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THE NEWSLETTER AS A COMMUNICATION MEDIUM

IN TEACHING LOW-INCOME HOMEMAKERS

Based Upon a Study of Randomly Selected Group of Low-Income Families Participating in the Expanded Nutrition Programs in Dayton, Ohio

DISSERTATION

Presented in Partial Fulfillment of the Requirement for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

By

Joseph Aibangbee Ben Efionayi, B.Sc.(Agric. Econ.) M. Sc.

The Ohio State University
1970

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CHAPTER 1

INTRODUCTION

Background of the Problem

In pursuance of the national expansion of nutrition programs, the Ohio Cooperative Extension Service in 1969 embarked on an expanded nutrition education program in sixteen Ohio Counties. This national effort was directed toward reaching low-income homemakers and their families in order to improve their understanding of nutritional requirements and so improve their diets.

The nutritional program was also directed toward helping low-income families in increasing their consumption of agricultural products in line with their dietary needs.

Whereas the "Smith-Lever Act" 1 1914, and "Memorandum of Understanding" 2 revised 1955, under which the Ohio State University accepted responsibility for

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1 The Encyclopedia of Educational Research 1960

2 Memorandum of Understanding Between the Ohio State University and the United State Department of Agriculture on Cooperative Extension Work in Agriculture and Home Economics. March, 1955
conducting all educational work in fields of agriculture and home economics and subjects related thereto as authorized by the Smith-Lever Act as amended and other Acts supporting Cooperative Extension work and such phases of other programs of the Department as are primarily educational, which the Department has been authorized to carry on within the state."

Since this memorandum has established Extension work on a permanent national basis, it became a legitimate obligation on the part of the Extension Service to educate and instruct the low-income families through out-of-school system of education, informal in nature, whereby the learner learns by doing, with a fundamental objective to help people help themselves.

Lyndon Johnson, the former President of the United States set a stage in his speech on "War on Hunger" of February 10, 1966 when he said:

Hunger poisons the mind
It saps the body but the
key to victory is self help.

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3Faculty Handbook for Ohio Extension Workers. Cooperative Extension Service. The Ohio State University October, 1969. 6.10
Forrest D. Murden, once said, "... what the low-income families have in common are their problems and their history of misery. They are poor, they are hungry, badly housed, some can neither read nor write." 4

There was hardly any period in the world history when population explosion was as pronounced as in the twentieth century. Trends of events revealed that this population increase as may be evidenced in world census with the parallel intellectual growth created a problem among nations. Sciences and technological development were making the world smaller and people becoming a fluid society. The impact of our present day fluid society on growth was evident in the primary, secondary and cultural diffusions. Although there are many factors which may influence diffusion, by and large, people invariably learn about things through communications. Such a human complexity needs a sound method of communication in the pursuance of economic, social and moral stability. By economic stability, this author would like to imply this to mean the acceptance, use and rewarding

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results of technological innovations; Social stability on the other hand as used in this context means a change in the cultural barrier which tends to inhibit progress.

Nature of the Study

With the recent national concern for health development, focused on nutrition problems among the low-income group families of Ohio inner-cities, it became clear that such problems could not be solved in a vacuum. In Ohio inner-cities, if the people of low-income families who are at different levels of literacy are to understand and accept an innovation dealing with nutrition, thereby deriving the maximum benefit from such a community development program which the State Government is pursuing, specific forms of communication system must be involved. Such a communication system must be sustained with a view to intensifying educational efforts to help all family members in low-income families improve the nutritional quality and adequacy of their diets.
Statement of the Problem

Stephen E. Fitzgerald, 5 once said that neither the desire to inform others, nor wish to become informed is new. Men have always attempted to educate, to sway, to influence their fellows and their contemporaries have always yearned for the facts. There is every reason to believe that when the cave dwellers of the early days gathered themselves together, they were motivated not only by the need for self-protection but also by the urge to exchange their communicative grunts. Each medium of communication has its advantages and each communication problem calls for specific channel(s).

The Cooperative Extension Service has worked with reasonable satisfaction by use of the pragmatic approach; - if radio advertisement, for example, leads to high sales in goods, then radio is all right. Such a trial and error system in a pragmatic approach is invariably expensive in time, energy and money.

Studies to determine a specific medium for specific communication problem is a worth-while step in meeting the present demand of effective communication in Extension

services. The problem of this study, in its broad aspect was to investigate and give answer(s) to the question:
To what extent are the communication methods, used by the Cooperative Extension Service in the expanded nutrition program for Ohio low-income families, effective in helping to increase the low-income homemakers knowledge of, and influencing changes to their better eating habits.

Specific Objectives of the Study

In order to meet the requirements and fulfillment of the purpose of this study, it was necessary to outline a few specific objectives to which answers must be given. In view of this necessity, three specific objectives were isolated so as to get closer to the most informal, every day influence contacts which will form the basis for obtaining codified data necessary for statistical analysis.

(a) to determine those existing sources of information through which low-income families of Ohio generally receive their nutrition information.

(b) to determine the effectiveness of the newsletter as a medium of communication, in enhancing the cognitive knowledge of homemakers of low-income
(c) to determine the direction and extent of the
general attitude of low-income families towards
the newsletter as a medium of information and
education on nutrition.

Importance of the Study

A Preamble

Communication has a vital role in the life of man.
The more we learn about communication, the better our
chances of leading more satisfactory lives both in terms
of material rewards and the intangible satisfactions we
all need. "Cooperative State Research Service" asserted
that individual and families need more information in
order to utilize effectively material resources for
maximum consumer satisfaction.

Authorities, in the field of extension services
communication have reported that, extension education,

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6Community Family Consumer Research. A Report of
a Critical Study. Agricultural Science Review: Vol. 2
No. 4, Fall 1964

7Douglas H. Pletsch, Robert W. McCormick and
Clarence J. Cunningham. A Research Report of a Graduate
Study. Research Series in Agricultural Education,
College of Agriculture and Home Economics. Columbus:
The Ohio State University, 1968
irrespective of the agency sponsoring it, will need to place its emphasis on education using "rifle approach" well leveled at different clientele using different approaches. An objective presentation of facts from a credible source will become increasingly important as more companies provide services with their products. Organization will need to change with the increase in population which will result in increased numbers of clientele to be served. Greater experimentation will be needed to solve new and unfamiliar problems with greater cooperation among agencies each relying on the others specialty to effectively solve yet unrecognized problem.

Katona once said, we know far too little as yet about the specific kind of economic information which masses of people are aware of and those of which they are not aware. Much has been written about the ignorance of the consumer and little has been done to investigate how much the consumer knows.

The national in-service training task force of the extension committee on organization and policy of the land

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grant college association identified understanding social system, education process and communication as areas of competency essential for successful extension workers.

Kelsey and Hearne made a statement to express reason for these needs:

Block and frustration must be removed. People must be studied as individuals and in group situations and their drives and motives explored. The process requires the accurate use of words to convey intended meanings and realization that persons vary in the readiness with which they receive new ideas. Those who are called innovators are always in a receptive mood. At the other extreme are the laggards who will never believe what they hear or see. In between are all the rest of us ordinary folks who need to be stimulated from one to six or eight times before we will adopt a new practice. 9

The author has a strong belief in a multi-facet approach to education, its process and the communication methods involved. The author also advocates a close study of such education and communications processes if the extension services are to formulate guiding principles with relationships to problems, their situations and communication methods that will help in shedding light on their solutions.

Hayek, 10 made a study of condition under which people are likely to acquire the necessary knowledge and the process by which they acquire it. He observed that there was a further question which seemed to be at least equally important but which appeared to have received no attention at all. This question was how much knowledge and what sort of knowledge the different individuals must possess in order that we may be able to speak of equilibrium. It is clear that, if the concept is to have any empirical significance, it cannot presuppose that everybody knows everything. The author has to use the undefined term "relevant knowledge" that is, the knowledge to a particular person which might lead to a particular action. Relevant knowledge, however, can hardly mean simply the knowledge which actually influenced one's actions when decisions might have been different. For instance, not if knowledge one possessed had been correct instead of incorrect but also if one had possessed knowledge about altogether different fields. Clearly, there is here a problem of division of knowledge but while the latter has

10Friedrich A. Hayek, Individual and Economic Order University of Chicago Press, 1948 p.84
been on as main subjects of investigation since the beginning of our science, the former has been completely neglected.

The Author’s Perception of the Importance of the Study

The author was of the opinion that such a problem of the division of knowledge within a public was in essence the really central problem of economic and social sciences.

On the phase of the importance of communication in the dissemination of knowledge, this study to this author became quite important in that it was hoped the results would provide the necessary information and guide to be used as basis for developing a replica or more realistic basis for evaluating, recommending and developing a communication program in the agricultural and Home Economics Extension Services. It was also hoped the findings would be a stepping stone for further research as it would enable the author to apply and appraise new testing techniques which might be used in the development of an improved communication system among the rural low-income people.

Whereas the Extension Services have expended much money on multifarious communications media with a view to influencing the behavior of their clienteles, it was
desirable at this stage to systematically screen out those systems which may not contribute significantly to learning as implied to low-income families who were at varied levels of literacy. It will also influence the directing of energy and fund towards the development of those communications systems which appear suitable for influencing behavioral changes among the families in the low-income areas of Ohio inner-cities. The case for the importance of this study to this author may be summarized as follows:

(a) Communication is progress, the more we learn about it, the better our chances for progress.

(b) A base for replication of study of communication effectiveness.

(c) Basis for evaluating, recommending and developing communication program.

(d) A stepping stone for further research in appraising and testing communications techniques.

(e) Means of keeping development program within its economic feasibility and conservation of other developmental resources.

(f) That communication is a process involving the attitudes, the knowledge, the communications skills
of more than one person and the social and cultural context in which he is located.

An intellectual skill that will enhance the behavioral changes in low-income family is that which is made possible through cognitive educational objective.

Bloom, \(^{11}\) expanded this as the areas of knowledge, comprehension, application, analysis, synthesis and evaluation.

If expanded nutrition programs in extension services are to remain viable, there should be a concerted effort to make in-depth study of those factors - communication and education patterns which will help the low-income families develop the intellectual skills necessary to implement the programs which help them to help themselves.

The traditional method of teaching low-income families through demonstration has become a cliche in phase of educational and social growth. Today, the homemakers are daily clamouring for conveniences and their attendant facilities to a degree that unless these facilities were

provided, homemakers were reluctant to attend demonstration which took them far away from their homes.

That demonstrations are particularly valuable in teaching low-income and low-educated families can not however be over emphasized; but the author still has the opinion that informal and individualized methods will invariably be superior to formal and group procedures in guiding learning. Formal and individualized methods of guiding learning will by no means become attainable unless through mass media, whereby a single teacher could multiply and extend himself in order to reach individual learners with standardized ideas purported to be received under a convenient situation. The suitability of a medium in any social group will vary both as a function of cost per user and depending on whether the medium is designed for solo or group use. Newsletter, magazines and newspapers to the author, have intrinsic characteristics of mass media.

If printed materials are to be used as tools for widening the horizons of the low-income families, the potentialities of the newsletter as printed material and mass medium needs a closer study.
Owing to the complexity of the problem involved in research on communication, mass media have been continually hampered and very little validated data in regard to the effects of the mass media on society exists. Those which do, remain at a relatively superficial level. In the final analysis, the author believed that this study would ultimately promote broad understanding of the concepts and principles of communications with relationship to specific situation.

It should improve also the techniques of communication. The methodologies employed in this study, in the mind of this author, should provide standards for evaluating and measuring effects of the many forms of communications methods, should guide the development and use of research techniques and methods appropriate to various situations and media.

There was a final hope that the result findings would contribute to the liberal education of teachers, extension workers, students and the informal education so much cherished for the farmers and homemakers for the promotion of their urge to succeed.
Basic Assumptions

The following basic assumptions were made in this study:

(a) That the low-income families who were at varied levels of literacy included in this study were able to recognize the individual need for training.

(b) That the low-income families, included in this study having recognized the need for training were able to decide whether any of the different types of education media contributed towards understanding of their nutrition principles and to what degree.

(c) That the extension workers in the expanded nutrition program whose communication methods were being studied recognized the importance of communication as a vital tool in the dissemination of information about new innovations.

(d) That the extension participants will honestly participate in the survey in order to determine those education media and/or channels which were of value in reaching their objectives.

(e) That the communication medium now being studied continued to have relevance as a potentially important teaching tool in extension education in the foreseeable future in working with low-income families.
(f) That the aides accurately interpreted the questions to the homemakers during the process of interview and that responses furnished would be valid information to this author for analysis.

Definition of Terminologies

Aides - In this study, the term aides refered to a paid nonprofessional who works directly with low-income family homemakers. She was a member of the audience to be served and had rapport with an understanding of this audience.

Low-income Group - This included families or individuals living on less than $800 per capita per year.

Homemakers - This term included the persons in the household who planned for and prepared the food for the families.

Consumer Education - This term as used in this study, embraced all activities and experiences designed to help homemakers develop the competencies that enabled them to become more effective buyers and consumers of agricultural goods that were in keeping with their dietary needs.

Cognitive Abilities - This was a concept which dealt with those behaviors which were concerned with the power to recall or recognition of knowledge and the development of intellectual skills.
Knowledge - This term was defined as the bulk of phenomena which a person learns, stored and can remember or recall when needed.

Rifle Approach - This term was used in an idiomatic sense to mean a direct approach, trying to make implicit explicit.

Author - As used in this context is synonymous with the term "Writer" and both shall be used interchangeably throughout this study.

Participants - This term applies to a total of 167 homemakers selected randomly as the sample for this study.

Respondents - This term is applicable to all the homemakers who actually completed and returned questionnaire with usable feedback.
Limitations

In this type of research, there was bound to exist many forms of extraneous variables which could not be otherwise controlled but admit they do exist as factors which could pose as limiting the study and in general terms consist of the following:

(a) The study was limited by a relatively short period of time, January 1970 to May 1970 during which time this study was conducted.

(b) The cost of making an intensive interview survey was abnormally high and this limited the scope of this study to a small geographical section of Ohio low-income families.

(c) A limitation was imposed by the belief that feedback to communication purported to change social behavior has a long time lag and the overall success of the treatment may be underestimated when measured within a short period of time.
Educational Communications media, as the major technological means for the improvement of instructions, may not be overemphasized. Maximum learning could be achieved if these media and the instructional messages are progressively improved along with proper selection of the channels of communication. Educational media have varied functions but two major aspects are outstanding: as supplement to the teacher by increasing his effectiveness in the classroom and as tools that could be utilized independently for instructions.

Media may thus be used for enriching the existing instruction or for improving overall productivity through instructional system which do not depend upon teachers for routine presentation.

Communication systems and their institutions are indispensable aspect of human life. In reviewing a doctoral thesis by Dennis W. Pett of Indiana University, Audio-Visual Center, it was found that Schramm emphasized
the importance of the newer media of education in the mobilization of human resources; and Pye points out that the communications facilities and content of the modern world fitted with the communications networks and content of the underdeveloped areas, are important resources for the building of institutions in these areas.

Winfield noted that part of development task consists of determining to what degree communications problems are significant in all aspects of development programs and then developing the means of training personnel and building the institutions needed to meet the communication need.

Stensland emphasized the role of communications in community development, pointed out that development stops when communications break down.

The author quite appreciated the fact that development is linked with communications. Development


2Per Stensland, Communication Between the People in the Community and the Administration and Technical Service. Community Development Review. 10:29-37 September 1958

is concerned with communicating the technology of the modern world to the people who need the technology in such a way that they understand, accept and use this technology to further their economic and social goals.

Little is known about the educational needs of the urban homemakers and very little had been done to understand the homemaker's preferred methods for studying their home and family living content. Further more, little had been done to isolate the homemakers preferences of institutional setting with which they would like to be educated and informed. Since learning is a requirement for living, all adult educators and laymen would agree that adults must continue to learn under informal process, "... the assumption that learning is a life-long process is based, fundamentally on new fact of life." 4 The accelerating pace of social change coupled with the time span of drastic cultural change had been greatly telescoped into less than the lifetime of the individual. Need for changes invariably gives rise to needs for particular forms of knowledge, skills and

understandings, education which is informal in nature. Needs which will help a society meet its evolving problems are necessary if such a society is to exist and be sustained in a rapidly changing world.

Knowles maintained that "... no matter the effectiveness of formal education, this can never fully prepare youths to meet the world as it will be when they are adults." 5 Nutrition and health maintenance in particular and the availability of new products and services at the market place call for new knowledges and understandings to help people improve performances of the involving social roles. The Extension Services can no more under the present day societal expectations, afford the luxury of pragmatic procedure in educational process; they need to make continual studies of education processes in order to cope with the task embodied in the Memorandum of Understanding, 1955. Jensen, et.al 6 had rightly stated that the well-educated youth of today is an obsolete man tomorrow.


6 Ibid. op. cit. p. 1V
The author wished to satisfy his interest and stimulate those of his readers by reviewing those accessible pieces of literature dealing with various communications media as they relate to instruction and education.

In view of the widespread use of currently available materials, it would be educationally desirable to make an indepth specific review of available literature in order to isolate the existing studies already done in this area. A review of excerpts of various experts in the field of communications will also be necessary so as to finally define those groups of hypotheses which will guide researches into, development of, improvement and adoption of newsletter by the Extension Services as a medium of communication in educating the low-income homemakers.

The basis for the following summary of findings which implications are related to this study was largely drawn from Extension Review of literature, related research and the candid opinions of specialists in the field of Cooperative Extension, Vocational Agriculture and Communications.
Radio and Television

Among a myriad of media system available in education today, Thomas A Edison commented, 7 that motion pictures could substitute for colorless, standardized lessons from textbooks. Commercial television is today teaching youngsters information that helps them understand their society. Experience showed that the Mid-West Program for Airborne Television Instruction (MPATI) at a certain time had successfully distributed entire courses of instruction by television networks and relayed from airplanes and satellites to hundreds of schools.

The Carnegie Commission on Educational television (1967), 8 described the role of television in providing general education to the public through a nationwide system of public television stations. The commission finally concluded that the major use of communication media was to supplement the teacher by enhancing his effectiveness. The council of Chief State school Officers (1964), 9 described the role of the new educational media in the school program and identified the

7 Encyclopedia of Educational Research. 1969 p.367
8 Ibid. p.367
9 Ibid. p. 367
responsibility of State Department of Education for extending and improving their use.

In recent years, only a few basic studies have been made of the effectiveness of radio and recordings in teaching actual information and in changing attitudes and interests.

Wisconsin studies, of acquisition of information and skills through listening to radio and recordings were found to be at least as effective as conventional teaching methods and to be liked by students mostly in the field of music.

Cook and Nemzek, on the other hand, found no significant differences in the amount of information acquired by radio and non-radio students. Lowdermilk, comparing recordings and printed versions of the recordings found that reading was more effective than listening in influencing students attitudes towards freedom of speech and assembly.

10Arvil S. Farr, et. al., Radio in the Classroom. University of Wisconsin, 1942 p.203


12Roland R. Lowdermilk, Attitude Shift from Reading and from Radio Program Listening: Ph.D. thesis, Ohio State University, 1939
Rulon and Reid, in independent studies, found recordings of little or no value in motivating students to further study. Chall and Dial, when they made measurements of the understandability of radio programs and broadcasts, found that understanding of and interest in newscasts were related to the level of difficulty of the material as measured by the Dale-Chall formula.

Vernon, studied the intelligibility of educational broadcasts by the British Broadcasting Corporation; he found that qualities which made for intelligibility were: limitation of number of teaching points, clear summaries, lucidity and liveliness of styles, concretness of both subject matter and treatment and illustration of principles or abstract points. On the other hand, he discovered factors which hindered intelligibility as too speedy delivery, flowery or literary metaphors, overlong sentences, difficult vocabulary and complex sentence structure.

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13 Encyclopedia of Educational Research. 1960 p. 120


The television as a means of educating the low-income group at varied levels of literacy can not be expected to serve much useful purpose. Gay-Lord, stated that television may motivate learning with the visual impact of the presentation serving as a springboard for involving the learner in the subject; but argued that to represent an instructional television as a panacea with no short-comings would be unrealistic.

In reality, like all media, it has several limiting factors. Television pacing of materials is predetermined and can neither be slowed for slow learners nor accelerated for fast learners and thus creates obstacles in scheduling.

Use of radio and television form a group of mass media in processes which now become vital opinion influencing techniques and focal points for the transmissions of knowledge. Radio and television to the educators had become significant aids in present day educational and learning methods. Steinberg, asserted


that, radio and television, because of the rapidity of their stimuli, are not cohesive, and despite the fact that they reach many groups simultaneously, their effects are frequently not long lasting. The rapid succession of stimuli, for example, may not leave as much time for reflective thinking as does reading the book (printed-materials). On the other hand the messages through these media are planned in relation to thousands of million of people, "... the so called captive audience," \(^{18}\) rather than in terms of individuals. A review of this argument in the mind of the author points to the fact that, the idea that television may really change the existing nutritional habits is far fetched. By and large, suffice it to say that the failure of radio and television is not due to the flaws in the media by themselves but the communicators do not know how to make sure that their ideas get not only into media but also into human minds.

Filmstrips and Slides

Goodman, \(^{19}\) in comparing sound and silent film-strips

\(^{18}\)Ibid. p.7

with sound and silent motion pictures in teaching four safety topics to grades VI and VII students, found no significant difference among the four methods when tested a month after lessons.

Carson,\(^{20}\) made a report on the study made by the Scottish Educational Film Associations in which long and abbreviated versions of a filmstrip on American Cowboys were compared with a sound film on the same subject. As measured by a 40-item true-false and multiple-choice tests, the two filmstrips groups were greatly superior, compared to the sound film groups in learning information and concepts.

Blain,\(^{21}\) in her study of effects of film narration type and of listenability level of learning, obtained conflicting results, finding no differences in factual information presented in an informal conversational and more personalized manner did affect learning of factual information.


\(^{21}\)Beryl B. Blain, , Effect of Film Narration Type and of Listenability Level on Learning of Factual Information. Doctoral thesis, Indiana University, 1956
UNESCO, conducted a visual-education experiment in West China and reported that the general value of audio-visual materials in teaching health principles to a partially literate rural population was pointed up. Filmstrips and slides were considered the most effective means used in reaching large numbers of people and in making the deepest and most lasting impression.

Hoban and Van Ormer, made review of the research on filmstrips and slides; they concluded that the superiority of the motion picture probably resulted from the greater adaptability of movies for portraying interacting events whereas the superiority of the filmstrips was probably due to the slower rate of development used in the actual presentation of the filmstrip to the audience.

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Slattery,\textsuperscript{24} compared the effectiveness of silent filmstrips with sound films in the informational and conceptual learning of grade V students in social studies. She found the filmstrips both with or without student participation to be significantly superior to the sound motion pictures.

In the mind of the author, filmstrips and slides have their basic advantages.\textsuperscript{25} Filmstrips and slides are among the most economical of audio-visual materials therefore their effectiveness as compared with more expensive motion pictures has frequently been studied. Production of filmstrips and slides are relatively lower in cost than the motion pictures. Duplicating and editing of slides in particular costs less in money and time than other projected materials.

Evidence of high utility of filmstrips and slides had been proved in research results. Slides need less complicated equipment and as such do not need highly skilled personnel to operate them.

\textsuperscript{24}Jamesetta M. Sister Slattery., "An Appraisal of the Effectiveness of Selected Instructional Sound Motion Pictures and Silent Filmstrips in Elementary Schools Instruction." Catholic University, 1953 67 pp

\textsuperscript{25}Harris W. Chester., Filmstrips and Slides: in Encyclopedia of Educational Research 1960 3rd. edition p. 120
The sequence of slides could be altered to suit the situation at issue without disrupting the entire sequence. Such an advantage is denied of motion pictures.

Speed of slides and filmstrips could be controlled to suit the audience speed in reading the verbal messages particularly among people whose perceptual and reading skills are limited, thus affording opportunity for discussion during the showing rather than passive watch of the motion pictures. Above all a single concept slides set could be produced with advantage for any small sized audience with multi-lingual magnetic tape recordings.

Summary Analysis of the Unique Characteristics of Filmstrips and Slides

(1) Cost  
Material and labor cost low.  
Mean/Ends ratio is favorable or less than unity.

(2) Time  
Takes shorter time to produce complete set of materials.

(3) Personnel  
Requires minimum training. Does not call for highly technical staff to produce slides.

(4) Equipment  
Needs minimum equipment for production and utilization.

(5) Duplicating  
Duplicating is easy, quick and cost less than other projectual materials.

(6) Production  
Easy to produce at all levels. Needs no elaborate editing. Facilities for local production is not a problem.
(7) Uses

(a) Easy to use

(b) Sequence of slides could be altered to suit the situation needed

(c) Speed of slides sequence could be controlled to suit audience, thus facilitating reading of the verbal cues particularly among people whose perception abilities are limited.

(d) Any frame could be held on as long as required thus it affords opportunity for discussion during showing

(e) The size of audience is not a factor when planning and investing on any particular single concept message.

(f) Best substitute for television in Biological and Botany laboratory magnification.

The suggestions with regard to the use of films as outlined by the author in this chapter is quite pragmatic and a large avenue is still open to researchers in testing its validity among different cultures, bias, attitudes and other individual differences which may enhance or inhibit communications effectiveness.
Other Materials

Abell and Dickerson,26 made a field study in Schuyler County, New York in 1947 to analyze sources of information about new ideas in farming. Respondents were asked to check media used from a list of fifteen sources and to rate them as most helpful or helpful. They rated as helpful in descending order of frequency of mention, farm papers, printed extension materials, radio, neighbors oral extension, newspapers, salesmen and others. Everyone mentioned on the average six sources. The conclusion was that no one medium satisfied a modern day farmer. He must have information supported by several media.

A consumer marketing information survey,27 was conducted by Burgess. The major objectives which motivated this study of consumer marketing information sources were:


(a) to evaluate the effectiveness of mass media for disseminating food marketing information

(b) to provide a tool for determining effectiveness in reaching consumers

Data collected showed that three of four respondents obtained marketing information from newspapers, mainly daily papers; one in six got her information from radio, one in seven from television. Main reasons given for not using radio or television were: no time, at work, poor reception, no helpful programs. Uses made of marketing information include, seasonal information on plentiful foods, nutritional information and ideas for variation. Reasons for not making use of marketing help included little or no helpful information available. Burgess concluded that Home makers advisors can make use of these findings by giving more attention to marketing information in their columns for local newspapers and on their radio and television.

In a survey,\(^{28}\) of four marketing newsletter distributed by the marketing extension specialists at Pennsylvania State, 5,6000 readers and 55 agricultural

\(^{28}\) Cooperative Extension Services, The Evaluator. Reporting Research for the Extension Workers. The Pennsylvania State University, No. 30 University Park, Pennsylvania 1968
agents were asked the extent to which they made use of the newsletter. Newsletters were usually always read and information was seen as being useful to all but a small fraction of the readership.

In another study conducted in Mckean County Pennsylvania State, to evaluate the effectiveness of a program to decrease mastitis, a major finding was "... the mass media teaching techniques, the newsletter was the most effective in reaching the dairymen"\(^{29}\)

The newsletter appeared to reinforce the farm visit.

The Cooperative Extension Service of Pennsylvania State University made ten studies,\(^{30}\) about the channels people prefer in getting information. The television, newsletter, meetings, personal visits and telephone were channels included in the survey. In all studies, the newsletter was the preferred method of receiving information for Home Economics topics. For all studies, it was reported that the proportion who gave newsletter as first choice ranged from one third to three quarters.

A survey was conducted among extension agents in Texas to determine their opinions as to the effectiveness

\(^{29}\text{Ibid. p. 3}\)

\(^{30}\text{Ibid. p. 4}\)
of extension agents' newsletters; 23 percent of the agents thought the agents' newsletters were absolutely essential in carrying out the county program; 76 percent said the newsletters were helpful.\textsuperscript{31}

A recent article,\textsuperscript{32} described the use of newsletters by Home Economists in Long Island, New York among suburban clientele especially young homemakers. The young homemakers reported that they found the series of newsletters helpful and they wanted to be on the list for any other extension series.

Lionberger,\textsuperscript{33} studied sources of information used by low-income farmers — a group which has proved difficult to reach. The rank order of their more important sources of information was newspapers, farm journals, neighbors and friends, radio broadcasts, county agents and farm bulletin.

Wilson and Gallup,\textsuperscript{34} in summarizing several early studies observed that indirect influences such as the examples of friends and neighbors, meetings, farm and

\textsuperscript{31} Ibid. p.4

\textsuperscript{32} The Extension Services Review: October 1966

\textsuperscript{33} H. F. Lionberger., Sources and use of Farm and Home Information by Low-income Farmers in Missouri. Missouri Agricultural Experimental Station. 1951 p.34

home visits were reported more frequently by farmers as having influenced the adoption of new practices. Women on the other hand reported demonstrations, general meetings and bulletin with somewhat greater frequency than other methods.

Hall and Others,35 studied women's use of an extension bulletin published by Cornell University. About one third of the women had used the subject matter of the bulletin in their work and others had filed it for reference. About three fifths of the women who requested the bulletin had never been enrolled in home-demonstration work.

In a study in the Philadelphia area where a leaflet on Japanese beetles was distributed upon request, recipients were asked if they had an opportunity to read the leaflets on Japanese beetles; 90 percent said yes. When they were asked if they sprayed for Japanese beetles 77 percent said yes and 59 percent provided some of the information on the leaflets to someone else.36


36Ibid. p. 3
Anapol, Malthon made a study of minority group communication behavior, in order to discover and examine the communicators, the channels of communication and the message appeals communicated by the most significant Jewish groups in communicating with the American society to improve intergroup relations, doing the communicating and the methods they used. He tried to determine how message appeals were received by the audience to whom they were addressed and if the appeals were able to bring about the desired changes in attitudes. He tested an hypothesis that the effectiveness of message appeal is sometimes a function of the factual support which can be offered to support the points. He also found out that the use of the series of three appeals seems to be uniformly more effective than any single appeal.

Edward J. Robinson emphasized in the theory of communications the concepts of overlapping of fields of experience of sender and recipient. A study by the opinion Research Corporation of how well employees understand company publications showed how easily every public relations practitioner overlook the degree of overlap between himself and his recipient. The findings were

based on interviews with nearly 500 workers. Among other things, researcher found that:

(a) only 54 percent of those interviewed understood the meaning of the term "fringe benefits."

(b) only 54 percent of those interviewed knew the meaning of "mass production". The researcher reported that one worker reported mass production to mean producing more than the buyers can absorb

(c) only 26 percent of those interviewed knew what "hidden salaries and wages" meant

(d) only 12 percent of those interviewed read and subsequently understood the average article in a company publication

(e) Fifty percent of those interviewed were familiar with the word "capitalism" but only 26 percent could explain what it meant

The researcher concluded that "... to the extent that these data are typical of all company publications, this is need for concern about the concept of overlapping fields of experience between senders and recipient of messages." 38

Dana Eastham made an analysis of the total communication system to determine how successful the link was between the company with its stock-holders. One such study was made of a random sample of stock-holders report of large and small American Businesses. The emphasis of the analysis of these stock-holders reports was on the level of difficulty of the writing.

Among other things the other reports that the level of reading difficulty of the material contained in the stock-holders' reports as measured, was well above the average reading comprehension of the intended audience. Dana drew attention to communication model regardless of the particular communication situation. The stock-holders' reports touched the point that "a communicator should think of the whole communication process and not become lost in any one stage such as message stage exemplified by the stock-holders' reports."^39

Jennifer Ruth Lohse,^40 of Ohio State University in 1968 made a study of nutrition knowledge, attitude and

^39Dana J. Eastham., Readability of Corporate Stockholder Communications: Unpublished Master's thesis. School of Public Communications, Boston University.

sources of nutrition information of young homemakers in Ohio, she came up with this excerpt in her review of literature:

Young, et. al. in their 1956 survey of urban areas of Rochester and Syracuse in New York State, reported that 30 to 50 percent of the homemakers interviewed had little or no knowledge about nutrition. Their assessment of the level of nutritional knowledge was based on the number of food groups for which the homemakers could give a nutritionally correct reason for inclusion in family meals. Seventy-five percent of the homemakers interviewed had never heard of the basic 7 food groups and less than ten percent of the homemakers knew anything about the nutritional contribution of bread and cereal and of butter and fortified margarine. Young tried to determine the factors affecting the level of nutrition knowledge. She classified the homemakers they interviewed into the following educational groups: Eighth grade or less, more than eighth grade but less than a high school graduate, and a high school graduate or more. They reported that the level of formal education and the level of nutritional knowledge were definitely and directly related. Of all the factors such as age, income, sources of nutrition information and education which these researchers studied, the educational attainment of the homemakers showed the greatest relationship to their nutritional knowledge.

Young Survey of relationship of income and nutritional knowledge showed that there was no consistent pattern in the relationship between family income and nutritional knowledge. The percentage of homemakers with minimal knowledge of nutrition or with a satisfactory
definition of a balanced diet did not increase consistently with higher income. Young further found that when income and educational influences were segregated by two-way tabulation for any given measure of nutritional knowledge, education was shown to be the important factor. The effect of increased income within given educational level was, in general, of a lesser magnitude and less consistent.  

Young, et al. made further studies of 331 Rochester and 315 Syracuse homemakers by means of personal interview about their general sources of information. Here, mothers or relatives stood highest in their table of analysis. When the question was related to buying habits, women magazines and newspaper ranked highest.  

Williams, in a limited study of the nutrition knowledge and practices of a group of clerical and professional women, observed this same relationship. When the subjects were divided into an educational group of

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42 Ibid. Parts III-IV

high school plus business school, and a second group of college, the average scores on a test of nutrition knowledge were 56 and 70 percent respectively.

In a more recent study, Morse et al. tested a group of mothers for their nutrition knowledge in relation to their education, occupation and the nutritional status of their children. These researchers showed that the higher the level of education, the better the knowledge of nutrition.

In another study published in 1967, data were secured from 4,177 different homemakers in six southern States. The researchers showed that homemakers with high scores on a test of nutrition knowledge were more likely to have had a high school education or more, and were also more likely to have had better occupation with higher incomes. However, Beeuwhes stated that money is not necessarily a primary determining factor in the improvement

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45 Homemakers' Nutritional Knowledge Scores 1967. Southern Cooperative Series Bulletin No. 123
of people's nutrition. Her belief on the effect of income is supported by the research of Young et al.; They reported no consistent pattern in the relationship between family income and nutritional knowledge except at the extremes of income where nutrition knowledge appeared to be directly related to the level of income. Lohse reported that, "... a direct relationship between education and income was also reported in the home economics survey conducted in Kentucky." 46

In the present day of multimedia channels of communications, it can not be overemphasized that there are various avenues open to the homemakers for receiving news and information about nutrition.

Spindler Evelyn, 47 stated that young homemakers are a difficult group to reach. The cooperative extension services in several States had been trying various ways of reaching these homemakers. A study was therefore conducted to explore ways of reaching the young homemakers with information on nutrition. It is a commonplace that mass media help to create awareness and trigger interest

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46 Lohse, op. cit. 1968

for an innovation. Spindler made a study of forty-seven groups of young homemakers in fifteen States: (Carolina, Connecticut, Rhode Island, Georgia, New Jersey, Idaho, Maryland, Virginia, Wyoming, Colorado, Arizona, Florida, Illinois, Pennsylvania and West Virginia.) The young women who were interviewed varied widely in educational, socio-economic and cultural backgrounds; They were both white and non-white groups living in urban, suburban and rural areas and small towns. The women were asked where they would expect to get authentic information about nutrition, the physician was the person most often mentioned. Other persons were the Home Economics teacher, agents or dietitians. Other sources constantly mentioned were the cook-book, women magazines, the newspapers advertisements, best-buy columns or women's page.

The radio and newspaper were only occasionally mentioned. The homemakers spoke highly of the value of face to face meetings provided meetings are arranged to suit their times, season, place and baby-sitting services. The author felt that the use of newsletter will be remedial factor in this situation. Categorizing the advantages in the use of the newsletter, the communicator can precisely identify his audience, have complete control of his message, the message can be tailored to the specific information
needs of the audience, he can adjust the timing and sequence of his message. The newsletter could be used by the audience as reference pack; finally the audiences could read the newsletter when convenient and at their own pace. The Spindler study further showed that the young women were not in favor of using the television as a channel for information on nutrition while others selected newspaper in place of radio.

In Kentucky, the Home Economics survey conducted an interview on three groups. Homemaker club members, Havebeen homemaker club members, and non-homemaker club members. Of the homemaker club members interviewed, it was reported that a higher percent received information through publications, newspapers and personal letters. Television and radio being used to a small scale. This result of not accepting television as better source of information by Kentucky women was in direct contrast to the results of the Pennsylvania study, in which television was ranked fairly high as a preferred method of receiving information.

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Medved, 49 study also showed that 80 percent of the viewing sample stated that they were very much interested in television nutrition information. Spindler study also showed that homemakers expressed little interest in receiving nutrition information through radio programs. Radio, they admitted was used only for background music or news. These observations were in conformity with those of Young and her group that both radio and television were ranked low as sources of nutrition information in their study.

Studies reviewed so far present controversial issues in determining whether newsletters, bulletin, newspapers, magazines, cookbooks, radio or television should be considered as most convenient sources of information on nutrition. Although these homemakers, who had an aversion to watching television and listening to radio for nutrition information did not state categorically why they preferred printed matters, the author is of the opinion that the relative advantages in the area of convenience must be largely responsible for it.

The College of Agriculture and Home Economics at the University of Kentucky, Lexington, investigated the question of how much attention do homemakers pay to promotional materials they receive through the mail. The objective was to determine the role of color on printed materials by comparing a four-color double postcard containing recipes with identical recipes in a duplicated letter form printed in black ink. Observation showed that the use of color does not induce any significant cognitive superiority over black ink. It is observed also that the effect of color fades with age.

Jean Shipman and Nellie R. McCannon, reported that the number of information sources rural and low-income families refer to with homemaking questions were basically related to two socio-economic factors; age and education and to two mass media availability factors, radio and women magazines. It was further discovered that most home makers, regardless of education, used printed media for answers to food buying questions.


Starley et al.\textsuperscript{52} made a study of the Leeds-Dunbar low-income areas, Kansas City, to determine their sources of information; Their findings showed that a circular letter "The Big News" was the most effective means of informing the population and of getting subject matter materials to them. The homemakers reported that they heard of the commodity food workshop through the circular letter they received.

Another study,\textsuperscript{53} was conducted by the same team in St Louis on the use of "Housing Digest." It was concluded that the figure was high enough to consider the Housing Digest as being useful media for reaching the household according to Hunter.

Virginia Norris,\textsuperscript{54} in her study of educational methods used in presenting consumer information to homemakers living in low-income urban areas, discovered the following related studies. In Bartz's study of the source of home making information preferred by young homemakers

\begin{itemize}
\item \textsuperscript{52} Starley Hunter, et al. \textit{Families in an Urban Enclave.} Leeds-Dunbar Community, Kansas City Columbia: University of Missouri, Extension Division 1965 p. 17
\item \textsuperscript{53} Ibid. p. 27-28, Leeds-Dunbar
\item \textsuperscript{54} Virginia Norris, Ph.D. thesis, Ohio State University, 1967. p. 44-47
\end{itemize}
in the greater Spokane, Washington area, three-fourths of the women indicated an interest in receiving newsletters for young homemakers. She suggested that these women might use printed pamphlets or newsletters as sources of information on low cost recipes and household suggestions if these were made available to them.

A study was conducted in California by Mardus, with 300 extension cooperators. It was indicated that women in a metropolitan county interested in home economics information preferred extension teaching methods and activities in the following order - Newsletter, schools for homemakers, newspapers and discussion meetings.

Starley Hunter, made a study of the low-income families and their learning situation in south End Boston. The low-income Boston homemakers reported that "Under-the-Door flyers were the most important source of program


information to them. Eighty-four percent of the homemakers interviewed in the South End housing development said they had received the flyers and 77 percent said they had read one or more of the flyers and two-thirds said they had read most of the flyers.

In Pfannstiel's effort to reach the Mexican-American cultural group in El Paso, flyers written both in English and Spanish languages were sent out to them. Within eighteen months, the percentage of homemakers who had heard about the food for fitness guide rose from five to seventy-two percent. Pfannstiel attributed this difference primarily to the flyers sent to them. 58

From these reviews, the author discovered that there is no standardized method of communication with the low-income groups. In the work of Richard Lee, "... there must be as many strategies as there are audiences, communication strategies must be flexibly to meet the specific conditions needed to communicate with each audience." 59

58D. C. Pfannstiel, (ed.) El Paso Study, University of Texas, 1967

Based upon an extensive review of related studies, theories and practices in communication effectiveness the following hypotheses were presented for this study.

1. **Null Hypothesis (H₀)** there is no significant difference in the cognitive knowledge scores between the experimental and control group on a test on principles of better breakfasts taught through newsletter.

   **Research Hypothesis (H₁)** there will be a significant difference in the cognitive knowledge scores between the experimental and the control group on a test on principles of better breakfasts taught through newsletter.

2. **Null Hypotheses (H₀)** there is no significant difference in the cognitive knowledge scores between groups, at different levels of income, on a test on principles of better breakfasts taught through newsletters.

   **Research Hypothesis (H₂)** There will be a significant difference in the cognitive knowledge scores between groups, at different levels of income, on a test on principles of better breakfasts taught through the newsletter.
(3) **Null Hypothesis** \((H_0)\) there is no significant difference between the attitude of participants, at different levels of income, towards the newsletter on better breakfasts.

**Research Hypothesis** \((H_3)\) there will be a significant difference between the attitude of participants at different levels of income, towards the newsletter on better breakfasts.

(4) **Null Hypothesis** \((H_0)\) There is no significant difference in the cognitive knowledge scores between groups, at different levels of education, on a test on the principles of better breakfast taught through the newsletters.

**Research Hypothesis** \((H_4)\) there will be a significant difference in the cognitive knowledge scores between groups, at different levels of education, on a test on the principles of better breakfasts taught through the newsletters.

(5) **Null Hypothesis** \((H_0)\) There is no significant difference between the attitude of the groups, at low and at high levels of education, towards the newsletter on better breakfast.
Research hypothesis (H₃) There will be a significant difference between the attitude of the groups, at low and at high levels of education, towards the newsletter on better breakfasts.
CHAPTER 3

METHOD OF INVESTIGATION

The Design Setting of the Study

The design for this study was taken from Stanley and Campbell, "Posttest-Only Control Group Design" (6) shown schematically.

\[
\begin{align*}
R & \quad X & \quad 0_1 \\
R & \quad 0_2
\end{align*}
\]

In the schematic representation of this design, the letter \( R \) represented randomization; this means that the participants were randomly selected and randomly assigned to their respective groups. The letter \( X \) represented the treatment applied to the experimental group but not to the control group. The treatment as used in this study meant the newsletters on Better Breakfsats. The symbol \( 0_1 \) was the observed dependent variable of the experimental group while the symbol \( 0_2 \) represented the observed

variables of the control groups.

Location of Research Base

An arrangement was embarked upon to locate a research base in Columbus inner-cities; as this was not feasible, the author's adviser contacted Miss Iris Macumber, the County Extension Agent for Montgomery County in Ohio, requesting the possibility of setting up a research project, based in Dayton.

The first conference for the author to meet the county agent and her assistant was arranged to take place in Columbus. That was an opportunity for the author to meet and acquaint himself with the county agent. At that first meeting, brief explanations of the proposed study and type of cooperation and assistance needed were discussed. Endorsement and support were sought and suggestions encouraged.

A subsequent meeting was arranged to take place in Dayton, Ohio. At that meeting, a tentative list of responsibilities was drawn up, outlining the county agent and her field workers involvements in the study. A mutual understanding was reached under the following terms:
(a) the homemaker participants would be drawn from Dayton urban area and would include those who were then participating in the nutrition programs

(b) that the newsletter to be used as treatment in the study would be prepared by the county agent to conform with the program need during that period.

(c) that the color of the paper for the newsletters should be yellow

(d) that a minimum of eight such newsletters dealing with different aspects of Better Breakfasts should be released between January 15, 1970 and May 15, 1970 inclusive.

Designation of the Population and Securing of the Sample

Whereas, the total population of interest in this study was the entire low-income group of families of Montgomery County in Ohio, it was necessary to draw from that area a representative size of population to participate in the study.

From the files of the home economics agent, a list of accessible population was tentatively drawn. As of January 1970, there were 355 low-income families identified from all 15 groups under 15 different aides.
Names were arranged in groups, designated by identifying labels, (A, B, C etc.). These labels had been assigned to the aides. The names in each group were held within their respective grouping for the purpose of later interviewing.

The nature of this study gave much cognizance to the importance of education and socio-economic status as means of categorizing the families into various groupings. In order to have an internally homogeneous groups, the total accessible population of 355 homemakers was stratified into three categories.

(a) those whose total yearly income fell below $2,000 were designated as the lower income group of the low-income families

(b) those whose total yearly income fell between $2,000 and $3,999 were designated as Medium income group of the low-income families

(c) those whose total yearly fell between $4,000 and $5,000 were designated as Upper income group.

The second step was the categorizing of each income stratum into two major groups of educational levels.
(a) High Education level, (9th grade and above)
(b) Low Education level, (8th grade and below)

ILLUSTRATION 1
Diagram of Participants Stratification

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>b</td>
<td>a</td>
</tr>
<tr>
<td>b</td>
<td>a</td>
<td>b</td>
</tr>
</tbody>
</table>

Income of $4,000 and above with education of 9th grade and above
Income of $4,000 and above with education of 8th grade and below
Income between $2,000 and $3,999 with education of 9th grade and above
Income between $2,000 and $3,999 with education of 8th grade and below
Income of $1,999 and below with education of 9th grade and above
Income of $1,999 and below with education of 8th grade and below

Keys:  
A = Upper Income Level  
B = Medium Income Level  
C = Lower Income Level  
a = 9th grade and above  
b = 8th grade and below
The illustration on the preceding page provided six categories of participants from which subjects were randomly selected for random assignment to groups. Random numbers as provided by Downie and Heath were used for the random selection of subjects for the study. A total of 168 subjects were selected in this way. This figure constituted 47.3 percent of the accessible population. Fifty percent of the randomly selected subjects were randomly assigned to the treatment group while the other fifty percent were assigned to the control group; giving a final total cells of twelve compartments.

See illustration 2.

---

ILLUSTRATION 2

A Format Showing the Final 12 Cells Compartments

<table>
<thead>
<tr>
<th>Income</th>
<th>Education</th>
<th>$R \times O_1$</th>
<th>$R \times O_2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Income</td>
<td>9th grade and above</td>
<td>Control/ newsletter</td>
<td>Contact only</td>
</tr>
<tr>
<td></td>
<td>8th grade and below</td>
<td>Control/ newsletter</td>
<td>Contact only</td>
</tr>
<tr>
<td>Medium Income</td>
<td>9th Grade and above</td>
<td>Contact/ newsletter</td>
<td>Contact only</td>
</tr>
<tr>
<td></td>
<td>8th grade and below</td>
<td>Contact/ newsletter</td>
<td>Contact only</td>
</tr>
<tr>
<td>Lower Income</td>
<td>9th grade and above</td>
<td>Contact/ newsletter</td>
<td>Contact only</td>
</tr>
<tr>
<td></td>
<td>8th grade and below</td>
<td>Contact/ newsletter</td>
<td>Contact only</td>
</tr>
</tbody>
</table>
Variables

The independent variables in this study were:-

(1) the eight series of Home Economics newsletters on Better Breakfasts released between January and May, 1970.
(2) the income levels of the participants, blocked, fixed and assigned and
(3) the education levels of the participants, blocked, fixed and assigned.

The income and educational variables were crossed to give six categories under which the subjects were nested.

The dependent variables in this study were:-

(1) the cognitive knowledge scores on a test on the principles of better breakfasts.
(2) participants reactions to attitudinal statements in relation to the newsletters.

Treatment

The treatment, in this case, the Home Economics newsletter on better breakfasts, went out for the first time on January 12, 1970 and there after on every 14th day within a period of 123 days. Eight such newsletters were issued in series dealing with the principles of buying, preparation eating and preservation of food in relation to breakfasts.
Initial Mortality

During the first six days the treatment was started, there was an apparent evidence that two of the participants could not be found and another random selection of two subjects was immediately effected to replace the missing subjects. The complexities of drawing an accurate sample to replace the missing participants were minimized by the fact that subjects were pre-categorized and nested so that it was quite easy to draw from an area affected by the initial mortality.

Determination of Reading Difficulty

Lorraine Weng,\(^3\) made a study of lay publications on child feeding. It was stated that physicians, teachers and dieticians have suggested that printed reading materials on child feeding now available suffer from a number of inadequacies and that many in current use do not give parents the kind of help which would enable them to deal effectively with the various problems that arose

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\(^3\)Lorraine Weng, A Study of Lay Publications on Child feeding in Journal of the American Dietetic Association Chicago: College of Medicine, University of Illinois, No. 28 1952
in the everyday feeding of the child. Weng therefore tried to determine the reading difficulties of the publications by applying the Dale-Chall Reading Difficulty Formula. Result showed that reading level was one of the factors which might have influenced the readability of a printed matter and application of the formula to the publication gave some useful information about the reading difficulty of the printed materials.

The author therefore decided to use the Dale-Chall Reading Difficulty Formula in order to determine the educational level at which the newsletter was written and hence the level of understanding that might be expected of the users. A request was made by the author for complete set of the newsletters series for determination of their readability. Result showed that the readability of the newsletter was at the 5th to 6th grade level as shown in Tables 1 to 3.

The evaluations shown on Tables 1 to 3 were random selection of three of the eight newsletters to form a basis for drawing an inference in determining the readability level of the newsletters used in the program.
<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Number of words in the sample</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>Number sentences in the sample</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>Number of words not in Dale's list</td>
<td>11</td>
</tr>
<tr>
<td>4</td>
<td>Average sentence length (divide 1 by 2)</td>
<td>8</td>
</tr>
<tr>
<td>5</td>
<td>Dale score (divide 3 by 1 multiply by 100)</td>
<td>11</td>
</tr>
<tr>
<td>6</td>
<td>Multiply 4 by .0496</td>
<td>0.3968</td>
</tr>
<tr>
<td>7</td>
<td>Multiply Dale score (5) by .1578</td>
<td>1.7369</td>
</tr>
<tr>
<td>8</td>
<td>Constant</td>
<td>3.6365</td>
</tr>
<tr>
<td>9</td>
<td>Formula raw score (add 6, 7, 8)</td>
<td>5.7702</td>
</tr>
</tbody>
</table>

Average raw score of sample for (1) sample: 5.7702

Average corrected grade level: 5-6th

Analyzed: Joseph A. B. Efionayi
Table 2

A FORMULA FOR PREDICTING READABILITY
BY EDGAR DALE AND JEANNE S. CHALL

<table>
<thead>
<tr>
<th>Article</th>
<th>Eggs are wonderful for breakfasts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Author</td>
<td>Miss Iris Macumber</td>
</tr>
<tr>
<td>Date</td>
<td>1-26-70</td>
</tr>
<tr>
<td>Publisher</td>
<td>Cooperative Extension, Dayton, Ohio</td>
</tr>
</tbody>
</table>

1. Number of words in the sample ................... 110
2. Number of sentences in the sample............. 14
3. Number of word not in Dale's list............ 10
4. Average sentence length (divide 1 by 2)...... 7
5. Dale Score (divide 3 by 1 multiply by 100)  9
6. Multiply(4 by .0496)............................ 0.3272
7. Multiply Dale Score (5) by .1578............. 1.4211
8. Constant........................................ 3.6365
9. Formula raw score (add 6,7,8)................ 5.40

Average raw score of sample for (2) samples  5.58
Average corrected grade level................... 5-6th
Analyst ................................. Joseph A. B. Efionayi
Table 3

A Formula for Predicting Readability
By Edgar Dale and Jeanne S. Chall

Article.......... Citrus Fruit is in Season.
Author.......... Miss Iris Macumber. Date...2-9-70
Publisher..... Cooperative Extension, Dayton, Ohio.

1. Number of words in the sample ............... 110
2. Number of sentence in the sample............. 12
3. Number of words not in Dale's list .......... 13
4. Average sentence length (divide 1 by 2).... 9
5. Dale Score (divide 3 by 1 multiply by 100).... 12
6. Multiply 4 by .0496.......................... 0.4464
7. Multiply Dale score (5) by .1578 ............ 1.8948
8. Constant........................................ 3.6365
9. Formula raw score (add 6, 7, 8).............. 5.98
    Average raw score of sample for (3) samples 5.71
    Average corrected grade level.............. 5-6th

Analyzed ........ Joseph A. B. Efionayi
Development of Data Collecting Instrument

A schedule consisting of 44 questions was constructed by the author to determine the amount of recall of nutrition principles on breakfasts that were taught through the newsletter. The final instrument of 30 questions was used on both the experimental and the control groups.

The second phase of the instrument consisted of 20 questions of "YES" or "NO" nature to determine the attitudes of the experimental group toward the newsletter.

In order to make meaningful the categorization of the low-income family groups, a third phase of the instrument was constructed for the collection of personal data of the homemakers participants in the experimental study.

Validity Test

The author realized that questionnaire was a basic tool of social science and that its value and usefulness depended not only on how skillfully it is used but on how well it is suited for its specific purpose and how flawlessly it is constructed. With a view to giving this instrument the appropriate validity, a group of judges was selected to make a critical review and judgment of
the content validity of the instrument. In order also that
the validity may receive a broader credence, the author
selected and made phone calls, and face to face contacts,
soliciting consents of experts from the fields of Home-
Economics, education, agricultural extension and graduate
students in the College of Agriculture and Home-Economics
to serve as judges.

A tentative questionnaire and a complete set of the
newsletters which effectiveness was being evaluated were
sent to each judge with a covering letter (appendix B). Their
comments and suggestions were implemented by the
author in order to make the questionnaire ready for field
testing as to determine its reliability.

Selection and Training
of Interviewers

Selection of interviewers was not a problem in this
study. From the rank and file of the nutrition aides in
Montgomery County, fifteen were selected to assist in
interviewing the participants. These aides were themselves
members of the community who had worked with the parti-
cipants for period of time and had developed the rapport
and confidence needed to make an interview a success.

A formal meeting was arranged to take place in Dayton
between the author and the aides who would be directly
involved in helping with interviewing the homemakers. At that meeting, an orientation session for the aides was held where the purpose of the study was explained and their major involvements as prospective interviewers were outlined. Questions, answers and comments were exchanged. The necessity for the aides being interested but not pushing the newsletter was stressed. An arrangement was made for a later date for training the aides in the technique of interviewing.

On a schedule data, an orientation and training session was held for interviewers. The purpose of the study, the necessity for being objective in recording responses, in being interested but not pushing the homemakers for answers were re-emphasized. The instrument was gone over question by question; comments about terminologies which the interviewers might use were carefully expressed. An interviewing game exercise was done by dividing the interviewers into mock groups of interviewers and homemakers. Each trainee was given the ample chance of playing the role of the homemaker and the interviewer alternately. Questions and answers were exchanged before the aides were sent out to conduct two interviews each.

Prior to their going out, the author had selected special groups of homemakers to be interviewed. Care was
exercised not to include, at this stage, any homemaker who had been included in the study. The interviewers were urged to take down comments made by the homemakers. After obtaining two interviews, the team returned. Each aide went over her instrument to catch any omission. The author reviewed each instrument and general comments were made on questions which had caused much concern.

This field exercise had dual usefulness. It gave the interviewers the opportunity to practise more on interviewing technique and the result was valuable as field testing data required for analysis in order to determine the reliability of the instrument.

Field Testing of Instrument -

The questionnaire was field tested with homemakers of low-income families in Montgomery County. Eighteen such homemakers were randomly picked from among those homemakers who were non-participants in the experiment. The reliability of this instrument was based on calculated reliability coefficient or the coefficient of internal consistency of the instrument.

The Spearman Brown Split-half reliability method, based on Odd-Even numbered items was applied to the responses. The odd and even scores were correlated by
computing between them the Pearson Product-Moment Correlation Coefficient. For the purpose of correcting this correlation for attenuation, the final correlation coefficient of the items on the instrument was obtained by the Spearman-Brown Formula as \( \frac{nR_{oe}}{1 + R_{oe}} \)

Where \( R_{tt} \) = the reliability of the complete original test.

\( R_{oe} \) = the reliability coefficient obtained by correlating the scores on the odd items with the scores on the even items.

\( n \) = the number of pairs of items in the table.

Determination of scoring Weights

In quantifying the data collected, it was quite convenient to adopt the Likert's arbitrary weighting method rather than the Standard-Score or the Sigma-deviate values. From studies made by Likert, it was noted that the arbitrary weighting method had resulting scores which correlate .99

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with scores based upon the sigma-deviate or standard score method. Arbitrary weightings were assigned for the alternate responses made by the participants to each statement: Strongly agree = 5; Agree = 4; Undecided = 3; Disagree = 2; Strongly disagree = 1.
The author had made this decision with the assumption that attitudes are normally distributed.

Item Analysis

In order to isolate and discard those items which were non-discriminating, an item analysis was compiled by using Anastasi Method. The difficulty and discriminating levels of each test item were calculated and the most difficult and non-discriminating items were discarded.

Thirty-three percent of the respondents who had the highest cognitive knowledge scores were matched with 33 percent of the respondents who had the lowest cognitive knowledge scores on the test on knowledge of nutrition in relation to better breakfasts.

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The instrument was revised and final schedule was designed. Thirty items were finally selected for the first part of the test to be given to the respondents in the sample. Other parts of the schedule consisted of:

(1) Six segments of questions to determine the sources of information about -
   (a) Daily happenings
   (b) Nutrition
   (c) Better Breakasts

(2) Statements and questions to determine the attitudes of the experimental group towards the newsletter as medium of information on better breakfasts.

(3) Personal data to re-emphasize the educational and income levels of the participants.

A specimen of final instrument is enclosed in appendix A.
CHAPTER 4

A DESCRIPTION OF THE CHARACTERISTICS OF ALL HOMEMAKER PARTICIPANTS

This chapter is concerned, primarily, with the exploration and analysis of personal characteristics and their relationship to the extent of cognitive learning. It also aimed at analyzing the attitude of the respondents towards the value of the home economics newsletter on better breakfasts. There were major aspects forming the basis of personal characteristics in this study:

(1) The level of income of respondents.
(2) The level of education of respondents.
(3) The age level of respondents.
(4) The family sizes of the respondents.

The data presented in the first part of this chapter reflect all the participants selected in the sample and not just those who were interviewed. The data were obtained from office record of the county agent.
**Environment of Participants**

The totality of the accessible population came from the urban area of Dayton township in Montgomery County. Daily experiences and exposures to local norms were fairly uniform among all members of the accessible population. The representative sample of 47.3 percent of the accessible population stratified and randomly selected was fairly spread across the geographical area in which this study was conducted.

**Formal Education of all Participants**

One-ninth of the participants had no more than four years of formal education and this number constituted 10.2 percent of the sample. Those who had twelve years and above of formal education constituted 2.4 percent of the total sample. About 45 percent of the participants had between nine and twelve years of formal education, thus forming the largest single group.

The next largest group was in the range of four to eight years of formal education, constituting 42.5 percent of the total participants. By years of formal schooling completed, 97.6 percent had 12 years or less of education as shown in Table 4.
TABLE 4

YEARS OF FORMAL EDUCATION OF ALL HOMEMAKERS PARTICIPANTS

<table>
<thead>
<tr>
<th>Years of Formal Education</th>
<th>Experimental</th>
<th></th>
<th>Control</th>
<th></th>
<th>Total</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NO</td>
<td>Percent</td>
<td>NO</td>
<td>Percent</td>
<td>NO</td>
<td>Percent</td>
</tr>
<tr>
<td>Under 4 Years</td>
<td>10</td>
<td>12.0</td>
<td>7</td>
<td>8.3</td>
<td>17</td>
<td>10.2</td>
</tr>
<tr>
<td>4 to 8 Years</td>
<td>31</td>
<td>37.4</td>
<td>35</td>
<td>41.6</td>
<td>66</td>
<td>42.5</td>
</tr>
<tr>
<td>9 to 12 Years</td>
<td>41</td>
<td>49.4</td>
<td>39</td>
<td>46.5</td>
<td>80</td>
<td>44.9</td>
</tr>
<tr>
<td>Above 12 Years</td>
<td>1</td>
<td>1.2</td>
<td>3</td>
<td>3.6</td>
<td>4</td>
<td>2.4</td>
</tr>
<tr>
<td>Total</td>
<td>83</td>
<td>100</td>
<td>84</td>
<td>100</td>
<td>167</td>
<td>100</td>
</tr>
</tbody>
</table>
Table 4 showed that the educational level of the experimental and control groups were generally distributed alike. The population was highly concentrated on levels of four years to twelve years of formal education in both cases. Not a single participant in the sample ever completed a college education.

**Formal Education by Family Income**

In each of the three major income categories, 50 percent of the total number of participants constituting each category had not more than eight years of formal education. Among the experimental group, participants with less than $2,000 yearly income constituted 28.5 percent of the homemakers in the group with education ranging between 9 and 11 years of formal schooling. Analysis showed that only 21.5 percent of the participants in the experimental group with income less than $2,000 had 12 years or more of formal education.

Within the $2,000 to $3,999 income bracket, thirty-two percent had nine to eleven years of formal education and 18 percent consisted of participants with high school or above level of education. Participants with $4,000 and above of yearly income had 36.3 percent of participants with 9 to 11 years of education and 14.8 percent with 12 years and above of formal schooling. See Table 5.
### TABLE 5

**YEARS OF FORMAL EDUCATION BY YEARLY FAMILY INCOME OF HOMEMAKER-PARTICIPANTS, EXPERIMENTAL GROUP**

<table>
<thead>
<tr>
<th>Years Formal Education</th>
<th>$1,999 and Below</th>
<th>$2,000 - $3,999</th>
<th>$4,000 and Above</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NO</td>
<td>Percent</td>
<td>NO</td>
<td>Percent</td>
</tr>
<tr>
<td>0-8 Yrs.</td>
<td>14</td>
<td>50.0</td>
<td>14</td>
<td>50.0</td>
</tr>
<tr>
<td>9-11 Yrs.</td>
<td>8</td>
<td>28.5</td>
<td>9</td>
<td>32.0</td>
</tr>
<tr>
<td>HS/1-3 Yrs. Col.</td>
<td>6</td>
<td>21.5</td>
<td>5</td>
<td>18.0</td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>100</td>
<td>28</td>
<td>100</td>
</tr>
</tbody>
</table>
Among the control group, the pattern of distribution of income levels among years of formal education was rather identical to the of the experimental group. Fifty-percent of the participants in each category of income group had not more than eight years of formal education. Among the participants with less than $2,000 yearly income, the population decreased with increase in number of years of formal education. This trend was also evidenced among those participants in the $4,000 and above yearly income bracket. See Table 6.

Distribution of Homemakers Among Income Levels

The three major income levels into which participants were categorized were further broken down into sub-categories in order to determine the distribution pattern between the experimental and control groups participants within a given category.

Analysis showed that the two groups of participants (experimental and control) were relatively identical in their distribution of income. See Table 7.

The data on Table 7 was compared in order to determine if there was an overall significant difference between the two groups. A chi square of 3.2 at .05 level
### TABLE 6

**YEARS OF FORMAL EDUCATION BY YEARLY FAMILY INCOME OF HOME MAKER PARTICIPANTS, CONTROL GROUP**

<table>
<thead>
<tr>
<th>Years of Formal Education</th>
<th>$1,999 and Below</th>
<th>$2,000 and Above</th>
<th>$4,000 and Above</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NO</td>
<td>Percent</td>
<td>NO</td>
<td>Percent</td>
</tr>
<tr>
<td>0-8 Years</td>
<td>14</td>
<td>50.0</td>
<td>14</td>
<td>50.0</td>
</tr>
<tr>
<td>9-11 Years</td>
<td>12</td>
<td>42.8</td>
<td>6</td>
<td>21.4</td>
</tr>
<tr>
<td>HS/and above</td>
<td>2</td>
<td>7.2</td>
<td>8</td>
<td>28.6</td>
</tr>
<tr>
<td>Total</td>
<td>28</td>
<td>100</td>
<td>28</td>
<td>100</td>
</tr>
</tbody>
</table>
### Table 7

**DISTRIBUTION OF HOMEMAKER PARTICIPANTS IN RELATION TO THEIR YEARLY INCOME**

<table>
<thead>
<tr>
<th>Income Levels</th>
<th>Experimental N = 83</th>
<th>Control N = 84</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below $1,000</td>
<td>11 13.2</td>
<td>6  7.1</td>
</tr>
<tr>
<td>$1,000</td>
<td>17 20.4</td>
<td>22  26.2</td>
</tr>
<tr>
<td>$1,999</td>
<td>13 15.6</td>
<td>15  17.8</td>
</tr>
<tr>
<td>$2,000</td>
<td>13 15.6</td>
<td>15  17.8</td>
</tr>
<tr>
<td>$2,999</td>
<td>15 18.0</td>
<td>13  15.4</td>
</tr>
<tr>
<td>$3,000</td>
<td>9 10.8</td>
<td>9 10.7</td>
</tr>
<tr>
<td>$3,999</td>
<td>9 10.8</td>
<td>9 10.7</td>
</tr>
<tr>
<td>$4,000</td>
<td>9 10.8</td>
<td>9 10.7</td>
</tr>
<tr>
<td>$4,999</td>
<td>9 10.8</td>
<td>9 10.7</td>
</tr>
<tr>
<td>$5,000</td>
<td>18 22.0</td>
<td>19 22.8</td>
</tr>
</tbody>
</table>

\[ \chi^2 \text{ value } = 3.2 \quad \text{d.f. } = 5 \quad \text{not Significant} \]

indicated that there was no significant difference between the experimental and the control group in their levels of income distribution. Under this category, therefore, the sample was homogenous.

Table 7 is graphically represented on the next page.
GRAPHICAL REPRESENTATION OF INCOME DISTRIBUTION

Keys:

--- Experimental
--- Control

Below $10000, $20000, $30000, $40000, $50000
Above

$1000, $1999, $2999, $3999, $4999, $5000

FIGURE 1.
Distribution of Homemakers by Age

The previous Table dealt with data collected from the office records of all those assigned to the experimental or control group. The remaining data reflects only those who were interviewed.

Age grouping of the participants was not considered when the study was designed. This characteristic was viewed as a possible factor that may jeopardise the result of the findings, so an analysis was completed. With a view to looking into the relative direction of the age group, the respondents were classified by age and the number and percentage of homemakers in each age group was determined as shown on Table 8.

The greatest number of homemakers were within 25 to 45 years of age and constituted a 63.3 percent of the entire respondents. Less than 10 percent were under 25 years of age and only 4.2 percent were above 65 years of age.

The distribution pattern of the age group within the experimental and the control groups and the significant result of chi square of 18.49 made us reject the idea that there was no significant difference in participants age distribution. We can not therefore rule out the fact that age may have had effect on the cognitive knowledge scores of the groups.
## TABLE 8

DISTRIBUTION OF HOMEMAKERS PARTICIPANTS BY AGE

<table>
<thead>
<tr>
<th>Age</th>
<th>Experimental NO</th>
<th>Experimental Percent</th>
<th>Control NO</th>
<th>Control Percent</th>
<th>Total NO</th>
<th>Total Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 25 years</td>
<td>4</td>
<td>6.6</td>
<td>7</td>
<td>11.6</td>
<td>11</td>
<td>9.1</td>
</tr>
<tr>
<td>25 - 35 years</td>
<td>14</td>
<td>23.4</td>
<td>24</td>
<td>40.0</td>
<td>38</td>
<td>31.7</td>
</tr>
<tr>
<td>36 - 45 years</td>
<td>22</td>
<td>36.6</td>
<td>16</td>
<td>26.6</td>
<td>38</td>
<td>31.7</td>
</tr>
<tr>
<td>46 - 55 years</td>
<td>9</td>
<td>15.0</td>
<td>5</td>
<td>8.4</td>
<td>14</td>
<td>11.7</td>
</tr>
<tr>
<td>56 - 65 years</td>
<td>9</td>
<td>15.0</td>
<td>5</td>
<td>8.4</td>
<td>14</td>
<td>11.7</td>
</tr>
<tr>
<td>Above 65 years</td>
<td>2</td>
<td>3.4</td>
<td>3</td>
<td>5.0</td>
<td>5</td>
<td>4.1</td>
</tr>
</tbody>
</table>

60 100 60 100 120 100

\[ \chi^2 = 18.48 \quad \text{d.f.} = 5 \quad \text{Significant} \]
Participants Sources of Income

From personal data collected on the respondents through the questionnaire, a table of distribution was made. Among the experimental group, 41.7 percent of the 60 respondents received their income through wages and salaries.

The other largest group was from welfare with 35 percent of the respondents indicating they had their income from welfare payments. In this group, only 1.7 percent of the members were on pensions. See Table 9.

Table 9 also showed that among the control group, respondents on welfare payments formed the single largest group with 45 percent of the respondents indicating that they received their income through welfare payments. Thirty-six percent also indicated that they received their income through wages and salaries.

A statistical chi square test was applied to the data on Table 9 and result showed a chi square of 5.88 which was not significant at .05 level. Therefore there was no significant difference relatively in sources of income of the low-income families of Dayton, Ohio.
TABLE 9

DISTRIBUTION OF RESPONDENTS IN RELATION TO THEIR SOURCES OF INCOME

<table>
<thead>
<tr>
<th>Sources of Income</th>
<th>Experimental N = 60</th>
<th></th>
<th>Control N = 60</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NO</td>
<td>Percent</td>
<td>NO</td>
<td>Percent</td>
</tr>
<tr>
<td>Wages and Salaries</td>
<td>25</td>
<td>41.7</td>
<td>22</td>
<td>36.7</td>
</tr>
<tr>
<td>Social Security</td>
<td>8</td>
<td>13.3</td>
<td>7</td>
<td>11.7</td>
</tr>
<tr>
<td>Welfare Payments</td>
<td>21</td>
<td>35.0</td>
<td>27</td>
<td>45.0</td>
</tr>
<tr>
<td>Veteran Benefits</td>
<td>2</td>
<td>3.3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pensions</td>
<td>1</td>
<td>1.7</td>
<td>3</td>
<td>5.0</td>
</tr>
<tr>
<td>Other Supports</td>
<td>3</td>
<td>5.0</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>100</td>
<td>60</td>
<td>100</td>
</tr>
</tbody>
</table>

\[ \chi^2 = 5.88 \]

d.f. = 5

not significant
Number of Person in Household
By Income Level (Control Group)

Household were arranged according to number of persons per family on a given yearly income. The one to three persons households made up a total of 18 out of 60 families and this represented 30 percent of the respondents in the control group. See Table 10.

Of these 18 families, 44.4 percent was with income under $2,000 and 44.4 percent with income $2,000 to $3,999. Only 11.2 percent of the household with one to three members in the family was with income above $4,000.

Household with 4 to six members in the family constituted a 56.6 percent of the total control group. The distribution showed 38.2 percent was with income under $2,000; thirty-two percent with income between $2,000 and $3,999 and 29.5 percent with income above $4,000.

There were 8 households with 7 to 10 members in the family which represented 13.4 percent of the respondents in the control group. Of these, 25 percent was with income below $2,000, thirty-seven percent between $2,000 and $3,999 and 37.7 percent above $4,000. No household had a family larger than 10 members and only 13.4 percent of all the levels ever had above 6 persons in the family.
TABLE 10

DISTRIBUTION OF HOMEMAKERS BY NUMBER OF PERSONS IN THE FAMILY IN RELATION TO THEIR YEARLY INCOME.
(CONTROL GROUP)

<table>
<thead>
<tr>
<th>Income Levels</th>
<th>Number in Household</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1-3</td>
</tr>
<tr>
<td>Below</td>
<td></td>
</tr>
<tr>
<td>$2,000</td>
<td>8</td>
</tr>
<tr>
<td>$3,000-$3,999</td>
<td>8</td>
</tr>
<tr>
<td>Above</td>
<td></td>
</tr>
<tr>
<td>$4,000</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>18</td>
</tr>
</tbody>
</table>
Number of Persons in Household by Income Level (Experimental Group)

The households constituting the experimental group were similarly arranged to the control group. Thirty-three percent of the respondents had 1-3 members in the family. Of this number, 75 percent had yearly income of less than $2,000 and 25 percent with income between $2,000 and $3,999 a year. There was no family with yearly income above $4,000 that had less than four members in the family.

The household with 4-6 persons in the family consisted of 40 percent of the respondents in the experimental group as compared to 56.6 percent in the control group. Of the 40 percent in the 4-6 members households, 29.2 percent were of income below $2,000 and 29.2 percent were of income above $4,000.

Twenty-five percent of the respondents in the Experimental group had 7-10 persons in the family. The percentage distribution of this 25 percent rose with an increase in income. Forty-seven percent were above $4,000 and 40 percent were within the $2,000 to $3,999 income bracket. Thirteen percent was with income below $2,000. See Table 11.
TABLE 11

DISTRIBUTION OF HOMEMAKERS BY NUMBER OF PERSONS IN THE FAMILY
IN RELATION TO THEIR YEARLY INCOME
EXPERIMENTAL GROUP

<table>
<thead>
<tr>
<th>Levels of Income</th>
<th>1-3</th>
<th>Per cent</th>
<th>4-6</th>
<th>Per cent</th>
<th>7-10</th>
<th>Per cent</th>
<th>Above</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below $2,000</td>
<td>15</td>
<td>75.0</td>
<td>7</td>
<td>29.2</td>
<td>2</td>
<td>13.3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>$2,000 - $3,999</td>
<td>5</td>
<td>25.0</td>
<td>10</td>
<td>41.6</td>
<td>6</td>
<td>40.0</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td>Above $4,000</td>
<td>-</td>
<td>-</td>
<td>7</td>
<td>29.2</td>
<td>7</td>
<td>46.7</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>100</td>
<td>24</td>
<td>100</td>
<td>15</td>
<td>100</td>
<td>1</td>
<td>100</td>
</tr>
</tbody>
</table>
Among the total respondents in the experimental group, only 1.7 percent of the households had more than 10 persons in their families and with income between $2,000 and $3,999.

In order to determine the relative disparity in the income level of the homemakers, the per capita income was calculated, based on the number of people in the household. See Table 12.

Table 12 showed the Upper income groups with a per capita of $700 per year, the medium income group with $600 per year and the lower income group with $400 per year.

TABLE 12

LEVELS OF PER CAPITA INCOME, BASED ON NUMBER OF PERSON PER FAMILY.

<table>
<thead>
<tr>
<th>Income Levels</th>
<th>Per Capita Income by Household</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1-3</td>
</tr>
<tr>
<td>$2,000 and Below</td>
<td>.666</td>
</tr>
<tr>
<td>$2,000-$3,999</td>
<td>$1000</td>
</tr>
<tr>
<td>$4,000 and Above</td>
<td>$1000</td>
</tr>
</tbody>
</table>
Frequency of Participants Exposures
to Various Sources of Information
on Nutrition

The impact of the various sources of information was examined to determine the amount of influence this would have had on the cognitive knowledge scores of the respondents.

In the question regarding the sources of nutrition information, the interviewers were instructed to circle the frequencies, (daily, weekly, monthly, seldom, never) with which the respondents perceived having received information on nutrition from a list of available sources. The percentages of frequencies of each group to the maximum frequencies were calculated and tabulated as shown in Table 13.

Table 13 showed that the highest impact on nutrition information was from the nutrition aides. In 93 percent of the maximum exposure to sources of information, the experimental group perceived the nutrition aides as sources of their information on nutrition while the control group showed 91.6 percent. The respondents of both groups perceived the television as the next regular source of nutrition information. The two groups indicated that in 86 percent
TABLE 13

FREQUENCY OF EXPOSURE TO VARIOUS SOURCES OF NUTRITION INFORMATION

<table>
<thead>
<tr>
<th>Sources of Information</th>
<th>Rank Order in Percentages</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Percent</td>
<td>Rank</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Control</td>
<td>Rank</td>
</tr>
<tr>
<td>Nutrition aides</td>
<td>93.0</td>
<td>1</td>
<td>91.6</td>
</tr>
<tr>
<td>Television</td>
<td>85.0</td>
<td>2</td>
<td>86.6</td>
</tr>
<tr>
<td>Radio</td>
<td>75.0</td>
<td>3</td>
<td>61.6</td>
</tr>
<tr>
<td>Newspapers</td>
<td>73.3</td>
<td>4</td>
<td>75.0</td>
</tr>
<tr>
<td>Store Adverts.</td>
<td>71.6</td>
<td>5</td>
<td>75.0</td>
</tr>
<tr>
<td>Cookbooks</td>
<td>70.0</td>
<td>6</td>
<td>71.6</td>
</tr>
<tr>
<td>Relatives</td>
<td>66.0</td>
<td>7.5</td>
<td>65.0</td>
</tr>
<tr>
<td>Neighbors</td>
<td>66</td>
<td>7.5</td>
<td>60.0</td>
</tr>
<tr>
<td>Doctors</td>
<td>56.6</td>
<td>9</td>
<td>40.0</td>
</tr>
<tr>
<td>Newsletters</td>
<td>55.0</td>
<td>10</td>
<td>28.6</td>
</tr>
<tr>
<td>Magazines</td>
<td>50.2</td>
<td>11</td>
<td>55.0</td>
</tr>
<tr>
<td>Store Owners</td>
<td>30.0</td>
<td>12</td>
<td>15.0</td>
</tr>
<tr>
<td>Welfare workers</td>
<td>23.6</td>
<td>13</td>
<td>38.9</td>
</tr>
<tr>
<td>School Teachers</td>
<td>15.0</td>
<td>14</td>
<td>18.5</td>
</tr>
</tbody>
</table>

RHO Rank-Order Correlation = .91 d.f. = 13 significant
of their time, they received nutrition information through the television. On the rank order, radio and newspaper came third as major sources of nutrition information. Seventy-five percent of the experimental group ranked the radio third while 75 percent of the control group ranked the newspaper or magazine third.

This finding is not, however in agreement with Spindler report that the young women interviewed made only occasional mention of radio and newspaper.¹ Medved study however showed radio impact of 80 percent ² and this is quite close to the result of this study.

The cookbooks came fifth and sixth in the rank order. This is close to Young's study when the homemakers ranked cookbooks as third, but not in agreement with Lohse who ranked cookbook as first in her study of the Ohio homemakers.³

In order to determine precisely if there was correlation in the rank order exposure of experimental

¹ Evelyn B. Spindler, Ibid.
² Eva Medved, Ibid.
³ Jennifer R. Lohse, Ibid.
and control group to the various sources of information on nutrition, Charles Spearman RH0 4 was applied in the procedure for computing correlation of the rank-order data. This resulted in .91 correlation. There were equal exposures of groups to sources of nutrition information.

Frequency of Participants Exposures to Various Sources of Information on Better Breakfasts

On the question regarding the sources of information on better breakfasts, both experimental and control groups ranked nutrition aides as the highest frequency source of information. Irrespective of the fact that every homemaker in the experimental group was in the mailing list for the newsletter on better breakfasts, this was ranked second by the experimental group but the control group seldom mentioned it. In the latter case, this result was obvious as they were not included in the mailing list.

---

The ten percent index therefore could be a result of contact with other flyers on nutrition. A list of the various sources which the participants perceived as channels of information on better breakfasts is shown in Table 14.

A RH0 Rank-Order correlation was computed on the weighted frequencies with which both groups indicated they were exposed to sources of information on better breakfasts. The result showed a correlation of .66. This low correlation could have occurred as a result of total exclusion of the control group from receiving the newsletter on better breakfasts.

The result, however, was a sufficient basis to conclude that both groups exposures to different sources of information on better breakfasts was uniformly significant.

Homemakers Exposures to the Newsletters

The data collected revealed that not all those participants in the mailing list for the newsletters recalled having received the complete set of the newsletter that were mailed out to them. It was therefore necessary to find out the average number of newsletters
<table>
<thead>
<tr>
<th>Sources of Information</th>
<th>Experimental Percent</th>
<th>Experimental Rank</th>
<th>Control Percent</th>
<th>Control Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutrition aides</td>
<td>89.9</td>
<td>1</td>
<td>83.3</td>
<td>1</td>
</tr>
<tr>
<td>Newsletters</td>
<td>85.0</td>
<td>2</td>
<td>16.6</td>
<td>11.5</td>
</tr>
<tr>
<td>Newspapers</td>
<td>50.0</td>
<td>3.3</td>
<td>45.0</td>
<td>5.5</td>
</tr>
<tr>
<td>Television</td>
<td>50.0</td>
<td>3.3</td>
<td>55.0</td>
<td>2</td>
</tr>
<tr>
<td>Neighbors</td>
<td>50.0</td>
<td>3.3</td>
<td>36.6</td>
<td>8.3</td>
</tr>
<tr>
<td>Cookbooks</td>
<td>48.3</td>
<td>6</td>
<td>48.3</td>
<td>3</td>
</tr>
<tr>
<td>Relatives</td>
<td>46.6</td>
<td>7.5</td>
<td>46.6</td>
<td>4</td>
</tr>
<tr>
<td>Doctors</td>
<td>46.6</td>
<td>7.5</td>
<td>45.0</td>
<td>5.5</td>
</tr>
<tr>
<td>Store Advertisement</td>
<td>41.6</td>
<td>9</td>
<td>36.6</td>
<td>8.3</td>
</tr>
<tr>
<td>Radio</td>
<td>40.0</td>
<td>10</td>
<td>36.6</td>
<td>8.3</td>
</tr>
<tr>
<td>Magazines</td>
<td>35.1</td>
<td>11</td>
<td>40.0</td>
<td>7</td>
</tr>
<tr>
<td>Welfare Workers</td>
<td>20.0</td>
<td>12</td>
<td>21.6</td>
<td>13</td>
</tr>
<tr>
<td>School Teachers</td>
<td>16.6</td>
<td>13</td>
<td>16.6</td>
<td>11.5</td>
</tr>
<tr>
<td>Stores Owners</td>
<td>11.6</td>
<td>14</td>
<td>10.0</td>
<td>14</td>
</tr>
</tbody>
</table>

\[ \text{RHO.} = .66 \quad \text{d.f.} = 13 \quad \text{Significant} \]
received and average number read by each participant
in order to determine the impact of the newsletter on
groups being compared. A analysis of the education level
groups is shown in Table 15.

**TABLE 15**

NUMBER OF THE NEWSLETTERS RECEIVED AND READ BY
THE EXPERIMENTAL GROUP BY EDUCATION LEVEL

Average Exposure = 8

<table>
<thead>
<tr>
<th>Educational Levels</th>
<th>NO Received</th>
<th>Percent Received</th>
<th>Read</th>
<th>Percent Read</th>
</tr>
</thead>
<tbody>
<tr>
<td>9th Grade and Above</td>
<td>31</td>
<td>6.2</td>
<td>77.5</td>
<td>5.5</td>
</tr>
<tr>
<td>8th Grade and Below</td>
<td>29</td>
<td>6.4</td>
<td>80.0</td>
<td>5.5</td>
</tr>
</tbody>
</table>

Approximately 80 percent of the newsletters were
seen as being received by the homemakers. Of those
received, the homemakers indicated they read nearly 90
percent. Table 15 showed that the two groups at different
levels of education had equal exposure to the news-
letter on better breakfasts.
CHAPTER 5

A STATISTICAL ANALYSIS OF DATA ON COGNITIVE KNOWLEDGE SCORES AND REACTIONS TO ATTITUDBINAL STATEMENTS ABOUT THE NEWSLETTERS

The data provided by the respondents through the questionnaire were coded and punched on data processing cards. Sorting of data pertaining to the description of the respondents and analyzing of the major part of the study were done on data processing equipment. The elected statistical tests for this study were the contingency chi square, t-test and F-test, percentages, frequency distributions and Spearman Rank-Order correlation.

The process of decision making made it desirable to state the level of significance prior to collecting of field data. The significance level set for this study was .05 level. At this level, the decision to accept or to reject the null hypothesis was made; that is, on the event of the observed value being equal to or less than the established .05 level of significance, the null hypothesis was rejected and the alternative research hypothesis was accepted.
Statistical Analysis of Cognitive Knowledge Scores

In order to make an accurate statistical analysis of the cognitive knowledge scores of the respondents, an arbitrary weight was assigned to the respondents' cognitive knowledge scores. It was necessary to test the null hypothesis \( (H_0) \) which stated that there will be no significant difference in the cognitive knowledge scores of experimental and control groups on a test on principles of better breakfasts.

An attempt was made to compare statistically the mean cognitive knowledge scores of the experimental group that received the newsletter on better breakfasts with the control group that did not receive the newsletter on better breakfasts. A t-test was applied in order to determine whether to accept or reject the null hypothesis.

Comparison of Cognitive Knowledge Scores of Experimental and Control Groups

The two major groups, experimental and control, were compared on cognitive knowledge scores to determine if those of who received the newsletter would be different from those of who did not, in their performances on a
cognitive knowledge test on principles of better breakfasts. Table 16 showed the comparison of the groups' cognitive knowledge mean scores. Table 16 revealed a significant difference between the cognitive knowledge mean scores of the experimental group and the control group at .05 level of significance.

**TABLE 16**

**COMPARISON OF EXPERIMENTAL WITH CONTROL GROUP IN THEIR MEAN COGNITIVE KNOWLEDGE SCORES.**

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean Score</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>60</td>
<td>23.3</td>
<td>2.29</td>
</tr>
<tr>
<td>Control</td>
<td>60</td>
<td>20.9</td>
<td>3.06</td>
</tr>
</tbody>
</table>

\[ t-value = 4.13 \quad d.f. = 118 \quad \text{Significant} \]

Based upon the result on Table 16, we failed to accept the null hypothesis \( H_0 \) which stated that there would be no significant difference in the cognitive knowledge scores between the experimental and the control
groups on a test on principles of better breakfasts taught through the medium of the home economics newsletters. We, therefore, accepted the research hypothesis \( H_1 \) that there would be a significant difference in the cognitive knowledge scores between the experimental and the control groups on a test on principles of better breakfasts taught through the medium of the home economics newsletter. We could then infer that the experimental group had, at the end of the program, gained a higher level of knowledge of better breakfasts as a result of the use of the newsletter.

**Effect of Education on Cognitive Knowledge Scores of Respondents**

For the purpose of analysis of the respondents' level of formal education and how it relates to their cognitive knowledge scores on better breakfasts, respondents were sorted into three major groups according to their income levels.

These groups were designated for this test as the Upper levels (\$4,000 to \$5,000), the Medium level, (\$2,000 to \$3,999) and the Lower income level, (less than \$2,000). Each level of income was then subcategorized into two educational levels, designated as high education and low education.
A factorial design with unequal cell frequency was adopted for the programming. At this stage, the three levels of income were analyzed separately. The income level was held constant for each level of income within every single income group in order to determine - the effect of education on cognitive knowledge scores and to determine if there was difference between experimental and control groups within the same income bracket. An arbitrary weight was assigned to the respondents individual scores.

Upper Income Group

Based upon the result as shown in Table 17, an F-value of .072 indicated there was no significant difference in the cognitive knowledge scores of people in the upper income level who are at varied levels of education. We would, therefore, infer that level of education does not make for any significant difference in cognitive knowledge scores among people of high income levels. Therefore, we accept the null hypothesis ($H_0$) in the case of this group that there is no significant difference in the cognitive knowledge scores of different educational levels groups at higher income bracket.
We failed to accept the research hypothesis \((H_4)\) that there will be significant difference between groups, at different levels of education, in the cognitive knowledge scores on a test on principles of better breakfasts.

### TABLE 17

**COMPARISON OF THE COGNITIVE KNOWLEDGE SCORES OF UPPER INCOME RESPONDENTS IN RELATION TO THEIR EDUCATIONAL LEVELS**

<table>
<thead>
<tr>
<th>Education Levels</th>
<th>N</th>
<th>Experimental</th>
<th>N</th>
<th>Control</th>
<th>d.f.</th>
</tr>
</thead>
<tbody>
<tr>
<td>9th grade and above</td>
<td>7</td>
<td>24.29</td>
<td>8</td>
<td>22.13</td>
<td>1</td>
</tr>
<tr>
<td>8th grade and below</td>
<td>7</td>
<td>24.57</td>
<td>7</td>
<td>22.43</td>
<td>1</td>
</tr>
</tbody>
</table>

Difference in education levels \(F = .07\) not significant

When the experimental group was compared with the control group within the same upper income level, there was a significant difference in their cognitive knowledge scores. A difference in mean scores of 2 points indicated an \(F\)-value of 3.84 which is significant at .05.
The experimental group learned more than the control group in the higher income category. See Table 18.

**TABLE 18**

**COMPARISON OF THE COGNITIVE KNOWLEDGE SCORES OF EXPERIMENTAL AND CONTROL GROUPS IN UPPER INCOME LEVELS**

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>Mean Score</th>
<th>d.f.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>14</td>
<td>24.29</td>
<td>1</td>
</tr>
<tr>
<td>Control</td>
<td>15</td>
<td>22.19</td>
<td></td>
</tr>
</tbody>
</table>

*F = 3.84  d.f. = 1  Significant*

Medium Income Group

Groups of the Medium income ($2,000 to $3,999) were compared to test the null hypothesis ($H_0$) that there will be no significant difference in the cognitive knowledge scores between groups, at different levels of education, on a test on principles of better breakfast taught through the newsletter. See Table 19.
<table>
<thead>
<tr>
<th>Education Level</th>
<th>N</th>
<th>Experimental</th>
<th>N</th>
<th>Control</th>
<th>d.f.</th>
</tr>
</thead>
<tbody>
<tr>
<td>9th grade and above</td>
<td>13</td>
<td>24.38</td>
<td>13</td>
<td>21.38</td>
<td>1</td>
</tr>
<tr>
<td>8th grade and below</td>
<td>9</td>
<td>23.33</td>
<td>9</td>
<td>20.89</td>
<td>1</td>
</tr>
</tbody>
</table>

F-value = 0.69

not significant
Table 19 showed an F-value of 0.69. Based on this result, there was no significant difference between two groups of different educational level with $2,000 to $3,999 yearly income. We, therefore accept the null hypothesis ($H_0$) that there will be no significant difference in the cognitive knowledge scores of groups at varied levels of education. By the same token, we fail to accept the research hypothesis ($H_4$) that there will be significant difference in the cognitive knowledge scores of groups at varied levels of education. We infer, therefore, that education is not a discriminating factor in learning of new ideas within the Medium income group of ($2,000 to $3,999).

When the experimental group was compared with the control group within the same medium income level, there was a significant difference in their cognitive knowledge scores. A difference in the mean scores of 3 points indicated an F-value of 9.26 which was significant at .05 level. The experimental group learned more than the control group in the medium income category. See Table 20.
### TABLE 20

**COMPARISON OF THE COGNITIVE KNOWLEDGE SCORES OF EXPERIMENTAL AND CONTROL GROUPS IN MEDIUM INCOME LEVELS.**

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>Mean Scores</th>
<th>d.f.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>22</td>
<td>24.38</td>
<td>1</td>
</tr>
<tr>
<td>Control</td>
<td>22</td>
<td>21.38</td>
<td></td>
</tr>
</tbody>
</table>

Difference between experimental and control groups F-value = 9.26 significant at .05 level.
Lower Income Group

The two educational levels among the lower income groups were compared. An F-value of 7.02 was an indication that there was a significant difference among the lower income group at varied levels of education.

We failed to accept the null hypothesis \( (H_0) \) that there will be no significant difference in the cognitive knowledge scores between different levels of education, on a test on better breakfasts. At the same time, we accepted the research hypothesis \( (H_4) \) that there will be significant difference in the cognitive knowledge scores between different levels of education, on a test on better breakfasts. See Table 21.

Those homemakers with less education scored significantly higher than those with a higher level of education among the low-income families.

The results of these preceding analyses are in agreement with what Young et al. (1956) found during a survey of urban areas of Rochester and Syracuse. Young in her survey found that when income and educational influence were segregated by two-way tabulation for any given measure of nutritional knowledge, education was shown to be the important factor. See chapter 2 of this thesis.
TABLE 21

COMPARISON OF THE COGNITIVE KNOWLEDGE SCORES OF LOWER INCOME RESPONDENTS IN RELATION TO THEIR EDUCATIONAL LEVELS

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>Experimental</th>
<th>N</th>
<th>Control</th>
<th>d.f.</th>
</tr>
</thead>
<tbody>
<tr>
<td>9th grade and Above</td>
<td>11</td>
<td>18.64</td>
<td>12</td>
<td>20.50</td>
<td>1</td>
</tr>
<tr>
<td>8th grade and Below</td>
<td>13</td>
<td>21.00</td>
<td>11</td>
<td>23.09</td>
<td>1</td>
</tr>
</tbody>
</table>

F-value = 7.02 Significant
The experimental group was compared with the control group. There was a significant difference in their cognitive knowledge scores as shown in Table 22. The control group had a higher score difference of 1.86 points.

TABLE 22

COMPARISON OF THE COGNITIVE KNOWLEDGE SCORES OF EXPERIMENTAL AND CONTROL GROUPS IN LOWER INCOME LEVELS.

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>Mean Score</th>
<th>d.f.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>24</td>
<td>18.64</td>
<td>1</td>
</tr>
<tr>
<td>Control</td>
<td>23</td>
<td>20.50</td>
<td></td>
</tr>
</tbody>
</table>

F-value = 4.49 d.f. = 1 Significant
Effect of Level of income on Cognitive Knowledge Scores of Respondents with Higher Level of Education

In order to determine the effect of level of income on the cognitive knowledge scores of participants, the 60 participants in the experimental group were studied. The respondents who had 9 years and above of formal education were sorted out and classified under three categories.

(1) Upper income of $4,000 to $5,000 with educational level of 9th grade and above.
(2) Medium income of $2,000 to $3,999 with educational level of 9th grade and above.
(3) Lower income of $1,999 and below with educational level of 9th grade and above.

The scores on the test on principles of better breakfasts for each income category were given arbitrary weighting and comparisons were made between every two categories:

(1) Between Upper income level and Medium income level.
(2) Between Upper income level and Lower income level.
It was necessary to keep the level of education constant among the three groups and hence a constant level of education was adopted. A t-test was applied in order to determine whether to reject or accept at .05 level of significance the null hypothesis \((H_0)\) that there will be no significant difference in the cognitive knowledge scores among people of different income levels on a test on principles of better breakfasts.

Comparison of Upper with Medium income Group

The three categories of income levels were compared on the basis of their mean cognitive knowledge scores. The Upper income group was compared with the Medium income group (\(\$4,000\) to \(\$5,000\) with \(\$2,000\) to \(\$3,999\)). The \(t\)-value of 0.07 for the means difference of the cognitive knowledge scores of these two groups was not significant at .05 level as shown in Table 23. Therefore, it would imply that levels of income were not factors in bringing about differences in the cognitive knowledge scores of individuals. Based upon this result, we failed to reject the null hypothesis \((H_0)\) that there will be no significant difference in the cognitive knowledge scores between groups, at varied levels of income on a test on principles of better
TABLE 23

COMPARISON OF THE MEAN COGNITIVE KNOWLEDGE SCORES OF THE UPPER AND THE MEDIUM INCOME GROUPS AT HIGH LEVEL OF EDUCATION

<table>
<thead>
<tr>
<th>Income Groups</th>
<th>N</th>
<th>Mean Scores</th>
<th>Standard Deviations</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Income</td>
<td>7</td>
<td>24.3</td>
<td>3.0</td>
</tr>
<tr>
<td>Medium Income</td>
<td>13</td>
<td>24.4</td>
<td>3.1</td>
</tr>
</tbody>
</table>

\[ t-value = 0.07 \quad d.f. = 18 \quad \text{not significant} \]
breakfasts. By the same token, we cannot accept the research hypothesis \( \text{H}_2 \) that there will be significant difference in the cognitive knowledge scores between groups, at different levels of income, on a test on principles of better breakfasts taught through the medium of the newsletter.

Comparison of Upper Income with Lower income Group -

The upper income group and the lower income group (\$4,000 to \$5,000 and \$2,000 to \$3,999) were compared. The \( t \)-value of 0.75 for the difference of the means scores of these groups was not significant at the 0.05 level of significance. Based on this result, we can infer therefore, that levels of income is not a factor in acquiring cognitive knowledge over a short period of time. We should therefore accept the null hypothesis \( \text{H}_0 \) that there will be no significant difference in the cognitive knowledge scores of groups at varied levels of income. We will then reject the research hypothesis \( \text{H}_2 \) that there will be significant difference in the cognitive knowledge scores of groups at varied levels of income. See Table 24.
TABLE 24

COMPARISON OF HIGH WITH LOWER INCOME GROUP IN MEAN COGNITIVE KNOWLEDGE SCORES. - ALL AT HIGH LEVEL OF EDUCATION

<table>
<thead>
<tr>
<th>Income Group</th>
<th>N</th>
<th>Mean Scores</th>
<th>Standard Deviations</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Income</td>
<td>7</td>
<td>24.3</td>
<td>3.0</td>
</tr>
<tr>
<td>Lower Income</td>
<td>11</td>
<td>23.1</td>
<td>3.2</td>
</tr>
</tbody>
</table>

\[ t-value = 0.75 \]
\[ d.f. = 15 \]
\[ not \ significant \]
Effect of Level of Income On Cognitive Knowledge Scores of Respondents with Lower Level of Education

In order to determine the effect of level of income on the cognitive knowledge scores of participants at lower level of education, the respondents who had formal education of 8 years or below were sorted out and classified under three categories.

(1) Upper income level of $4,000 to $5,000 with an educational level of 8th grade or below.
(2) Medium income of $2,000 to $3,999 with an educational level of 8th grade or below.
(3) Lower income level of $1,999 and below with an educational level of 8th grade or below.

The scores of the 27 respondents in the experimental group were given arbitrary weighting and comparisons were made between every two groups in the income categories.

(a) Between Upper income level and Medium income level.
(b) Between Upper income level and Lower income level.
A lower level of education was kept constant among the three groups. A t-test was applied in order to determine whether to reject or accept at .05 level of significance the null hypothesis that there will be no significant difference in the cognitive knowledge scores among people of different income levels on a test on principles of better breakfasts.

Comparison of Upper income with Medium income Group

The mean cognitive knowledge scores of the Upper income group ($4,000 to $5,000) was compared with the means cognitive knowledge scores of the Medium income group ($2,000 to $3,999). The t-test value of 0.76 for the means difference of the cognitive knowledge scores of these two groups was not significant at .05 level. See Table 25.

Based upon this result, we failed to reject the null hypothesis ($H_0$) that there will be no significant difference in the cognitive knowledge mean scores between lower educated groups, at varied levels of income, on a test on principles of better breakfasts. We then failed to accept the research hypothesis ($H_2$) that there will be significant difference in the
TABLE 25

COMPARISON OF THE MEAN COGNITIVE KNOWLEDGE SCORES OF THE UPPER AND THE MEDIUM INCOME GROUPS AT LOWER LEVEL OF EDUCATION

<table>
<thead>
<tr>
<th>Income Groups</th>
<th>N</th>
<th>Mean Scores</th>
<th>Standard Deviations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Income</td>
<td>7</td>
<td>24.57</td>
<td>2.7</td>
</tr>
<tr>
<td>Medium Income</td>
<td>9</td>
<td>23.33</td>
<td>3.3</td>
</tr>
</tbody>
</table>

\[ t\text{-value} = 0.76 \quad \text{d.f.} = 14 \quad \text{not significant} \]
cognitive knowledge scores between groups, at different levels of income, on a test on principles of better breakfasts taught through the medium of the newsletter.

Comparison of Upper Income Group with the Lower Income Group

The mean cognitive knowledge scores of the Upper income group was compared with the mean cognitive knowledge scores of the lower income group. The t-test value of 2.52 for the means difference of the cognitive knowledge scores of these two groups was not significant at .05 level. See Table 26.

### TABLE 26

**COMPARISON OF UPPER AND LOWER INCOME GROUPS IN THEIR MEAN COGNITIVE KNOWLEDGE SCORES -ALL AT LOWER LEVEL OF EDUCATION**

<table>
<thead>
<tr>
<th>Income Groups</th>
<th>N</th>
<th>Mean Scores</th>
<th>Standard Deviations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Income</td>
<td>7</td>
<td>24.57</td>
<td>2.67</td>
</tr>
<tr>
<td>Lower Income</td>
<td>11</td>
<td>20.81</td>
<td>3.04</td>
</tr>
</tbody>
</table>

\[ t\text{-value} = 2.52 \quad \text{d.f.} = 16 \quad \text{Significant} \]
Based upon the result of the t-test as shown in Table 26, we failed to accept the null hypothesis ($H_0$) that there will be no significant difference in the cognitive knowledge scores of lower education group at varied levels of income. The data tend to support the research hypothesis ($H_2$) that there will be a significant difference in the cognitive knowledge scores of lower education groups, at varied levels of income, on a test on the principles of better breakfasts taught through the medium of the newsletter. The upper income group had a means difference score of 3.76 points above the lower income group.

**Descriptive and Statistical Analysis of Attitudes About the Newsletter**

The schedule on attitudes was constructed exclusively for the experimental group in this study. The section of the schedule dealing with attitudes was divided into two parts. The first part required that the respondents tell how they felt about each statement by showing the extent to which they agreed. The second part required that the respondents answer YES or NO in order to determine how
Attitudes About the Newsletter

Reflecting the extent of Agreement

Participants were given the following semantic differentials: Strongly agree; Agree; Undecided; Disagree; Strongly disagree. These alternate answers were weighted as 5, 4, 3, 2, 1 respectively. The participants were instructed to circle the single answer in each given alternative as they best perceived it to be the honest evaluation of the newsletter they read.

The seven items in the first half of the schedule on attitude statements appeared in Appendix A, as questions 5 - 11. The schedule was constructed so the items 5, 7, 8, and 10 needed positive directions to make them favorable. Items 9 and 11 required negative directions to make them favorable, thus, in the latter case, answers like disagree indicated favorable attitude towards such items in the interview schedule. Item 6 was a non-directional statement. It was intended to get the homemakers opinion about the standard of production of the newsletter.

In order to make descriptive analysis of the first half of the schedule on attitudinal statements, items
on the schedule were given designating symbols \((A_5, A_6, A_7, A_8, \ldots, A_{11})\) and examined individually and independently.

For descriptive purposes, the weighted arbitrary value were categorized into favorable, undecided and non-favorable. On the semantic differential scale, 5th and 4th were merged into favorable group, 2nd and 1st into non-favorable and 3rd undecided.

Based on this categorization, Table 27 was completed to reflect the frequency distribution of the participants reacting to the attitudinal statements.

Participants were asked to react to the statement: "More newsletter should be supplied to the homemakers." Eighty-five percent of 60 homemakers agreed and only 6.6 percent failed to support such an idea. However 8.3 percent remained undecided.

To the statement, "the newsletter is just right for me and needs no change." Thirty-four homemakers or 56.6 percent of 60 participants indicated that the newsletter used for the program was just good for them. Sixteen percent however felt there must be modification and 26 percent remained undecided.
TABLE 27

DISTRIBUTION OF PARTICIPANTS RESPONDING TO FIRST PART OF THE
ATTITUDINAL STATEMENTS ABOUT THE NEWSLETTERS

N = 60

<table>
<thead>
<tr>
<th>Attitudinal Statements</th>
<th>Favorable</th>
<th>Undecided</th>
<th>Non-Favorable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td>Per cent</td>
<td>Per cent</td>
<td>Per cent</td>
</tr>
<tr>
<td>A5</td>
<td>More newsletters should be supplied to homemakers.</td>
<td>51 85.0</td>
<td>5 8.4</td>
</tr>
<tr>
<td>A7</td>
<td>The newsletter is just right for me.</td>
<td>34 56.6</td>
<td>16 26.7</td>
</tr>
<tr>
<td>A8</td>
<td>The newsletter taught me much more about food and nutrition than other sources of information.</td>
<td>28 46.6</td>
<td>16 26.7</td>
</tr>
<tr>
<td>Attitudinal Statements</td>
<td>Favorable</td>
<td>Undecided</td>
<td>non-Favorable</td>
</tr>
<tr>
<td>-------------------------------------------------------------</td>
<td>-----------</td>
<td>-----------</td>
<td>---------------</td>
</tr>
<tr>
<td></td>
<td>NO Per cent</td>
<td>NO Per cent</td>
<td>NO Per cent</td>
</tr>
<tr>
<td>* A9 The newsletter plays no part in teaching me to plan better breakfasts.</td>
<td>49 81.6</td>
<td>2 3.4</td>
<td>9 15.0</td>
</tr>
<tr>
<td>A10 The newsletter was a good guide to saving money in buying of food.</td>
<td>36 60.0</td>
<td>10 16.7</td>
<td>14 23.3</td>
</tr>
<tr>
<td>* A11 The newsletter used in the better breakfasts program was difficult for me to read.</td>
<td>52 86.6</td>
<td>2 3.3</td>
<td>6 10.1</td>
</tr>
</tbody>
</table>

* Negative reaction to make it favorable
Of the 60 participants, 46.6 percent indicated that the newsletter taught them much more about food and nutrition than other sources of information. Twenty-six percent did not perceive the newsletter to teach them much more than other sources of information. Twenty-six percent remained undecided.

When the homemakers were asked to indicate if the newsletter on better breakfasts played no part in helping them to plan better breakfast, 49 out of 60 homemakers indicated the newsletters had helped them to plan better breakfast. This number constituted 81.6 percent of the experimental group. Fifteen percent indicated that the better breakfasts newsletter played no part in helping them to plan better breakfast. Three percent however remained undecided.

Sixty percent of 60 homemakers perceived the newsletter on better breakfasts to be good guide to saving money in buying of food and 23.3 percent indicated they were not good guides to them. Sixteen percent remained undecided.

When the homemakers were asked to tell if the newsletters were difficult to read, 52 out of 60 homemakers, a number which constituted 86.6 percent,
indicated the newsletter was not difficult to read. Only 10 percent perceived the newsletters to be
difficult to read while 3.3 percent remained undecided.

The non-directional attitude statement was examined.

A6 More words than pictures should be used in newsletter on better breakfasts.

In this statement, 41.6 percent of the respondents perceived a need for more words to be used in this newsletter. Twenty respondents, constituting 33.3 percent of the group were undecided and 25 percent contended it was not necessary to include more words than pictures. This opinion survey showed that many homemakers will desire more words than pictures on the pages of their newsletter. No wonder, Edgar Dale once said in a class seminar that we should not assume, however, that because pictures are real, they are carriers of universal massage.

The number of participants responding favorably to the attitudinal statements was sorted out and categorized into two levels of formal education (9th grade and above; 8th grade and below). A chi square analysis was applied in order to determine if there was a significant difference between the number who showed
As it is indicated in Table 28, the chi square value of 6.6 showed there was significant difference between the number in each group who responded favorably to attitudinal statements. The groups with 9 years of formal education showed more favorable attitude towards the attitudinal statements about the newsletter on better breakfasts.

The group of participants responding favorably to the attitudinal statements was further categorized into income groups. See Table 29.

The distribution of respondents on Table 29 indicated that favorable attitude towards newsletter on better breakfasts decreased slightly with increase in income. It could be inferred that low income families are more inclined to have favorable attitude towards newsletters on nutrition. This might be related to the fact that the homemakers perceived the newsletter as having helped them in making more judicious allocation of their low incomes and so getting best out of them. A graphical representation of the favorable reactions from three levels of income groups towards attitudinal statements is shown in Figure 2.
<table>
<thead>
<tr>
<th>Attitudinal Statements</th>
<th>9th grade and above</th>
<th>8th grade and below</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N = 31</td>
<td>N = 29</td>
</tr>
<tr>
<td></td>
<td>NO</td>
<td>Per cent</td>
</tr>
<tr>
<td>A5 More newsletters on Better Breakfasts should be supplied to the homemakers</td>
<td>30</td>
<td>91.0</td>
</tr>
<tr>
<td>A6 More words than pictures should be used in the newsletters on Better Breakfasts.</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>A7 The newsletter is just right for me and it needs no change.</td>
<td>15</td>
<td>45.5</td>
</tr>
</tbody>
</table>

+ A non-directional statement.
TABLE 28 (Continued)

<table>
<thead>
<tr>
<th>Attitudinal Statements</th>
<th>9th grade and above</th>
<th>8th grade and below</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N = 31</td>
<td>N = 29</td>
</tr>
<tr>
<td></td>
<td>NO</td>
<td>PER cent</td>
</tr>
<tr>
<td>A8 The newsletter taught me much more about food and nutrition than other sources of information</td>
<td>16</td>
<td>48.5</td>
</tr>
<tr>
<td>A9 The newsletter was a good guide to saving money in buying of food</td>
<td>18</td>
<td>54.5</td>
</tr>
<tr>
<td>A10 The newsletter plays no part in teaching me to plan better breakfasts</td>
<td>27</td>
<td>82.0</td>
</tr>
<tr>
<td>A11 The newsletter used in the Better Breakfasts program was difficult for me to read.</td>
<td>30</td>
<td>91.0</td>
</tr>
</tbody>
</table>

\[ x^2 = 6.6 \quad \text{d.f.} = 5 \quad \text{Significant} \]
<table>
<thead>
<tr>
<th>Atttudinal Statements</th>
<th>Below $2,000</th>
<th>Per $2,000</th>
<th>$3,999</th>
<th>Per $4,000</th>
<th>Per $5,000</th>
<th>N=24</th>
<th>N=22</th>
<th>N=14</th>
</tr>
</thead>
<tbody>
<tr>
<td>A5 More newsletters should be supplied to homemakers.</td>
<td>21</td>
<td>87.5</td>
<td>18</td>
<td>81.8</td>
<td>12</td>
<td>85.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A7 The newsletter is just right for me and it needs no change.</td>
<td>16</td>
<td>66.6</td>
<td>11</td>
<td>50.0</td>
<td>7</td>
<td>50.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A8 The newsletter taught me much more about food and nutrition than other sources of information.</td>
<td>11</td>
<td>45.8</td>
<td>12</td>
<td>54.5</td>
<td>5</td>
<td>35.7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TABLE 29 (continued)

<table>
<thead>
<tr>
<th>Attitudinal</th>
<th>Below $2,000 N=24</th>
<th>Per cent</th>
<th>$2,000 $3,999 N=22</th>
<th>Per cent</th>
<th>$4,000 $5,000 N=14</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>A9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The newsletter was a good guide to saving money in buying food.</td>
<td>14</td>
<td>58.3</td>
<td>13</td>
<td>59.0</td>
<td>9</td>
<td>64.4</td>
</tr>
<tr>
<td>A10</td>
<td>The newsletter plays no part in teaching me to plan better breakfasts. *</td>
<td>20</td>
<td>83.3</td>
<td>17</td>
<td>78.3</td>
<td>12</td>
</tr>
<tr>
<td>A11</td>
<td>The newsletter used in the Better Breakfasts program was difficult for me to read. *</td>
<td>20</td>
<td>83.3</td>
<td>20</td>
<td>90.9</td>
<td>12</td>
</tr>
<tr>
<td>Mean Percent</td>
<td>72.1</td>
<td>69.0</td>
<td>68.0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Items requiring negative answers to make them favorable
GRAPHICAL REPRESENTATION OF FAVORABLE REACTIONS FROM THREE LEVELS OF INCOME GROUPS TO ATTITUDINAL STATEMENTS

FIGURE 2.
Attitudes About Newsletter Reflecting What the Home-makers did About the Newsletters they read

The second half of the attitudinal statements was examined item by item to determine descriptively the percentages of the respondents who answered YES or NO to each item on the schedule.

As was done with the first half of the attitudinal statements, the items on the second half were designated by the symbols ($B_{12}$, $B_{13}$, ..., $B_{19}$) for descriptive and analytical purposes. The frequency distribution of respondents were sorted out into YES and NO categories with their respective percentages as shown in Table 30.

Table 30 showed that 93.3 percent of the respondents in the experimental group often felt like doing what they read in the newsletter as revealed in their answers (YES). Seventy percent of the 60 respondents said they actually did what they read in the newsletters. The next largest single group of respondents was of those homemakers who indicated by their answers that they would recommend the newsletter to other friends and would like to receive more of the newsletters.
### TABLE 30

**PARTICIPANTS RESPONSES TO ATTITUDINAL STATEMENTS ABOUT NEWSLETTER (PART B)**

<table>
<thead>
<tr>
<th>Attitudinal Statements</th>
<th>YES</th>
<th></th>
<th></th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td></td>
<td>N</td>
</tr>
<tr>
<td>B12 Felt like doing what was read</td>
<td>56</td>
<td>93.3</td>
<td>4</td>
<td>6.7</td>
</tr>
<tr>
<td>B13 Doing what was read</td>
<td>42</td>
<td>70.0</td>
<td>18</td>
<td>30.0</td>
</tr>
<tr>
<td>B14 Lack of money as cause of failure to take action</td>
<td>31</td>
<td>51.6</td>
<td>29</td>
<td>48.4</td>
</tr>
<tr>
<td>B15 Lack of time as cause of failure to take action</td>
<td>20</td>
<td>33.3</td>
<td>40</td>
<td>66.7</td>
</tr>
<tr>
<td>B16 Willingness to recommend the newsletter to friends</td>
<td>53</td>
<td>88.3</td>
<td>7</td>
<td>11.7</td>
</tr>
</tbody>
</table>
TABLE 30 (continued)

<table>
<thead>
<tr>
<th>Attitudinal Statements</th>
<th>YES</th>
<th></th>
<th>NO</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Per cent</td>
<td>N</td>
<td>Per cent</td>
</tr>
<tr>
<td>B_{17} Desire for receiving more newsletters</td>
<td>53</td>
<td>88.3</td>
<td>7</td>
<td>11.7</td>
</tr>
<tr>
<td>B_{18} Discussing the newsletter with neighbors before taking action</td>
<td>23</td>
<td>37.3</td>
<td>37</td>
<td>62.7</td>
</tr>
<tr>
<td>B_{19} Like for the color of Materials</td>
<td>38</td>
<td>63.3</td>
<td>22</td>
<td>36.7</td>
</tr>
</tbody>
</table>
themselves. These groups constituted 88.3 percent, respectively, of the total respondents in the experimental group.

Thirty-seven percent of the respondents indicated by their answers that they sometimes discussed the newsletters on better breakfasts with others before taking action. Fifty-two percent of the total respondents in the experimental group indicated that they failed to act on the message of the newsletters due to lack of money. Thirty-three percent however perceived lack of time as the cause of their not taking action.

The respondents who answered YES to the attitudinal statements were examined by their income levels. Their frequency distributions are shown in Table 31.

When respondents were asked if they felt like doing what they read in the newsletters, 95.9 percent of the 24 lower income families indicated they felt like doing what they read. When they were asked if they did what they read, 87.5 percent of the 24 lower income families indicated they did what they read. Ninety-five percent of the 22 families in the medium income group indicated they felt like doing what they read while only 60 percent of 22 families indicated having done what they read.
TABLE 31

DISTRIBUTION OF PARTICIPANTS RESPONDING "YES" TO ATTITUDE STATEMENTS BY INCOME LEVELS (PART B)

<table>
<thead>
<tr>
<th>Attitudinal Statements</th>
<th>Below $2,000</th>
<th>Per cent</th>
<th>$2,000 - $3,999</th>
<th>Per cent</th>
<th>$4,000 - $5,000</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>B12 Felt like doing what was read.</td>
<td>23</td>
<td>95.9</td>
<td>21</td>
<td>95.9</td>
<td>12</td>
<td>85.7</td>
</tr>
<tr>
<td>B13 Doing what was read.</td>
<td>21</td>
<td>87.5</td>
<td>13</td>
<td>60.0</td>
<td>8</td>
<td>57.1</td>
</tr>
<tr>
<td>B14 Lack of money as cause of failure to take action</td>
<td>16</td>
<td>66.6</td>
<td>10</td>
<td>45.5</td>
<td>5</td>
<td>35.7</td>
</tr>
<tr>
<td>B15 Lack of time as cause of failure to take action</td>
<td>6</td>
<td>25.0</td>
<td>6</td>
<td>27.2</td>
<td>8</td>
<td>57.1</td>
</tr>
<tr>
<td>Attitudinal Statements</td>
<td>Below 2,000</td>
<td>Per cent</td>
<td>$2,000</td>
<td>Per cent</td>
<td>$3,999</td>
<td>Per cent</td>
</tr>
<tr>
<td>------------------------</td>
<td>------------</td>
<td>----------</td>
<td>--------</td>
<td>----------</td>
<td>--------</td>
<td>----------</td>
</tr>
<tr>
<td>B16 Willingness to recommend the newsletter to friends</td>
<td>22</td>
<td>91.6</td>
<td>20</td>
<td>90.9</td>
<td>11</td>
<td>78.6</td>
</tr>
<tr>
<td>B17 Desire for receiving more newsletters</td>
<td>20</td>
<td>83.3</td>
<td>21</td>
<td>95.5</td>
<td>12</td>
<td>85.7</td>
</tr>
<tr>
<td>B18 Discussing the newsletter with neighbors before taking action</td>
<td>5</td>
<td>20.8</td>
<td>10</td>
<td>45.4</td>
<td>8</td>
<td>57.1</td>
</tr>
<tr>
<td>B19 Like for the color of materials</td>
<td>19</td>
<td>78.8</td>
<td>15</td>
<td>68.2</td>
<td>4</td>
<td>28.5</td>
</tr>
</tbody>
</table>
Among the upper income group, 85.7 percent of 14 families indicated feeling like doing what was read while only 57 percent of the group perceived having done what was read.

Participants were asked if lack of time or lack of money had made them to not take action on what they read. Of the 24 lower-income respondents, 66.6 percent indicated lack of money as a factor in their not taking action and only 25 percent of 24 families perceived lack of time as a cause for not taking action.

Among the medium income group, 45.5 percent of the 22 families indicated money to be the cause for not taking action while 27.2 percent perceived lack of time as the cause for not taking action.

In the case of the upper income group, 35.7 percent of the 14 families perceived lack of money as cause for their not taking action while 57.1 percent indicated lack of time as cause for not taking action on what they read.

Participants were asked if they would be willing to recommend the newsletter to other friends and desirous of receiving more of the newsletters themselves. Of the 24 lower income families, 91.6 percent indicated they
would be willing to recommend the newsletter to other friends and 83.3 percent of the group indicated they like to receive more of the newsletters.

About 91 percent of the 22 families in the medium income group expressed willingness to recommend the newsletters to friends while 95.5 percent showed desires for receiving more newsletters.

Among the 14 upper income families, 78.6 percent showed willingness to recommend the newsletters to friends and 85.7 percent indicated they would like to receive more of the newsletters on better breakfasts.

Participants were asked if they discussed the newsletters with friends before taking action. About 21 percent of the 24 families in the lower income group said they did. Forty-five percent of 22 medium income families answered YES and 57.1 percent of 14 upper income families perceived having discussed the newsletters with neighbors before taking action.

When the participants were asked if they were attracted by the color of the paper on which the principles of better breakfasts were printed, 78.8 percent of 24 lower income families indicated they were attracted by the color. Sixty-eight percent of 22 medium
income families said they were attracted. Twenty-eight percent of 14 upper income families indicated having been attracted by the color of the paper on which the better breakfasts principles were printed.

The "YES" and "NO" frequency distributions were examined from the point of view of the educational levels. Table 32 showed a chi square test result of 6.4. This result indicated no significant difference at .05 level of significance between the reactions of the high and the low education groups towards attitudinal statements about the newsletters on better breakfasts.

We could infer, therefore, that levels of education do not dichotomize families of low income homemakers in relation to their attitudes towards newsletter on better breakfasts.
TABLE 32
PARTICIPANTS RESPONDING "YES TO ATTITUDEAL STATEMENTS BY LEVELS OF EDUCATION (PART B)

<table>
<thead>
<tr>
<th>Attitudinal Statements</th>
<th>9th grade and above</th>
<th>8th grade and below</th>
</tr>
</thead>
<tbody>
<tr>
<td>B12 Felt like doing what was read.</td>
<td>31</td>
<td>25</td>
</tr>
<tr>
<td>B13 Doing what was read.</td>
<td>22</td>
<td>20</td>
</tr>
<tr>
<td>B14 Lack of money as cause of failure to take action.</td>
<td>12</td>
<td>19</td>
</tr>
<tr>
<td>B15 Lack of time as cause of failure to take action.</td>
<td>13</td>
<td>7</td>
</tr>
<tr>
<td>B16 Willingness to recommend the newsletters to neighbors</td>
<td>26</td>
<td>27</td>
</tr>
<tr>
<td>B17 Desire for receiving more newsletters.</td>
<td>27</td>
<td>26</td>
</tr>
<tr>
<td>B18 Discussing the newsletters with neighbors before taking action.</td>
<td>9</td>
<td>14</td>
</tr>
<tr>
<td>B19 Like for the color of materials</td>
<td>17</td>
<td>21</td>
</tr>
</tbody>
</table>

\[ x^2 = 6.4 \quad \text{d.f.} = 7 \quad \text{not significant} \]
Statistical Test of the Hypotheses Relating to Attitude Towards Newsletter on Better Breakfasts

In order to accept or reject the null hypotheses this section was tested statistically item by item. An arbitrary weight was attached to each alternate response, (YES = 1; NO = 0) to the items on attitude towards the newsletters on better breakfasts. A chi square contingency table analysis was calculated, based on Formula (14.1)\(^1\) in Downie, for the weighted data collected.

\[
x^2 = \sum \frac{(O - E)^2}{E}
\]

Where \(O\) = the observed variable
\(E\) = the expected variable

The null hypothesis needing to be confirmed was that there would be no significant difference between the attitude of the groups at low and at high levels of education on one hand and at varied levels of income

\(^1\)N. M. Downie and R. W. Heath, op. cit. Basic Statistical . p.162
on the other hand, towards the newsletter on better
breakfasts. The alpha set for this hypothesis was .05
level of significance. Items on the schedule were
examined and treated individually.

On the phase of the preceding descriptive analysis
statistical tests of the hypotheses were conducted in
order to determine if in effect income and/or education
had any influence on attitude towards the newsletters
on Better Breakfasts.

Effect of Level of Education
and Income on Attitudes
Towards the Newsletters

In order to determine the effect of level of income
on the attitude of homemakers towards attitudinal
statements about the newsletter, the respondents were
classified under three categories of income levels:-
The upper, the medium and the lower.

The rated evaluation made by the respondents in
the experimental group were given arbitrary weighting.
and comparison were made in their income categories.
The different attitude statements were analyzed
individually.
As you read the newsletter, did you often feel like doing what you read?

Of the 60 families in the experimental group, 56 reacted favorably. The distributions are shown in Table 33.

**TABLE 33**

**COMPARISON OF RESPONDENTS, AT DIFFERENT LEVELS OF EDUCATION AND INCOME, WHO PERCEIVED THEY FELT LIKE DOING WHAT THEY READ.**

<table>
<thead>
<tr>
<th>Income Groups</th>
<th>Higher Education</th>
<th>Lower Education</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Income</td>
<td>12</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>Medium Income</td>
<td>11</td>
<td>10</td>
<td>21</td>
</tr>
<tr>
<td>Lower Income</td>
<td>8</td>
<td>13</td>
<td>21</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>31</strong></td>
<td><strong>25</strong></td>
<td><strong>56</strong></td>
</tr>
</tbody>
</table>

\[ X^2 = 9.2 \quad \text{d.f.} = 2 \quad \text{Significant} \]
Based upon these frequencies within the income categories, a test of the null hypothesis ($H_0$) that there is no significant difference between the attitudes of groups who are at varied levels of income, towards the newsletter was completed. A chi square test was applied to the frequencies responding YES to the attitude statement on whether the homemakers felt like doing what they read. The chi square value of 9.2 at .05 level of significance indicated there was a significant difference among people of varied levels of income in their feeling like doing what they read in the newsletter.

Based upon this result, we rejected the null hypothesis ($H_0$) that there is no significant difference between the attitude of two groups who at at varied levels of income and education, towards the newsletter. The data tend to support the research hypothesis ($H_5$) that there is significant difference between the attitude of two groups, at varied levels of income and education, towards the newsletters on better breakfasts. Groups with lower income felt more like doing what they read in the newsletter on better breakfasts.
As you read the newsletter, did you ever do what you read?

To this question, 42 homemakers indicated having done what they read in the newsletter. The frequencies distribution of this group among the income levels is shown in Table 34.

**TABLE 34**

COMPARISON OF RESPONDENTS AT DIFFERENT LEVELS OF INCOME WHO PERCEIVED HAVING DONE WHAT THEY READ IN THE NEWSLETTER

N = 42

<table>
<thead>
<tr>
<th>Income Groups</th>
<th>Higher Education</th>
<th>Lower Education</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Income</td>
<td>3</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Medium Income</td>
<td>4</td>
<td>9</td>
<td>13</td>
</tr>
<tr>
<td>Lower Income</td>
<td>15</td>
<td>6</td>
<td>21</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>22</strong></td>
<td><strong>20</strong></td>
<td><strong>42</strong></td>
</tr>
</tbody>
</table>

\[ \chi^2 = 13.8 \quad \text{d.f.} = 2 \quad \text{Significant} \]
The chi square value of 13.8 as shown in Table 34 indicated that there was significant difference among people of varied income and education levels, in their aptitude for taking action on information received through mass media.

Based upon these results we failed to accept the null hypothesis (H₀) that there is no significant difference in the attitudes of groups, at varied levels of income and education, towards the newsletter on better breakfasts. The data tend to support the research hypothesis (H₅) that there is a significant difference between the attitude of the groups at varied levels of income and education, towards the newsletter on better breakfasts. Groups of lower income homemakers with education of 9th grade and above indicated they did what they read in the newsletter in greater number than the groups with 8th grade and below of education level.

B14 Does lack of money cause you to not do what you read in the newsletter?

When the homemakers were asked if lack of money had interfered with what they read resulting in action,
thirty-one said YES. The frequencies distribution of these respondents is shown in Table 35.

**Table 35**

**Comparison of Responses at Different Levels of Income in Relation to Whether Lack of Money Caused Lack of Action.**

\[ N = 31 \]

<table>
<thead>
<tr>
<th>Income Groups</th>
<th>Higher Education</th>
<th>Lower Education</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Income</td>
<td>2</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Medium Income</td>
<td>4</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Lower Income</td>
<td>13</td>
<td>3</td>
<td>16</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>19</strong></td>
<td><strong>12</strong></td>
<td><strong>31</strong></td>
</tr>
</tbody>
</table>

\[ x^2 = 6.8 \]

\[ d.f. = 2 \]

**Significant**

A chi square analysis showed a significant result of 6.8 at .05 level. More of the lower income groups with higher level of education indicated that lack of money had caused them to not take action.
Do you fail to do what you read in the newsletter because you do not have the time?

When homemakers were asked if lack of time was a factor in their not taking action, only 20 respondents indicated they failed to take action due to lack of time. The frequencies distribution of the homemakers within the income categories did not show much difference. See Table 36.

**TABLE 36**

**COMPARISON OF INCOME GROUPS WHO PERCEIVED LACK OF TIME AS CAUSE OF THEIR NOT TAKING ACTION.**

\[ \text{N} = 20 \]

<table>
<thead>
<tr>
<th>Income Groups</th>
<th>Higher Education</th>
<th>Lower Education</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Income</td>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Medium Income</td>
<td>4</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Lower Income</td>
<td>5</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>13</strong></td>
<td><strong>7</strong></td>
<td><strong>20</strong></td>
</tr>
</tbody>
</table>

\[ x^2 = 3.24 \quad \text{d.f.} = 2 \quad \text{not significant} \]
A chi square value of 3.24 indicated there was no significant difference at .05 level in number of homemakers in varied income groups who perceived lack of time as factor in their not taking action.

B16 Will you recommend the newsletter on better breakfasts to other friends?

Homemakers were asked to indicate by answering YES if they would be willing to recommend the newsletter to other friends. Fifty-three out of 60 indicated they would. The frequencies distribution of these 53 homemakers among their income categories showed no significant difference. See Table 37.

The chi square value of 3.3 at .05 indicated there was no significant difference in the percentage of homemakers at different levels of incomes, who said they would be willing to recommend the newsletter on better breakfasts to other friends.

Based upon this result, we failed to reject the null hypothesis \( (H_0) \) that there is no significant difference among groups at varied levels of income and education in relation to their attitude towards newsletter. By the same token, failed to accept the
TABLE 37

COMPARISON OF THE DIFFERENT INCOME GROUPS IN THEIR WILLINGNESS TO RECOMMEND THE NEWSLETTER TO THEIR FRIENDS

N = 53

<table>
<thead>
<tr>
<th>Income Groups</th>
<th>Higher Education</th>
<th>Lower Education</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Income</td>
<td>6</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>Medium Income</td>
<td>12</td>
<td>8</td>
<td>20</td>
</tr>
<tr>
<td>Lower Income</td>
<td>13</td>
<td>6</td>
<td>19</td>
</tr>
</tbody>
</table>

| Total         | 31              | 22             | 53    |

$x^2 = 3.3$  \hspace{1cm} d.f. = 2  \hspace{1cm} \text{not significant}$
research hypothesis \( (H_5) \) that there will be a significant difference in the attitude of groups at varied levels of income and education towards the newsletter.

If it could be possible, would you like to receive more of this type of newsletters?

Fifty-three out of 60 homemakers indicated they would like to receive more of newsletters like the ones used on better breakfasts programs. Table 38 showed the frequencies distribution of these 53 homemakers among their income levels categories.

**TABLE 38**

**COMPARISON OF DIFFERENT INCOME LEVELS IN THEIR DESIRES TO RECEIVE MORE NEWSLETTERS**

\( N = 53 \)

<table>
<thead>
<tr>
<th>Income Groups</th>
<th>Higher Education</th>
<th>Lower Education</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Income</td>
<td>5</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>Medium Income</td>
<td>11</td>
<td>10</td>
<td>21</td>
</tr>
<tr>
<td>Lower Income</td>
<td>10</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>26</strong></td>
<td><strong>27</strong></td>
<td><strong>53</strong></td>
</tr>
</tbody>
</table>

\( X^2 = 2.8 \) \hspace{1cm} \text{d.f.} = 2 \hspace{1cm} \text{not significant}
A chi square value of 2.8 indicated there was no significant difference at .05 level among varied income groups in their preference for more newsletters.

Based upon these results, we failed to reject the null hypothesis ($H_0$) that there will be no significant difference among groups of varied levels of income and education levels in their attitudes towards the newsletter on better breakfasts. We, therefore, failed to accept the research hypothesis ($H_1$) that there will be a significant difference in the attitudes of groups at varied levels of income and education towards the newsletters on better breakfasts.

B18 Do you sometimes discuss the newsletter with other neighbors before taking action?

Homemakers were asked if they discussed the better breakfasts' newsletter with neighbors before taking action. Twenty-three of 60 homemakers indicated they discussed the newsletters. A chi square analysis of the frequency distribution of those who said YES, showed a value of 1.82 which is not significant at .05 level. See Table 39
### TABLE 39

**COMPARISON OF DIFFERENT INCOME LEVELS WHO SAID THEY DISCUSSED THE NEWSLETTERS BEFORE TAKING ACTIONS**

\[ \text{N} = 23 \]

<table>
<thead>
<tr>
<th>Income Groups</th>
<th>Higher Education</th>
<th>Lower Education</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Income</td>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Medium Income</td>
<td>6</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Lower Income</td>
<td>4</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>14</strong></td>
<td><strong>9</strong></td>
<td><strong>23</strong></td>
</tr>
</tbody>
</table>

\[ x^2 = 1.82 \quad \text{d.f.} = 2 \quad \text{not significant} \]

B19 Does the color of the paper on which the newsletters were printed attract you?

Thirty-eight of the 60 homemakers in the experimental group indicated they had attraction for the color of the paper used for the newsletters. The frequencies distribution of the respondents who liked the color is shown in Table 40.
TABLE 40

COMPARISON OF THE DIFFERENT INCOME LEVELS
IN THEIR ATTITUDES TOWARDS COLOR OF
PRINTED MATERIALS.

N = 38

<table>
<thead>
<tr>
<th>Income Groups</th>
<th>Higher Education</th>
<th>Lower Education</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Income</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Medium Income</td>
<td>9</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>Lower Income</td>
<td>10</td>
<td>9</td>
<td>19</td>
</tr>
<tr>
<td>Total</td>
<td>21</td>
<td>17</td>
<td>38</td>
</tr>
</tbody>
</table>

\[ x^2 = 9.6 \quad d.f. = 2 \quad \text{Significant} \]

When a chi square test was applied to the frequency distribution Table 40, there was a resulting value of 9.6 which was significant at .05 level. The lower income category with higher education appeared to be more attracted by the color of the newsletters.

Based upon this result, we rejected the null hypothesis \( H_0 \) that there was no significant difference among the attitudes of groups at varied
income and education levels, towards the newsletters on better breakfasts. The data tend to support the research hypothesis \( (H_0) \) that there would be a significant difference among the attitudes of groups at varied levels of income and education towards the newsletter on better breakfasts. Based upon these results, we may infer that the use of color does induce a significant difference in low income families attitudes towards any printed material.
CHAPTER 6

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The purpose of this chapter was to review the problem, the objectives and hypotheses of the study, the method of investigation, to summarize the major findings, and to arrive at conclusions based upon the data collected.

This chapter also proposes recommendations for the use of educational and information media in presenting specific nutrition education information to homemakers of low-income families living in urban areas.

Purpose

This study was conducted to assist in assessing the usefulness of a newsletter as means of improving the knowledge of nutrition with regard to better breakfasts for the homemakers of low-income families living in urban areas.

This study was conducted in a program which was part of a national expansion of nutrition programs
directed toward reaching low-income homemakers and their families in order to improve their understanding of nutritional requirements and so improve their diets. If the Cooperative Extension Services were to fulfill the needs of these people, increased inquiries into the multi-media and methods of educating the low-income families were justifiable.

The Problem

The major problem in this study was to investigate the question of how effective were the communication methods used by the Cooperative Extension Services in the expanded nutrition programs, so as to help increase the low-income families knowledge of nutrition that may influence the necessary changes in their eating habits.

Specific Objectives

The specific objectives in this study were:-
(a) to determine those existing sources of information through which low-income families of Ohio generally receive their nutrition information.
(b) to determine the effectiveness of the newsletter as a medium of communication in enhancing the
cognitive knowledge of homemakers of low-income families in relation to nutrition principles
to determine the direction and extent of the general attitude of low-income families towards the newsletter as a medium of information and education on nutrition

Null Hypotheses

Based upon review of related studies, theories and practices in communication effectiveness, the following null hypotheses were developed and tested in this study.

(1) There is no significant difference in the cognitive knowledge scores between the experimental and control group on a test on principles of better breakfasts.

(2) There is no significant difference in the cognitive knowledge scores between groups at different levels of income on a test on principles of better breakfast taught through the newsletters.

(3) There is no significant difference between the attitude of participants, at different levels of income, towards the newsletter on better breakfast.
(4) There is no significant difference in the cognitive knowledge scores between groups, at different levels of education, on a test on principles of better breakfasts taught through the newsletter on better breakfasts.

(5) There is no significant difference between the attitude of the groups at low and at high levels of education, towards the newsletter on better breakfasts.

In the sequence of this study, the process of decision making made it desirable to prestate the level of significance at the .05 level. At this level, the decision to accept the null hypothesis was made, that is, on the event of the observed value being greater than the established .05 level of significance, the null hypothesis was to be accepted.

Based upon the null hypotheses, the following research hypotheses were also developed so that on the event of the observed value being equal or less than the established value of .05 level of significance, the null hypothesis should be rejected and the alternative research hypothesis accepted.
Research Hypotheses

(1) There is a significant difference in the cognitive knowledge scores between the experimental and the control groups on a test on principles of better breakfasts.

(2) There is a significant difference in the cognitive knowledge scores between groups at different levels of income on a test on principles of better breakfasts taught through the newsletter.

(3) There is a significant difference between the attitude of participants, at different levels of income, towards the newsletter on better breakfasts.

(4) There is a significant difference in the cognitive knowledge scores between groups, at different levels of education, on a test on principles of better breakfasts taught through the newsletter on better breakfasts.

(5) There is a significant difference between the attitude of the groups, at low and at high levels of education, towards the newsletter on better breakfasts.
Design of the Study

The best-fit design for this study was drawn from Stanley and Campbell, "Posttest-Only Control Group Design" number six.

Location of Research Base, Designation of the Population and Securing of the Sample

This study was conducted in Montgomery County, in the State of Ohio. The specific geographic area covered was the urban area in Dayton, Ohio.

The target population of interest in this study was the families in the expanded nutrition program of Montgomery County. A list of accessible population of 355 low-income families was tentatively drawn from the files of the Home Economics Agent of that geographical area. A stratified random sample of 47.3 percent of the accessible population of 355 was selected to participate in this study.

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Pre-determined income and education levels were defined to provide directions for stratification and categorization of the participants. Three levels of income were isolated and defined as:-

(a) "Lower" low-income group, $1,999 and below with per capita of less than $400 a year.
(b) "Medium" low-income group, $2,000 to $3,999 with per capita of $400 to $500 per year
(c) "Lower" low-income group, $4,000 to $5,000 with per capita of not more than $600 a year.

Each level of income was sub-categorized into two levels of education.

(a) High Education (9th grade and above)
(b) Low Education (8th grade and below)

These categories were crossed and fixed into which were nested groups representing six varied categories of participants. Each of the six categories was later sorted out randomly into experimental and control groups.

Variables

The independent variables in this study were:-

(1) The home economics newsletter on better breakfasts
(2) Income levels of participants
(3) Education levels of participants
The dependent variables in this study were:-

(1) The cognitive knowledge scores on a test on the principles of better breakfasts
(2) Participants reactions to attitudinal statements in relation to the newsletters.

Treatment

The treatment in this study was the newsletter on better breakfasts. In order to determine its readability, the Dale-Chall Reading Difficulty Formula was used. The result showed that the readability of the newsletter was at 5th to 6th grade levels.

Instrument

A preliminary schedule consisting of 44 items was constructed to determine the amount of recall of knowledge of nutrition principles in relation to better breakfasts.

A second phase of the instrument consisted of 20 attitudinal statements to determine the feeling of experimental group toward the newsletter on better breakfasts.

A third phase of the instrument was constructed for
(a) collection of personal data of the homemaker participants in the study

(b) determining sources of nutritional information to the homemakers

The validity of this instrument was arrived at through the judgment, comments and suggestions of experts and colleagues. A reliability test was conducted before a final instrument was drawn for the collection of data for this study. A split-half reliability coefficient after adjustment for attenuation was .71.

Based upon the validity and reliability tests, a final schedule which reduced the cognitive test items to 30 was drawn up and used for collecting of data. The reliability of the final instrument was .51.

Selection and Training of Interviewers

Fifteen aides were selected from among those who were then currently employed to work with the low-income families in Montgomery County in the State of Ohio. Orientation and training meetings were held to aid in better collection of data for this particular study.
Collection of Data

Personal interviews were used to collect data from each of the 120 respondents. The interview schedule contained a total of 45 questions and could be completed in 45 minutes. The interviewers were nutrition aides who worked among the respondents and had established rapport with the participants. A good understanding between the interviewers and the respondents was ensured. This situation helped to satisfy the assumption that meaningful response was anticipated. Seventy-two percent of the schedule was returned usable.

Quantification of Data

In quantifying the data collected, the Likert's arbitrary weighting was assigned to the alternate responses made by the participants to each statement. The data provided by the respondents were coded and punched on data processing cards. A computer was used for sorting and analyzing the major part of the analysis. Both descriptive and inferential statistics were used for the analysis. The statistical tests used were largely frequency distribution, chi square, contingency tables, t-test and F-test, and Spearman Rank Order Correlation.
Findings of the Study

The findings of this research study as they relate to the stated null hypotheses, research hypotheses and specific objectives are presented in this section. A few other findings which may not have directly related to the stated null and research hypotheses but which are considered by this author as pertinent basis for predicting the results of this study are also given.

Specific Objective 1. -- To determine those existing sources of information through which the low-income families of Ohio generally receive their nutrition information.

The respondents, both the control and the experimental groups, perceived the nutrition aides as their most frequent sources of nutrition information. Television was ranked second by both groups and frequency of contact with neighbors was ranked 8th by both groups. The frequencies of exposure to all sources of information on nutrition was significantly correlated between the control and the experimental groups.

In the question regarding sources of information on better breakfasts, the nutrition aides was ranked
highest as the most frequent source of information about better breakfasts. The experimental group ranked the newsletter second and the control group ranked the newsletter eleventh.

Both groups perceived the store owners as least frequent sources of information on better breakfasts.

**Specific Objectives 2.** To determine the effectiveness of the newsletter as a medium of communication, in enhancing the cognitive knowledge of homemakers of low-income families with relation to nutrition principles.

**Difference between Control and the experimental groups**

The experimental group that read the newsletter had a mean score of 23.3 regarding knowledge of nutrition while the control group that did not read the newsletter had a mean score of 20.9.

A t-test value of 4.13 showed that the mean score difference was significant at .05 level of significance.

**Difference between two Income Levels**

When the three income categories were compared two at a time, a t-test value of .07 showed that there was no significant difference between the cognitive
knowledge mean scores of the upper income group
($4,000 to $5,000) and the medium income group ($2,000
to $3,999).

Comparing the upper income group of $4,000 to $5,000
with lower income group of $1,999 and below, a t-test
value of .75 showed that there was no significant
difference at .05 level between the two groups cognitive
knowledge mean scores.

**Difference Between Two**
**Levels of Education**

Within the lower income group of $1,999 and below, the
low education homemakers with an 8th grade level of
education and below learn more than the homemakers with
a 9th grade level of education and above. The lower
education groups had a mean score of 21.00 while the
homemakers with an educational level of 9th grade and
above had a mean score of 18.64. The mean score differen-
difference between the two groups showed an F-value of
7.03 which was significant at .05 level.

Within the groups categorized as medium and upper
income levels, the different levels of education had
no varied effect on the homemakers in learning from the
newsletter. Their mean cognitive knowledge scores showed
no significant difference.
Specific Objective 3. — To determine the direction and extent of low-income families' attitudes toward newsletters as medium of information on nutrition.

Comparison of Different Income Levels at varied levels of Education

Low-income homemakers with low education ranked highest among the groups who felt like doing what they read in the newsletter.

The number of homemakers who did what was read in the newsletter on better breakfasts increased significantly with decrease in income.

The number of homemakers who perceived lack of money as cause for not taking action increased significantly with decrease in income and increase in education.

The number of homemakers who perceived the color of the paper used for the newsletter as being attractive increased significantly with decrease in income, but with increase in education.
Conclusions

This study was in the nature of both a descriptive and a statistical research study. Its findings were based on the responses to a schedule administered to a stratified and randomly selected sample of low-income families in Montgomery County in the State of Ohio.

While great caution must be exercised in generalizing the result findings, the author, however presented on the basis of evidence reported in the major findings, the following conclusions.

The use of newsletters in the nutrition program had proved its value by providing directed experience for the low-income homemakers in Montgomery County and by involving them at individual rate of learning process.

The low-income homemakers perceived having learned new ideas from the newsletter and that it had helped them in saving money on buying of food.

The learning situation was brought closer to the homemakers through the newsletters and offered experiences which stimulated self activities on the part of the low-income families.

The level of formal education of the low-income homemakers was a factor in the amount of learning acquired of nutrition principles through the newsletters.
Rising levels of income were not related to an increase in the learning rate of low-income families in Montgomery County.

The formal education level of the low-income families had effect on their attitudes towards the newsletter as their medium of education. The higher the level of education the stronger the favorable attitude statements were evidenced.

The low-income families with higher level of formal education are motivated to action more readily through reading of newsletter than the low-income families of lower level of formal education.

The low-income families with higher level of formal education had more inclination than those with lower level of education in recommending newly perceived ideas to other friends and neighbors.

The higher an educational level of the low-income families the more desire they have in reading the newsletters.

The level of formal education did reflect difference in attitudes towards the color of the material on which the newsletter was printed.
As level of income rises among the low-income families, time becomes a factor in taking of action on what is read in the newsletter on nutrition principles.

The low-income homemakers of Montgomery County perceived and acknowledged the services of the nutrition aides as their major sources of information on nutrition.

The low-income families of Montgomery County perceived the television, radio, newspaper, store advertisements and the cookbook, other than the nutrition aides and the newsletters as their sources of nutrition information.

Recommendations

The following recommendations are made, based upon the research data, a study of the related research and the judgment of the author.

The newsletter, in fact, is a potential communication medium through which the low-income families could be taught about nutrition principles. The use of newsletter therefore, should be incorporated into the teaching methods now being adopted in Montgomery County.
Information relating to better feeding of people should be presented in a way that best suits the peculiar demand. The contents should be framed as to remain within the semantic limitations of the language as well as within the range of receptivity and understanding of the receiving audience.

As there is evidence in this study that high income invariably becomes a factor which motivates and enhances action taking, it will be necessary to help provide for low-income families the legitimate sources of income. A homemaker might understand the reasons for eating better breakfast, however, she is not likely to change her feeding pattern if the materials for better breakfasts are not available at a price she could afford to pay.

A replica of this study should be conducted with larger samples in order to be able to determine the external validity of its findings.

The author would recommend that an independent and broader instrument that may measure more precisely the attitudes of the low-income families towards education media should be constructed.
In as much as attitude is a mental state of readiness organized through experience and exerting directive influence upon the individual's responses to stimuli, other fields of discipline, such as psychology and sociology should use this study result as an exploratory stage for conducting another study on psycho-socio basis. Such study should ultimately lead to the understanding of the behavioral approach to the problem of communication with the low-income families.

The level of cognitive knowledge found in this study should provide the home economics agent with direction in developing materials for teaching the low-income families.
APPENDIX A

Questionnaire
BACKGROUND DATA

1. Personal data
   (a) Name of Homemaker
   (b) Age of Homemaker
   (c) Number in the Family
   (d) Date of Interview
   (e) Name of Aide

2. Educational Level of Homemakers (check one)
   (a) Ninth grade and above
   (b) Eighth grade and Below

3. Family Income (check one)
   (a) Less than $1,000
   (b) $1,000 - $1,999
   (c) $2,000 - $2,999
   (d) $3,999 - $3,999
   (e) $4,000 - $4,999
   (f) $5,000 and over

4. From which of the following sources did you receive your income last year? Check them.
   (a) Wages and Salaries
   (b) Social Security
   (c) Welfare Payments
   (d) Veteran Benefits
   (e) Pensions
   (f) Support from others
QUESTIONNAIRE

In order to enable us make an accurate decision in the planning of a program, please give your honest answers to the following questions. I would like for you to give these questions the best of attention. You do not have to sign your name if you do not wish to do so.

Directions
Below are several statements about Better Breakfasts. Read each statement carefully and give your judgment by indicating the degree to which you agree or disagree. Record your decision by putting a circle around one of the numbers which applies in your case.

Keys:-
If strongly agree circle .... 4
If agree circle ............... 3
If disagree circle .......... 2
If strongly disagree circle . 1

1. If in a hurry, let your breakfast substitute for breakfast.
   4 3 2 1

2. Breakfast is needed because it helps in getting more done at school or at work
   4 3 2 1

3. Since we drink milk and coffee during breakfast, we do not need fruit juice
   4 3 2 1

4. A good breakfast is a good beginning for the day; so, school children should have half (½) of day's food for breakfast.
   4 3 2 1

5. Fruits, milk, bread, cereal, eggs and beverage are a poor combination for an adult breakfast
   4 3 2 1
Keys:

If strongly agree circle ...... 4
If agree circle................ 3
If disagree circle............ 2
If strongly disagree circle... 1

6. Breakfast helps prevent illness 4 3 2 1
7. Since breakfast is a problem meal, I can solve this by having late snacks. 4 3 2 1
8. Weight watchers should not eat breakfast each day. 4 3 2 1
9. If your child does not like breakfast, he should be left alone until he is grown up. 4 3 2 1
10. Eggs are economical because they have no waste and cost less than meat. 4 3 2 1
11. A hard-cooked egg for breakfast should be cooked at high temperature. 4 3 2 1
12. A homemaker should prepare her poached egg in crisco oil. 4 3 2 1
13. Soft cooked egg should stand in cool water for a second or two for easier handling. 4 3 2 1
14. An egg contains 77 calories 4 3 2 1
15. It is not good to add pepper to scramble eggs. 4 3 2 1
16. One half (½) cup of orange or grapefruit juice is enough for the total day's supply of Vitamin C. 4 3 2 1
Keys:
If strongly agree circle......  4
If agree circle..............  3
If disagree circle..........  2
If strongly disagree circle..  1

17. Firm, heavy grapefruit is a better buy than light weight puffy fruit

18. Men and women need Vitamin C for healthy body tissues

19. Oatmeal is least expensive of all cereals.

20. It costs less to buy many little boxes of cereal instead of one bigger box.

21. Enriched oatmeals are better than whole grain cereals.

22. Breakfast helps prevent morning tiredness

23. Fried eggs contain more calories than scrambled eggs.

24. Coffee has 10 calories per cup.

25. Children need 4 cups of milk each day.

26. If your child likes breakfast, he or she should be left alone to eat only what he or she likes best.

27. It is not good to add chopped cooked potatoes to scrambled eggs.

28. A cup of hot tomato soup made with milk is also good for breakfast.
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Keys:-

If strongly agree circle........... 4
If agree circle...................... 3
If disagree circle................... 2
If strongly disagree circle........ 1

29. A pancake has more calories
than a donut

30. Grown up people should drink
twice as much milk as young
children

Sources of Information

How often do you receive information about what
is happening across the country through the
following sources? Put a circle around those
numbers that answer the question. Use the
following scales.

Keys:-

If daily circle............... 5
If weekly circle............... 4
If monthly circle............... 3
If seldom circle............... 2
If never circle............... 1

(a) Radio 5 4 3 2 1
(b) Newspaper 5 4 3 2 1
(c) Magazines 5 4 3 2 1
(d) Newsletter 5 4 3 2 1
(e) Television 5 4 3 2 1
Keys:

If daily circle...........  5
If weekly circle..........  4
If monthly circle........  3
If seldom circle.........  2
If never circle..........  1

2.  
(a) Neighbor 5 4 3 2 1
(b) Nutrition aides 5 4 3 2 1
(c) Relatives 5 4 3 2 1
(d) Welfare workers 5 4 3 2 1
(e) Store owners 5 4 3 2 1
(f) School teachers 5 4 3 2 1
(g) Church Ministers 5 4 3 2 1

How often do you receive information on food and nutrition through the following sources?

3.  
(a) Radio 5 4 3 2 1
(b) Newspaper 5 4 3 2 1
(c) Magazines 5 4 3 2 1
(d) Newsletter 5 4 3 2 1
(e) Store Advertisement 5 4 3 2 1
(f) Television 5 4 3 2 1
(g) Cookbook 5 4 3 2 1
Keys:—

| If daily circle ......... | 5 |
| If weekly circle .......... | 4 |
| If monthly circle......... | 3 |
| If seldom circle.......... | 2 |
| If never circle........... | 1 |

4. (a) Neighbors 5 4 3 2 1
   (b) Relatives 5 4 3 2 1
   (c) Nutrition aides 5 4 3 2 1
   (d) Welfare workers 5 4 3 2 1
   (e) Store owners 5 4 3 2 1
   (f) School teachers 5 4 3 2 1
   (g) Doctors 5 4 3 2 1

How often do you receive information about Better Breakfasts from the following sources? Circle those numbers that answer the question.

5. (a) Radio 5 4 3 2 1
   (b) Newspaper 5 4 3 2 1
   (c) Magazines 5 4 3 2 1
   (d) Television 5 4 3 2 1
   (e) Store Advertisement 5 4 3 2 1
   (f) Cookbook 5 4 3 2 1
   (g) Newsletter 5 4 3 2 1
Keys:
If daily circle....... 5
If weekly circle...... 4
If monthly circle..... 3
If seldom circle....... 2
If never circle....... 1

6. (a) Neighbors 5 4 3 2 1
(b) Relatives 5 4 3 2 1
(c) Nutrition aids 5 4 3 2 1
(d) Welfare workers 5 4 3 2 1
(e) Store owners 5 4 3 2 1
(f) School teachers 5 4 3 2 1
(g) Doctors 5 4 3 2 1

Attitudes Towards the Newsletter

To the best of your knowledge, answer (YES) or (NO) to the following questions. Circle your answer.

1. Do you recall receiving newsletter like these? YES NO
2. Did you read any of these newsletters? YES NO

To the best you can remember answer the following questions. Circle the number that applies to you.

3. How many of such newsletters would you say you received this year?
   8 7 6 5 4 3 2 1 0
4. How many of the newsletters would you say you read?
   8 7 6 5 4 3 2 1 0

Below are several statements about the newsletters you received on Better Breakfasts. Please, tell me how you feel about each statement by showing if you strongly agree, agree, disagree, strongly disagree, or undecided.

Keys:-
   If strongly agree circle ...... 5
   If agree. circle................ 4
   If undecided circle........... 3
   If disagree circle............. 2
   If strongly disagree circle... 1

5. More newsletters on Better Breakfasts should be supplied to the homemakers. 5 4 3 2 1

6. More words than pictures should be used in newsletters on Better Breakfasts. 5 4 3 2 1

7. The newsletter is just right for me and it needs no change. 5 4 3 2 1

8. The newsletter taught me much more about food and nutrition than other sources of information. 5 4 3 2 1

9. The newsletter plays no part in teaching me to plan better breakfasts. 5 4 3 2 1

10. The newsletter was a good guide to saving money in buying of food. 5 4 3 2 1
Keys:-
If strongly agree circle........... 5
If agree circle..................... 4
If Undecided circle.................. 3
If disagree circle................... 2
If strongly disagree circle........ 1

11. The newsletter used in the Better
Breakfasts program was difficult 5 4 3 2 1
for me to read.

To the best of your knowledge, answer (YES or (NO)
to the following questions. Circle your answer.

12. As you read the newsletter, did
you often feel like doing what
YES NO
you read?

13. As you read the newsletter, did
you ever do what you read?
YES NO

14. Does lack of money cause you to
not do what you read in the
YES NO
newsletter?

15. Do you fail to do what you read
in the newsletters because you
do not have the time?
YES NO

16. Will you recommend the newsletter
on Better Breakfasts to other
YES NO
friends?

17. If it could be possible, would
you like to receive more of this
type of newsletters?
YES NO

18. Do you sometimes discuss the
Better Breakfasts newsletters with
other neighbors before taking
action?
YES NO
To the best of your knowledge, answer (YES) or (NO) to the following questions. Circle your answer.

19. Does the color of the paper on which the newsletters were printed attract you? YES NO

Thank You.
APPENDIX B

Correspondences
December 31, 1969

Clarence J. Cunningham
Assistant Director, Staff Development
and Program Analysis
Agricultural Administration Building
2120 Fyffe Road
Columbus, Ohio 43210

Dear Mr. Cunningham:

This communication is for you and Joe. We have assembled the mailing list for the 84 homemakers selected to receive the newsletters. We have a question or two but we are trying to solve it locally.

Enclosed is a copy of the first two newsletters which I have prepared — one will leave our office today and the second will be mailed within two weeks (see date of mailing).

We have decided to send it under postage with our office return so that should any mail go astray, we will be able to trace it immediately.

Sincerely Yours,

Iris Macumber
County Extension Agent,
Home Economics
Iris Macumber  
County Extension Agent, Home Economics  
1001 South Main Street  
Dayton, Ohio 45409

Dear Iris:

Joe Efionayi and I both appreciated the opportunity to meet with you and Mrs. Morton regarding the research project on Communication Patterns among families in the Expanded Nutrition Program. We feel that with your excellent cooperation we can design a very satisfactory research project.

You will not on the attached sheet that we have the family identifications on 355 families from the records we reviewed last week. Three-hundred and thirty of these have available information on income level and educational level. We would appreciate your letting us know if the number of families for each aide is as about as indicated on the attached sheet. We will then proceed to draw the samples of those homemakers who are to receive your nutrition newsletter on better breakfast and those families that are not to receive the newsletter.

I have also included with this letter a tentative date outline of when each activity will be completed in this project.

If you have questions regarding any of these please let us know. Otherwise, Joe Efionayi will plan to meet with your aides to discuss the project after lunch on January 9, 1970.

Sincerely,

Clarence J. Cunningham  
Assistant Director  
Staff Development and progr-Analysis

cc: Joe Efionayi
Draw samples of families (Efionayi)

Prepare newsletters on Better Breakfasts (Macumber)

Meet with aides to discuss project (Efionayi and Macumber)

Start mailing newsletters at two week intervals (Macumber)

Prepare research instruments (Efionayi)

Field test instruments (Efionayi)

Do preliminary interviews (Efionayi)

Meet with aides to learn interview form (Efionayi)

Aides do interviews
December 31, 1969

Clarence J Cunningham
Assistant Director
Staff Development and Program Analysis
Agricultural Administration Building
2120 Fyffe Road
Columbus, Ohio 43210

Dear Mr. Cunningham,

In regard to our telephone conversation of Monday, I would like to make an addition. Please add R-15 families to the number which you already have.

thank you

Sincerely yours,

Grace S. Morton
Senior Nutritionist
Miss Iris E. Macumber
County Extension Agent,
1001 South Main Street
Dayton, Ohio 45409

Dear Iris,

We appreciate very much your co-operating with the research project on communication effectiveness with low income homemakers. As a follow-up of our telephone conversation may I indicate that we would like for you to substitute person 0-6 in place of H-1 and per E-13 in place of K-5. You should continue to use person Q-1, Q-2, and Moray, which I understand on your records is Q-14.

We are sending with this letter a copy of the people who will be interviewed who are not receiving the newsletter. We would appreciate very much your or Mrs. Morton checking the records to see if we have valid addresses on these people. There is no need to contact these individuals as this contact will only be by an interview in May.

I would appreciate very much your providing us ten copies of each copy of the newsletters. The reason for this quantity of copies is so Joe may include them as a part of his dissertation. Please send these in a large envelope so they are not folded.

Thanks so much for your continuing co-operation on this project.

Sincerely,

Clarence J. Cunningham
Assistant Director
Efionayi, Joe
George Wadlington
Staff Development and Program Analysis
January 27, 1970

Iris Macumber
County Extension Agent, Home Economics
1001 South Main Street
Dayton, Ohio 45409

Dear Iris:

Thanks for letting us know the results of the first mailing in our research project with the low-income homemaker. The substitute families, whom Joe Efionayi has randomly drawn, and for whom we have no return address, are I 33, C 6, and I 27. We have only three families to give you in place of the four since the fourth category found no available families to be used. This, I think, concludes the changes that we will make in those receiving the newsletter.

The only additional substitutes we may have to give you will be any families for whom we do not have an address, of those who are not to receive the newsletter.

We certainly appreciate your cooperation and the fine work of Mrs. Morton in assisting us in conducting this joint research project.

Sincerely,

Clarence J. Cunningham
Assistant Director
Staff Development and Program Analysis

cc: George Wadlington
Joe Efionayi
March 19, 1970

Mr. Joe Efionayi,
c/o Dr. Clarence Cunningham
Agricultural Administration Building
2120 Fyffe Road
Columbus, Ohio 43210

Dear Joe:

We are very pleased to send you the ten sets of the eight newsletters concerning Better Breakfasts. Some of these you have not seen. The last one is scheduled for mailing on April 20th.

If there is any question, please contact us.

Sincerely Yours,

Iris Macumber
County Extension Agent,
Home Economics
Miss Iris E. Macumber  
County Extension Agent  
Home Economics  
1001 South Main Street  
Dayton, Ohio 45409  

Dear Iris  

I appreciate so much your consent to review the items on the questionnaire for my research project on communication Effectiveness with the low income homemakers.  

In pursuance of this, I left for you a copy of this instrument for your validation.  

As it will be necessary to test the reliability of this instrument before its application, I attached hereto list of the following homemakers, who are not previously included in the study, as subject for the field test.  

Subsequent to my face to face conversation with Grace, the senior nutritionist, I shall be at your training session on April 24, 1970 for the purpose of interviewers orientation and planning for field testing of instrument.  

Thanks so much for your continued co-operation on this research project.  

Sincerely Yours  

J. A. E. Efionayi  

cc: Dr. Clarence Cunningham
April 27, 1970

J. A. B. Efonayi
Agricultural Administration Building
Room 254
Ohio State University
2120 Fyffe Road
Columbus, Ohio 43210

Dear Joe:

Since you were here last Friday, we have worked over the plans for the preliminary run on your questionnaire. Attached is a record of the Aides still employed who were here for your instruction meeting. You will notice that there are nine on the list to do preliminary interviews.

You selected Target "N" for two interviews and I am suggesting that you shift to either Target "E" or Target "I" and select the two numbers that you wish to use for interviews. This is in a public Housing project and I am sure that if you request, either of these Aides would walk along with you to locate the homemaker. I believe this would be more simple and you would enjoy your experience.
We are putting the packets of questionnaires and instructions in the mail today and you will recall that we set Friday, May 8th for them to be returned. As promised, the cover of each will be removed and that material typed from our office records.

According to these plans, you will have a total of 20 questionnaires for checking validity. Does this sound satisfactory to you?

We enjoyed having you visit our training meeting on Friday and if you have any questions, please contact us.

Sincerely Yours,

Iris Macumber
County Extension Agent
Home Economics

cc - Dr. Clarence Cunningham
Miss Vivian, Virginia M.
Miss Anita McCormick
Home Economics
Campbell Hall
1787 Neil Ave. Columbus Ohio

Dear Judges,

I wish to express my gratitude to you for the candid opinion expressed in your reviewing the tentative instrument for my study.

The comments you have made will be of immense value to me in the preparation of the final schedule while I am still looking forward to your invaluable advice if I am in difficulty.

Thanks for Co-operation

Sincerely Yours

Joseph A. B. Efionayi
Agricultural Administration Bldg.
Room 254
Ohio State University
Columbus Ohio 43210
May 20, 1970

TO:
The County Extension Agent
The Senior Nutritionist
The Nutrition Aides

RE: Research Project.

Dear Co-Workers,

Thanks for your help in the timely completion of the field testing of the instrument for research on communication effectiveness. The result was gratifying and made the research project to progress satisfactorily.

Enclosed are two sets of final questionnaire for this research project. The set labelled "A" is to be used with those homemakers who received the newsletters and the sets labelled "B" for those who do not receive the newsletters.

Contents of both sets are the same excepting that the section dealing with "Attitude Toward Newsletters" is not included in the set labelled "B".

Since the time lapse during which an interview is conducted has major effect on the result of the data collected, I would appreciate it if this final interview would be possibly completed latest on or by June 5, 1970.

Thanks

Sincerely

Joseph A. B. Efionayi

cc: Cunningham C. J. Adviser.
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