

DK/CS _____7

NR _____8

DNA _____9

19. There is no point in learning about the customs and habits of people in other parts of the world or in other parts of India because their lives are so different from life here. Do you agree or disagree with this statement? _____

Agree _____1

Disagree _____2

DK/CS _____7

NR _____8

Community participation:

20. Do you hold any positions including membership in any formal organizations? _____

No _____ 1

Yes _____ 2

(IF YES, ask):

Society/Organization (Write down the name)	Member only	Position	Score
1.			
2.			
3.			
4.			

(Count 1 for each membership and 2 for each office or position held in a traditional organization. Count 2 for each membership and 3 for each office held in a non-traditional organization)

22. Have you ever voted in the village panchayat election?

No _____ 1

Yes _____ 2

NR/DK/CS _____ 8

23. Have you ever voted in a village general election? ___

No _____ 1

Yes _____ 2

NR _____ 8

DNA _____ 9

Political knowledgeability:

24. Please tell me if you think this statement is true or false. At present, there are two Congress Parties in the country.

No _____ 1

Yes _____ 2

DK/CS _____ 7

NR _____ 8

DNA _____ 9

25. Who is the President of India? _____

Incorrect _____ 1

Correct _____ 2

NR/DK/CS _____ 8

26. Who is your representative in the Parliment today? ___

Incorrect _____ 1

Correct _____ 2

NR/DK/CS _____ 8

KNOWLEDGE TEST

27. Can you tell me the advantages of having a large number of children in the family? _____

No _____ 1

Yes _____ 2

(IF YES, ask):

28. What are they? _____

1 _____

2 _____

3 _____

4 _____

5 _____

Score:

NR/DK/CS _____ 8

DNA _____ 9

29. Can you tell me the advantages of having a small number of children in the family? _____

No _____ 1

Yes _____ 2

(IF YES, ask):

30. What are they? _____

1 _____

2 _____

3 _____

4 _____

5 _____

Score:

NR/DK/CS _____ 8

DNA _____ 9

31. Can you tell me the possible reasons children fall sick? _____

No _____ 1

Yes _____ 2

(IF YES, ask):

32. What are they? _____

1 _____

2 _____

3 _____

4 _____

5 _____

Score:

NR/DK/CS _____ 8

DNA _____ 9

33. Many foods are necessary for good health. Milk is one. Can you name some others? _____

No _____ 1

Yes _____ 2

(IF YES, ask):

34. What are they? _____

1 _____

2 _____

3 _____

4 _____

5 _____

Score:

NR/DK/CS _____ 8

DNA _____ 9

35. Which family is more secure? A family with many children, none of them educated, or a family with only a few children, all of them educated? _____

Family with many uneducated children _____ 1

Family with fewer but educated children _____ 2

DK _____ 7

NR _____ 8

36. Who is better help to the parents, a son who is educated, or a son who is not educated?

Uneducated son _____ 1

Educated son _____ 2

Sometimes uneducated and sometimes educated _____ 3

DK/CS _____ 7

NR _____ 8

37. A school-going child needs such things as books, school funds, stationary and uniforms. About how much does it cost to give these things to a boy in 7th class per year? _____

Below 250 _____ 1

250-399 _____ 2

400-500 _____ 3

501-650 _____ 2

651-and above _____ 1

DK/CS _____ 7

NR _____ 8

38. A man with many children can give his children a proper education just as easily as a man with a few children. Do you agree or disagree? _____

Agree _____ 1

Disagree _____ 2

Sometimes a man with many children and sometimes a man with fewer children _____ 3

DK/CS _____ 7

NR _____ 8

39. Who would be more helpful to you in your old age, an uneducated or an educated son?

Uneducated son _____ 2

Educated son _____ 1

DK/CS _____ 7

NR _____ 8

40. Why do you think so? _____
(Categories for coding are furnished in the Hindi version)

41. Who would be more help to you on the farm, an educated son or an uneducated son? _____

Uneducated son _____ 1

Educated son _____ 2

Both _____ 3

DK/CS _____ 7

NR _____ 8

42. Why do you think so? _____
(Categories for coding are furnished in the Hindi version)

43. Given the same amount of income, in your view, who are the farmers most likely to put money in improved agricultural practices? Those with a small family or those with a large family? _____

Farmer with large family _____ 1

Farmer with small family _____ 2

Both _____ 3

DK/CS _____ 7

NR _____ 8

44. Why do you think so? _____
(Categories for coding are furnished in the Hindi version)

ATTITUDE TEST

Now we will put some statements before you that some people think are true and some people think are false. We only want to know your opinion as to whether each statement is true or false.

	True	False	DK/CS
45. Children are the wealth of the poor _____	1	2	8
46. Regardless of the sex of the children you have, three should be considered enough _____	2	1	8

		True	False	DK/CS
47.	A small family is less secure than a large family _____	1	2	8
48.	Only in small families can parents give proper attention and care to their children _____	2	1	8
49.	Having fewer children is good for a mother's health _____	2	1	8
50.	It is desirable to limit the number of children you have so all children get proper education	2	1	8
51.	Where one eats, so can many ____	1	2	8
52.	We should leave it up to nature as to the number of children we have _____	1	2	8
53.	There are many reasons why farmers should try to limit the number of children they have _____	2	1	8

INFORMATION SEEKING BEHAVIOR

54. Do you want to know more about the kind of foods that are best for your family to have? _____

No _____ 1

Yes _____ 2

DK/NR _____ 8

(IF YES, ask):

55. Why do you want to know more? (Write down the reasons)

_____ 1

_____ 2

_____ 3

NR/DK/CS _____ 8

DNA _____ 9

56. Do you want to know more about the amount of education it is best for your family to have? _____

No _____ 1

Yes _____ 2

DK/NR _____ 8

(IF YES, ask):

57. Why do you want to know more? (Write down reasons)

_____ 1

_____ 2

_____ 3

NR/DK/CS _____ 8

DNA _____ 9

58. Do you want to know more about planning the number of children in your family? _____

No _____ 1

Yes _____ 2

DK/NR _____ 8

(IF YES, ask):

59. Why do you want to know more? (Write down the reasons)

_____ 1

_____ 2

_____ 3

NR/DK/CS _____ 8

TELEVISION RESEARCH QUESTIONNAIRE
(English version)

PART II

Computer identification _____

Serial number of the respondent _____

Program number _____

Name of the village _____

Full name of the respondent _____

House number _____

HOMOPHILY

Measurement of objective homophily:

"Tonight you heard that (Source) had--years of schooling and is a (occupation). Now that you know these things about (source), please tell me something about yourself."

1. How many years of schooling have you had? _____
   (Write above the actual number of years of schooling he has had.)

   NR _____ 88

   DNA _____ 99

2. Do you work in this village, some other place, or do you do no work?

   Work here _____ 1

   Work some other place _____ 2

   Do not work _____ 3

3. What is your occupation? That is, from what occupation did you earn more than half your income last year?

   Doing agriculture in this village _____ 1

Doing other than agricultural work in this village (please specify) _____ 2

Doing work in a town or city (please specify) _____ 3

DNA _____ 9

(If doing agriculture in the village, ask):

4. What kind of farming do you do in this village? (Categories for coding are furnished in Hindi version)

(If doing work in a town or city, ask):

5. If you are working outside the village, what sort of work do you do there? _____

Unskilled worker _____ 1

Seller of farm produce _____ 2

Artisan _____ 3

Service person such as office worker _____ 4

DNA _____ 9

Measurement of perceived homophily:

(Instructions for interviewers, please interview the respondent exactly as illustrated below:)

Please think of a person you know, who is highly educated. (Pause)

Have you thought of him? (Pause)

What is his name? (He will tell the name)

This is a ladder such as you have in your house (Show ladder)

There are many steps on this ladder. (Point them out)

I will place the educated person you mentioned at the top of the ladder. (Be sure that respondent is observing when you show him the mark on the top step)

Now please think of a person who has no education. (Pause)

Have you thought of him? (Pause)

What is his name? (He will tell the name)

I will place this person with no education at the bottom of the ladder. (Be sure that respondent observes your mark on the bottom step)

Now between these two persons, on which step will you place Panditji/Doctor Sharma? (Put the separate sheet with ladder facing the respondent and then ask)

Now you tell me, between these two persons, on which step would you place yourself? Give your answer by putting your finger on one of the steps.

6. (Educational status)

Think of a person who has a very high education. Think of a person who has no education? Between these two persons, on which step do you place Panditji/Doctor Sharma?

Record the step number here _____

NR/DK/CS _____ 88

On which step do you place yourself?

Record the step number here _____

NR/DK/CS _____ 88

7. (Socio-economic status-effective income)

Think of a person who earned a great deal of money. Think of another person who earned very little money. Between these two persons, on which step do you place Panditji/Doctor Sharma?

Record the step number here _____

NR/DK/CS _____ 88

8. (Socio-economic status-occupation)

Think of a person who has a very high and important occupation. Think of another person who has a very low and menial occupation. Between these two persons, on which step do you put Panditji/Doctor Sharma?

Record the step number here _____

NR/DK/CS _____ 88

On which step do you place yourself?

Record the step number here _____

NR/DK/CS _____ 88

9. (Modern values-innovativeness)

Think of a person who likes to try every new idea he hears about. Think of another person who never tries new ideas until after his neighbour has tried them. Between these two persons, on which step do you place Panditji/Doctor Sharma?

Record the step number here _____

NR/DK/CS _____ 88

On which step do you place yourself?

Record the step number here _____

NR/DK/CS _____ 88

10. (Modern values-achievement motivation)

Think of a person who is very much interested in providing educational opportunities for his children. Think of another person who does not want his children to go to school. Between these two persons, on which step do you place Panditji/Doctor Sharma?

Record the step number here _____

NR/DK/CS _____ 88

On which step do you place yourself?

Record the step number here _____

NR/DK/CS _____ 88

11. (Modern values-cosmopoliteness)

Think of a person who spends a great deal of time in the city. Think of another person who never goes to the city. Between these two persons, on which step do you place Panditji/Doctor Sharma?

Record the step number here _____

NR/DK/CS _____ 88

On which step do you place yourself?

Record the step number here _____

NR/DK/CS _____ 88

SOURCE CREDIBILITY

(Unstructured Questions)

A. Trustworthiness:

12. Some people who offer advice on television make you feel that they are interested in your welfare. Other people on television seem to be less concerned about your welfare. How do you feel about Panditji/Doctor Sharma? (Categories for coding are furnished in Hindi version)

13. Why do you think so? _____
(Write down the detailed reasons in the space below)

_____

_____

NR/DK/CS _____ 8

DNA _____ 9

B. Competence:

14. Some people who offer advice on television seem to know a great deal about the topic they are discussing. Other people on television seem to know much less about the topic. How do you feel about Panditji/ Doctor Sharma? (Categories for coding are furnished in Hindi version)

15. Why do you think so? _____
(Write down the detailed reasons in the space below)

_____

_____

NR/DK/CS 8

DNA 9

(Structured Questions)

16. Panditji/Doctor Sharma said tonight that there are many ways in which a family with a small number of children is better off than a family with many children. Do you think Panditji/Doctor Sharma knows enough about these things to make such a statement--by that I mean, does he know much, some, or very little about these things?

Knows much 3

Knows some 2

Knows very little 1

NR/DK/CS 8

17. When Panditji/Doctor Sharma said that there are many ways in which a small family is better off. Can you put faith in him--by that I mean, can you put much faith, or no faith?

Much faith 3

Less faith 2

No faith 1

NR/DK/CS 8

18. Panditji/Doctor Sharma said tonight that children who eat proper foods are healthier than children who do not. Do you think Panditji/Doctor Sharma knows enough about these things to make such a statement--by that I mean, does he know much, some, or very little about these things?

Knows much 3

Knows some 2

Knows very little 1

NR/DK/CS 8

19. When Panditji/Doctor Sharma said that children who eat proper foods are healthier, can you put faith in him--by that I mean, can you put much faith, less faith, or no faith? _____

Much faith _____ 3

Less faith _____ 2

No faith _____ 1

NR/DK/CS _____ 8

20. Panditji/Doctor Sharma said tonight that educated children are more help to their parents than uneducated children. Do you think Panditji/Doctor Sharma knows enough about these things to make such a statement--by that I mean, does he know much, some, or very little about these things? _____

Knows much _____ 3

Knows some _____ 2

Knows very little _____ 1

NR/DK/CS _____ 8

21. When Panditji/Doctor Sharma said that educated children are more help to their parents, can you put faith in him--by that I mean, much faith, less faith, or no faith?

Much faith _____ 3

Less faith _____ 2

No faith _____ 1

NR/DK/CS _____ 8

22. Panditji/Doctor Sharma said tonight that a family with a small number of children is more likely to get ahead financially than a family with many children. Do you think Panditji/Doctor Sharma knows enough about these things to make such a statement--by that I mean, does he know much, some, or very little about these things?

Knows much _____ 3

Knows some _____ 2

Knows very little _____ 1

NR/DK/CS _____ 8

23. When Panditji/Doctor Sharma said that a family with a small number of children is more likely to get ahead financially, can you put faith in him--by that I mean, can you put much faith, less faith, or no faith?

Much faith _____ 3

Less faith _____ 2

No faith _____ 1

NR/DK/CS _____ 8

(Tests for knowledgeability, attitudes, and information-seeking behavior utilized in the pretest are also utilized in the posttest and the post posttest.)

APPENDIX B

TELEVISION PROGRAM SCRIPT

APPENDIX B

INFORMATION OUTLINE

(Both programs contained the same information.)

I. Two reasons why a large family is more secure.

   A. There is more help in the fields when needed.

   B. There is protection against thieves.

II. Everything has plus and minus points. We must weigh both sides.

III. A small family is more secure because all members can have proper foods.

   A. Importance of proper foods for children.

      1. Without proper foods children are not as healthy and get sick more often.

      2. It is not enough to fill the stomach.

      3. Proper diet includes milk, vegetables, fruits, and foods like dal.

      4. Children who eat proper foods are strong and can be more help to their parents.

   B. Importance of proper foods for adults.

      1. With proper foods adults are stronger and can do more work.

IV. A small family is more secure because children can be properly educated.

   A. An educated child can be of great solace to parents in their later years.

      1. The cost of educating a son (in seventh class) per school year is about rupees 400 to 500.

2. When there are too many children, a father can't spend much time with each one.

B. An educated son can be a great help to his father on the land.

1. An educated son can discuss agricultural improvements with his father.

2. An educated son can help his father fill out forms for loans.

C. When there are too many children, there is less chance for education.

D. Less educated children are not as helpful to their father on the land.

V. A small family is more secure because there is a better chance to increase income.

A. With less pressure on the land in the form of growing food for the family, it is possible to afford improvements such as fertilizer.

B. Fertilized land yields more cash returns.

TELEVISION PROGRAM SCRIPT

(English Version)*

Cue	Video	Audio
Roll film Music up		
	Village of Bharthal	Music up Gradually fade music under
Music under	"	(Compere's narration) THIS IS THE VILLAGE OF BHARTHAL . . . IN MANY WAYS LIFE IS THE SAME HERE AS IT HAS ALWAYS BEEN . . .
	Men smoking hooka	THE MEN TAKE REST AFTER THEIR WORK IN THE FIELDS
	Women at well	THE WOMEN GO DAILY TO THE WELL TO DRAW WATER . . .
	Rattan's courtyard	AND THE FAMILY IS THE CENTER OF ALL ACTIVITY.
	"	THIS IS THE HOUSE OF RATTAN SINGH. RATTAN'S WIFE AND DAUGHTER ARE IN THEIR COURTYARD CUTTING CHAFF. RATTAN HAS ONLY THREE CHILDREN AND HE IS ABLE TO LOOK AFTER THEM WELL.
	Munshi's courtyard	HERE IS THE COURTYARD OF RATTAN'S BROTHER, MUNSHI RAM. SOME OF THE CHILDREN ARE DOING DAILY CHORES . . . AND THEIR MOTHER IS ALSO BUSY AT WORK. MUNSHI RAM HAS EIGHT CHILDREN. IT IS GOOD TO HAVE MANY CHILDREN TO HELP. BUT WITH SO MANY MOUTHS TO FEED, SOMETIMES MUNSHI RAM FINDS LIFE DIFFICULT.

*The script was designed to help the compere and production staff coordinate their tasks. Interview portions of the script were presented informally.

Cue	Video	Audio
	Singh brothers meet outside house. They talk, then turn their backs to camera and walk off.	WHICH FAMILY IS BETTER OFF? RATTAN'S FAMILY? OR MUNSHI RAM'S FAMILY? WHICH FAMILY IS MORE SECURE NOW . . . AND IN THE FUTURE? IT IS NOT EASY TO ANSWER THESE QUESTIONS. THERE ARE SO MANY THINGS TO WEIGH ON BOTH SIDES. BUT IN OUR STORY OF THESE TWO FAMILIES TONIGHT, WE WILL TRY TO BRING OUT WHETHER IT IS ALRIGHT TO HAVE MORE CHILDREN. ONLY WHEN WE WEIGH BOTH SIDES CAN WE DECIDE. AND NOW, LET US START WITH THE STORY OF THE SINGH BROTHERS.
Studio MS	Compere and source	Compere to camera GOOD EVENING. TO TELL THE STORY OF THE SINGH BROTHERS AND THEIR FAMILIES, HERE IS (SOURCE). Mention the following: 1. Source knows the Singh brothers 2. Occupation of source 3. Schooling of source Compere to source WITH ONLY THREE CHILDREN, RATTAN DOES NOT HAVE AS MUCH HELP IN THE FIELDS AS HIS BROTHER. HOW IMPORTANT IS THIS HELP TO A FARMER? Source States two benefits of large family 1. Help in the fields when needed 2. Protection against thieves Compere BUT EVERYTHING HAS ITS PLUS AND MINUS POINTS. IF YOU HAVE TO MAKE A CHOICE, YOU CHOOSE THAT WHICH HAS THE MOST PLUS POINTS. LET US LOOK AT WAYS IN WHICH THE SMALL FAMILY IS MORE SECURE.

Cue	Video	Audio
		PROPER DIET, FOR EXAMPLE. DOESN'T MUNSHI RAM FIND IT HARD TO OFFER PROPER FOOD TO SO MANY CHILDREN?
		Source States that Munshi Ram can put food in their stomachs. But with so many children, he does not have the means to give all quite as many of the proper foods as Rattan can give his.
		Compere ARE CHILDREN AS HEALTHY WHEN THEY DO NOT HAVE ALL THE PROPER FOODS?
		Source Usually they are not as healthy. They get sick more often.
		Compere IT IS NOT ENOUGH TO FILL THE STOMACH. PLENTY OF MILK, VEGETABLES, FRUITS, AND FOODS SUCH AS DAL ARE IMPORTANT FOR RAISING STRONG, HEALTHY CHILDREN. DO RATTAN'S CHILDREN GET THESE FOODS?
		Source They do. As a result they are strong and healthy.
		Compere (cue film) WE HAVE AN EXAMPLE TO SHOW HOW PROPER FOODS MAKE CHILDREN STRONG AND HEALTHY.
Film	Bimla churning milk	Source This is Bimla, Rattan's 10-year-old daughter. By the way she is churning milk, we are able to see that she is full of strength and energy . . .
	Bimla gives milk to brother	Bimla is giving milk to her brother. Proper food is a good investment. Properly fed children are stronger and are much help to their parents.

Cue	Video	Audio
	STUDIO MS	Compere (cue next film) PROPER FOODS ARE ALSO IMPORTANT FOR THE ADULT MEMBERS OF THE FAMILY, ARE THEY NOT?
Film	Rattan's wife mixing feed	Source Yes. Here is Rattan's wife mixing feed for the cattle. By the way she goes at the task, we can see how strong she is. She eats proper foods. She can work like this for long periods of time without becoming exhausted. Women-folk who have many children often do not eat proper foods and become tired from work.
	Studio MS	Compere WE HAVE SEEN HOW IT IS THAT A SMALL FAMILY IS HEALTHIER BECAUSE ALL CAN HAVE PROPER FOODS . . .
Zoom out	Harindar joins group	AND HERE IS ANOTHER REASON WHY IT IS GOOD TO HAVE A SMALL NUMBER OF CHILDREN. RATTAN'S CHILDREN ARE EDUCATED AND AN EDUCATED CHILD IS MUCH SOLACE TO HIS PARENTS WHEN THEY GROW OLD. WHAT IS THIS BOY'S NAME? Source This is Harindar. He is Rattan's younger son. He is 15 years old and in seventh class. He is the class monitor and his teacher says that he is beginning to show much leadership ability.
Zoom in on Harindar		Compere WHAT DO YOU WANT TO DO WHEN YOU COMPLETE YOUR SCHOOLING, HARINDAR? Harindar States that he wants to be an engineer.

Cue	Video	Audio
Zoom out		Compere to source ABOUT HOW MUCH DOES IT COST PER YEAR TO PROVIDE A BOY LIKE HARINDAR WITH BOOKS, STATIONARY, SCHOOL FUNDS, AND ALL THE OTHER THINGS A SCHOOL-GOING BOY NEEDS?
		Source It costs about rupees 400 to 500.
		Compere CAN FAMILIES WITH A LARGE NUMBER OF CHILDREN AFFORD TO SPEND SO MUCH ON EDUCATION?
		Source No. And as a result their children do not go to school as many years.
		Compere (politely dismisses Harindar) WE CAN SEE THAT AN EDUCATION IS A GOOD INVESTMENT BECAUSE AN EDUCATED BOY LIKE HARINDAR CAN BE A GREAT SOLACE TO HIS PARENTS WHEN THEY GROW OLD. MOST PARENTS DO NOT WANT FINANCIAL HELP WHEN THEY GROW OLD. BUT IT IS COMFORTING TO KNOW THAT IT IS THERE IF NEEDED. AND HERE IS A PICTURE OF AJIT, RATTAN'S OLDER SON. IS AJIT ALSO EDUCATED?
Still pix	Rattan and Ajit in field	Source Yes. Here are Rattan and Ajit talking about their rabi wheat crop. Because Ajit is educated, he can discuss things with his father and present many ideas for his father's consideration.
	Audio MS	Compere CAN AN EDUCATED SON LIKE AJIT HELP HIS FATHER IN OTHER WAYS?

Cue	Video	Audio
		Source Yes. He can help his father fill out forms for loans. This work is bothersome for Rattan. Because Ajit is educated, he can relieve his father of such bothersome chores.
		Compere WE HAVE SEEN HOW IT IS THAT IT IS BETTER TO HAVE A FEW CHILDREN, ALL OF THEM EDUCATED, THAN TO HAVE MANY CHILDREN AND NOT BE ABLE TO PROVIDE THEM A PROPER EDUCATION. NOW WE WILL LOOK AT ONE MORE WAY IN WHICH A SMALL NUMBER OF CHILDREN CAN LEAD TO GREATER FAMILY SECURITY . . . THAT IS INCREASED INCOME. BOTH RATTAN AND MUNSHI RAM HAVE THE SAME NUMBER OF ACRES IN CARROTS, DON'T THEY? (Pause for agreement) HOW IS IT THAT RATTAN IS ABLE TO GET HIGHER RETURNS FROM HIS CARROT CROP THAN MUNSHI RAM?
		Source Rattan and Munshi Ram both have one and one-half acres in carrots and their fields are adjoining. But Rattan uses fertilizer and Munshi Ram does not. With a small number of children, Rattan can afford such agricultural improvements as fertilizer.
		Compere (cue film) NOW WE WILL SEE HOW A SMALL NUMBER OF CHILDREN HAS HELPED RATTAN INCREASE HIS INCOME.
Film #2	CU, Rattan with carrots	Source As a result of fertilizer, Rattan can grow better carrots. These slender carrots are uniform and have good cash value.

Cue	Video	Audio
Film	Pan Rattan's carrot field. Widen to Rattan in background	(Source aided by compere) Notice the vigor of Rattan's carrots. Because Rattan has a small number of children, he has less pressure on the land in the form of growing food for the family. He can turn more land into cash crops and thus afford to spend money on such things as fertilizer.
	Pan to Numshi's carrot field	Compere MUNSHI RAM HAS NOT BEEN ABLE TO USE FERTILIZER. Source That is right. He has to grow more food for his family and cannot afford fertilizer.
CU	Munshi Ram with his carrots	(Source aided by compere) Notice that Munshi Ram's carrots are not as good. They will not bring as much cash return as Rattan's carrots will. When a man has a large family, it is much harder to get ahead financially.
Studio MS and Zoon to CU on compere		Compere THANK YOU (source). (To camera) TONIGHT YOU HAVE LEARNED SOME OF THE PLUS AND MINUS POINTS OF HAVING A SMALL NUMBER OF CHILDREN. WE HOPE YOU HAVE ENJOYED OUR PROGRAM AND WILL BE INTERESTED TO KNOW MORE ABOUT ALL WE HAVE PUT BEFORE YOU TONIGHT. FOR FURTHER INFORMATION ABOUT THESE THINGS, PLEASE TALK TO THE WORKER FROM THE PRIMARY HEALTH CENTER WHO VISITS YOUR VILLAGE. GOOD NIGHT.

APPENDIX C

EXPERIMENTAL VILLAGES: ASSIGNMENT TO TREATMENT

APPENDIX C

EXPERIMENTAL VILLAGES: ASSIGNMENT TO TREATMENT

No.	Date	Village	Block	Television Source
1.	8th April	Aali	Shahdara	Village
2.	9th April	Molar Band	Shahdara	Urban
3.	10th April	Asola	Mehrauli	Village
4.	11th April	Ghitorni	Mehrauli	Urban
5.	14th April	Darapur	Nangloi	Village
6.	15th April	Ladpur	Nangloi	Urban
7.	16th April	Sultanpur Majra	Nangloi	Village
8.	17th April	Kirari Suleman Nagar	Nangloi	Urban
9.	18th April	Hulambi Khurd	Alipur	Village
10.	20th April	Khera Khurd	Alipur	Urban
11.	21st April	Samaypur	Alipur	Village
12.	22nd April	Hyderpur	Alipur	Urban
13.	23rd April	Burarai	Alipur	Village
14.	24th April	Mukhmel Pur	Alipur	Urban
15.	25th April	Hiranki	Alipur	Village
16.	27th April	Palla	Alipur	Urban
17.	28th April	Banakner	Alipur	Village
18.	29th April	Samalka	Najafgarh	Urban
19.	30th April	Hastshol	Najafgarh	Village
20.	1st May	Bendalpur	Najafgarh	Urban