A COMPARATIVE FIELD EXPERIMENT IN VOLUNTARY BIRTH PLANNING

Dissertation for the Degree of Ph. D.

MICHIGAN STATE UNIVERSITY
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1976

This is to certify that the

thesis entitled

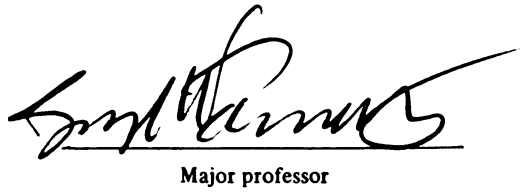
A Comparative Field Experiment
In Voluntary Birth Planning

presented by

Jeffrey Rothwell Taylor

has been accepted towards fulfillment
of the requirements for

Ph.D. degree in Social Science



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ABSTRACT

A COMPARATIVE FIELD EXPERIMENT
IN VOLUNTARY BIRTH PLANNING

By

Jeffrey Rothwell Taylor

Birth planning is voluntary planning and action by individuals to have the number of children they want, when and if they want them. Short intervals between pregnancies, large numbers of children and pregnancy in very young or old women are linked to abnormal rates of mortality and morbidity for mother and child. Recent fertility studies in the United States make it clear that couples in all socio-economic groups have been unable to control the number and spacing of their children according to their wishes. In spite of the comparatively low reproductive rates in the United States, we can still expect to see our population doubled in seventy years. Citizens must align their normative reproductive goals with those needed to produce an "optimum population."

Previous efforts at social change in birth planning have combined various approaches in such a way that it is difficult to determine which element of the approach was responsible for the change. This investigation attempts to distill both content and mode of presentation into their most simple, non-duplicating structure. Four such educational strategies are measured for their effect on birth planning knowledge, attitude and practice (KAP) variables.

A naturalistic field setting was chosen in which to conduct the experiment. Seventy-four married student wives who volunteered to

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receive birth planning education were randomly assigned to one of the four treatment groups or the control group. Two methods of presentation (brochure and small group discussion) and two types of educational content ("Choosing Birth Control Methods" and "Choosing Family Size") were used in a 2 x 2 factorial design with a single control group. New materials were developed to conduct the alternative modalities. Subjects were followed for six months.

Six major analyses of variance were performed on birth planning knowledge, attitude and practice summated rating scales. Five of the possible twenty-four separate tests were significant. The evidence suggests that knowledge of contraception can be taught equally well by the brochure or group discussion methods. Subjects receiving these materials scored significantly higher than those receiving information on choosing family size or no information. None of the experimental groups differentially changed birth planning attitudes or family size norms. Two of the presentations--birth control methods brochure and family size group discussion--contributed to significantly more severe attitudes toward overpopulation. The control group practiced more effective contraception and sustained fewer pregnancies after six months. A correlational analysis was performed among all major dependent measures. The conceptual inter-relationships of birth planning knowledge, attitude and practices were questioned. Changes in birth planning knowledge may not uniformly precede or predict a change in attitude or behavior.

A COMPARATIVE FIELD EXPERIMENT IN VOLUNTARY BIRTH PLANNING

By

Jeffrey Rothwell Taylor

A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Social Science

1976

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ACKNOWLEDGEMENTS

The opportunity of a student to receive both a humanistic and scientific education from a single person is rare in an era which reveres the specialist. George W. Fairweather, Ph.D., is the kind of person from whom we learn that,

> The major survival crisis facing man today is not overpopulation, environmental pollution, or even unjust social relations as single problems. Rather, it is their common denominator: man's unwillingness or inability to change his values, attitudes, behaviors and institutions (1972, p. 2).

I thank Professor Fairweather not only for assisting in this recognition but for setting forth many of the strategies for social change which may enable us to improve our culture, institutions and individual characters.

The highly professional work of my colleague, Susan Hedrick, during the first year of the project was of great value. Warm appreciation also goes to Nancy Purchase, R.N., and Elizabeth Goldsmith, M.A., who led the small group discussions on "Choosing Birth Control Methods" and "Choosing Family Size", respectively. Homer Sprague, Ed.D., developed the fortran program to execute the analysis of variance. Carol Gregory spent many hours typing this manuscript and I express my gratitude.

Finally, the author wishes to thank the National Science Foundation for Grant Number GZ-2179 which made possible this investigation of voluntary birth planning.

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CHAPTER I

INTRODUCTION

The Parameters of the Problem

The search for evermore effective means to control reproduction spans the vast sweep of human history. In walking this path, each culture and generation has left innumerable footprints of silent, bitter tragedy and precious few of successful advancement. The ancient Egyptians were methodically recording their observations and practices 1500 years before Gabriel announced that one of biology's most elemental laws was temporarily repealed. While many of these archaic techniques rested on the quicksand of magic and supernatural rite, others must have been empirically derived. Surely, among the latter, was the Egyptian method of combining lint with a powder ground from the tips of the acacia shrub. Acacia contains an acidic gum which is capable of lessening sperm motility and inviting its destruction. If placed in a strategic location and at the proper time, the nursery steadfastly maintained its calm repose. Even into modern times, the struggle for reproductive control goes forward. Individual and family sorrows are now increasingly joined by the prospect that man's fruitful increase has fundamentally and grievously strained the carrying capacity of the environment.

As interest in contraception flourished through the ages, several "themes" emerged to provide philosophical and scientific underpinnings for the birth control movement (Omran, 1971). These major themes are the ecologic, social, family health, eugenic, feminist and nationalistic.

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Although two of these themes will be presented later in detail, it is worthwhile to briefly review each rationale.

The ecologic theme contends that man is increasing his number beyond the capacity of the environment to sustain a high quality of life. The contemporary high priest of this idea is Paul R. Ehrlich, an eminent biologist who has devoted over seventy scientific papers and several books to the subject. Scores of other scientists have examined many aspects of the relationship between population and ecology (Population Reference Bureau, 1969). But few have matched Ehrlich's emotional impact as he sledgehammers public opinion through electronic media, lecture tours and organization of mass social movements.

> I have understood the population explosion intellectually for a long time. I came to understand it emotionally one stinking hot night in Delhi a couple of years ago. My wife and daughter and I were returning to our hotel in an acient taxi. The seats were hopping with fleas. The only functional gear was third. As we crawled through the city, we entered a crowded slum area. The temperature was well over 100, and the air was a haze of dust and smoke. The streets seemed alive with people. People eating, people washing, people sleeping. People visiting, arguing, and screaming. People thrusting their hands through the taxi window, begging. People defecating and urinating. People clinging to buses. People herding animals. People, people, people, people. As we moved slowly through the mob, hand horn squawking, the dust, noise, heat, and cooking fires gave the scene a hellish aspect. Would we ever get to our hotel? All three of us were, frankly, frightened. It seemed that anything could happen - but, of course, nothing did. Old India hands will laugh at our reaction. We were just some overprivileged tourists, unaccustomed to the sights and sounds of India. Perhaps, but since that night I've known the feel of overpopulation (Ehrlich, 1968, pp. 15-16).

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This latter day exponent, however, was preceded a century-and-a-half by Thomas Malthus, an English preacher and economist. The conclusions drawn by this able mind were the first signals among a litany of alarms that were to follow:

> Population, when unchecked, increases in a geometrical ratio. Subsistence increases only in an arithmetical ratio. A slight acquaintance with numbers will show the immensity of the first power in comparison of the second.
>
> ...the increase of population is necessarily limited by the means of subsistence...population does invariably increase when the means of subsistence increase (Malthus, 1798).

The social welfare theme marked its beginning when Francis Place (1823) vividly argued the need of ordinary working people to practice methods of contraception. Place argued that high rates of reproduction created a labor surplus which drove wage rates below subsistence levels. A corollary of his argument pointed out the human misery which resulted from the practice of child labor, which was begun in order to reduce the number of mouths at the worker's table.

The family health theme was first effectively championed by Charles Knowlton (1833). This New England physician recognized the irreparable damage brought by frequent, closely spaced pregnancies on the women in his medical practice. He explicitly advocated the use of birth control methods, particularly chemical douches to avoid the clinical aftermath of unrestrained childbearing. His approach was a far cry from that of Malthus, who counseled "moral restraint."

The eugenic movement, beginning with Sir Francis Galton's (1883) landmark publication focused on the popular fear that the unfit, who could never understand the practice of birth control, would rapidly

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increase their numbers and reduce the "fit", who did practice birth control, to an ever smaller minority. During World War II, Adolph Hitler and his brain trust pushed this argument to its greatest absurdity, and shamed all mankind. This theme flows through America in the 1970's as she examines such diverse activities as the wars she wages and the national family planning programs her leaders direct.

Margaret Sanger, a public health nurse working in 1912 among the poor of New York City, gave birth to a feminist theme in the birth control movement. Distraught by the death of one of her patients who had undergone multiple abortions, she decided to devote the balance of her life to freeing women by providing them with those facts and methods needed to gain a measure of control over an often gloomy and short-lived existence. Persistently, nonviolently and with a graceful command of the available facts she opened birth control clinics, distributed information, spoke and lectured before groups large and small, some of them her cellmates. Her legacy is the Planned Parenthood-World Population Federation, which she founded and which now undertakes its chosen work on a worldwide basis. Margaret Sanger was one of many who began to knock at the door of full equality for women. Her basic arguments and philosophy are eminently compatible with contemporary movements to secure abortion reform and the equal rights amendment to the Constitution.

The nationalistic theme began within the last twenty-five years in response to enlightened self-interest on the part of many less developed countries. Many of these nations, believing that permanent gains in economic growth were impossible without some success at limiting runaway population growth, cooperated with a variety of international agencies

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to develop and implement national population control and distribution policies. As world politics and coalitions have shifted, much skepticism has emerged among the "third world" countries about the relation of population to national economics and the motives of industrialized nations in stimulating world population limitation programs. The 1974 World Population Conference in Bucharest, Romania, while representing a breakthrough in international discussions, certainly indicated that not all nations believed that population limitation was in their national self-interest.

Five major positions were stated at the conference.

1. Population growth is desirable to fill empty lands (Brazil), or for development and defense purposes in the developing world (China), or to stimulate the economy (France).

2. Population growth is not an important variable, development is (many African and Latin American States).

3. Rapid population growth intensifies problems in socio-economic development (most of Asia, Western Europe, the United States, Oceania, Japan, and some Latin American States).

4. Population is a key variable in socio-economic development (Bangladesh).

5. There is no need for population policy. In a well-organized society the demographic trends are adjusted automatically by social and economic factors (Eastern Europe, excluding Romania and Yugoslavia). (Mauldin, Choveri, Notestein and Teitelbaum, 1974, p. 359).

Two of these themes, the ecologic and family health constitute the major rationales under which the present research was conceived. These themes deserve a more deliberate development.

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Health Rationale for Birth Planning

Over the last decade, birth planning programs have emerged around the United States in response to a need to protect the health and well-being of mothers and their children. Many public health officials have come to realize that action to help families achieve optimal child-bearing patterns is as fundamental an aspect of public health care as environmental sanitation and communicable disease control (World Health Organization, 1971).

Birth planning is voluntary planning and action by individuals to have the number of children they want, when and if they want them (Jaffe, 1973). Short intervals between pregnancies, large numbers of children and pregnancy in very young or old women are linked to abnormal rates of mortality and morbidity for mother and child. Large numbers of children are associated with a number of complications in pregnancy and delivery, including placenta praevia, accidental hemorrhage, prolapsed cord, abnormal presentation or position of the fetus, rupture of the uterus and postpartum uterine inertia with severe bleeding. Large numbers of children may lead to nutritional deficiency in the mother resulting in anemia, calcium deficiency and difficulties in breast feeding. It has also been suggested that the incidence of diseases, like diabetes mellitus, increase as susceptible mothers have more children (World Health Organization, 1970).

Day (1967) isolated several health outcomes linked with high parity and the spacing of pregnancies.

1. The ideal age for maternity appears to be between 20 and 30 years of age.

2. An interval of approximately two years between the end of one pregnancy and the beginning of

another is associated with the lowest incidence of late fetal and neonatal mortality and prematurity. Survival through childhood is more likely if pregnancy intervals are three years or more.

3. Stillbirths are most frequent among firstborn infants, especially if the mother is over 35. The very young mother also displays a somewhat higher stillbirth rate.

4. The older father, regardless of the age of his wife, is also more likely to have a stillborn child than a younger man.

5. Older parents are more likely to have children with congenital defects of certain types than those who are young; this is true of both father and mother.

6. High birth orders are associated with greater risks, especially if the mother is young, perhaps as a result of the short intervals between pregnancies of the young multiparous mother.

7. Growth in height and weight of children is less in large families than in small ones.

8. Early fetal loss appears to be biologic in causation and is often associated with malformations and chromosomal derangements. Later deaths, especially those in childhood, are probably caused by environmental factors to a large extent.

9. The mother, whose baby is at greatest risk from preventable conditions, and who would be most likely to benefit from medical care (including contraceptive advice), is the young multipara (having two or more pregnancies which resulted in livebirths). Improvement in the health care of such women, especially those who are economically deprived, would be likely to result in the greatest improvement in total pregnancy outcome statistics.

10. Environmental factors probably play a large role in the associations which have been described, but separation of these influences from other variables has proven difficult.

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As Day has so adequately demonstrated in his summary, health outcomes for mother, child and family can be related to the key variables of maternal age, parity (number of children previously born) and birth interval. Siegel and Morris (1974) suggest, that while these variables are apparently powerful determinates of health outcomes, their relationships can only be expressed as associations and not in terms of cause-and-effect. Socio-economic status and psychological factors also play a large role in pregnancy outcome.

Age. The risk of mortality or morbidity to both mother and child is high in the early maternal teen years, drops to its lowest point during the mid-twenties and steadily increases thereafter, reaching its highest peak of risk at the most advanced maternal age. This variation in reproductive risk by maternal age is thought to be a result of biological factors (Nortman, 1974).

> Early spontaneous abortion, often of a genetically defective fetus, increases with age of woman. Hormonal, morphological, and histological changes with age noted in the reproductive and related organs of many animals, including man, indicate a deterioration in reproductive capacity with age. And, although the human male is capable of producing viable germ cells, that is, spermatogenesis, for a much longer part of his life span, the quantity and quality of spermatozoa deteriorate with advancing age (Bishop, 1970).

According to Nortman (1970), the pattern of relative reproductive risk can usually be portrayed as a U or J shaped curve with respect to maternal age. However, absolute risk at any particular age is influenced by social, cultural and economic factors. Accordingly, in a low maternal mortality country, the highest maternal age group may have a lower absolute maternal mortality rate than much younger women in a high mortality country.

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Maternal age, among other associated factors, has a strong relationship to perinatal outcome. Low birth weight infants (2500 grams or less) are particularly susceptible to perinatal death. When birth weights are examined by maternal age, one sees the expected reversed J shaped curve result.

Table 1.1

Low Weight Michigan Resident Livebirths
By Age of Mother, 1973

Age of Mother	Number Low Weight Livebirths	Rate/1000 Total Livebirths
Under 15 years	91	159.3
15 - 19 years	2,790	100.3
20 - 24 years	3,873	75.5
25 - 29 years	2,542	63.8
30 - 39 years	1,525	73.7
40 years & over	128	95.6
TOTAL	10,949	77.4
Median Age of Mother	23	

Source: Michigan Department of Public Health, 1973, p. 15.

A number of congenital anomalies are associated with advancing maternal age.

> ...Down's syndrome (mongolism) has an incidence of about 1 in 2,000-2,500 livebirths; this rises to 1 in 300 for mothers aged 35-39, and becomes progressively more frequent, the incidence being at least 1 in 50 and possibly as high as 1 in 35 in the children of the very oldest mothers (World Health Organization, 1970, p. 14).

Parity. As mean maternal age increases, so does mean parity. Many scientists have found a substantially higher incidence of mental retardation, congenital malformations, low-weight infants and infant mortality associated with a parity of four or greater (Kessler, 1967).

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The grand multipara--women who have delivered 6 or more children--appear to have not only higher maternal and infant mortality rates, but also

> ...a high incidence of maternal diseases and obstetric complications, such as hypertensive cardiovascular disease, placenta previa, abruptio placentae, anemia, heart disease, prolapsed cord, ruptured uterus, and postpartum hemorrhage (Quinlivan, 1964; Israel and Blazar, 1965).

In a landmark study undertaken by Yerushalmy (1945) of over 200,000 stillbirths occurring in the United States, he found the stillbirth rate the lowest for second order births. The rate per thousand livebirths rose to a level twice as great for sixth order births. Newcombe (1965) found an increasing risk of infant death with increasing birth order. This effect was heightened when maternal age was controlled. Despite the contemporary development of regional perinatal intensive care hospital centers, the grand multiparous maternity patient continues to have a higher risk at birth.

Birth Interval. Large numbers of closely spaced pregnancies may have detrimental health impacts on both mother and infant. Bishop (1964) found significantly fewer low-weight births as the length of time between pregnancies increased. When at least two years elapsed between births, he found the percentage low-weight to be 7.8. When the birth interval fell below twelve months, the low-weight rate climbed to 18 percent. Similar results of an anlysis of birth spacing were derived in a British study involving 13,000 births which occurred over a relatively brief span of time (Douglas, 1950). Some scientists, however, who have attempted to control factors such as prior reproductive outcome, age, and social class, believe that birth spacing is a

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Unwanted Conceptions. The role of birth planning in preventing or relieving personal and family stress has been seriously analyzed by many investigators (Pohlman, 1969; Lieberman, 1964; Guttmacher, 1967). Unwanted pregnancies seem to lead to an increased incidence of previously illegal abortion, rejection of the neonate and poor maternal attachment, and not infrequently, the battered infant. As Pohlman has stated:

> If the expectant parent feels hostility, this may be directed toward himself or herself, toward the spouse, or toward the unborn child...Hostility directed toward the unwanted child may begin before birth, in a culture where it is anticipated that the pregnancy will lead inescapably to another member in the family (Pohlman, 1969, p. 223).

Schwartz (1969) has suggested, as a result of intensive studies carried out on large families, that the "unwanted" child has a greater risk of developing mental illness. Latter born, presumably "unwanted" children of the grand multipara, were found to have a higher incidence of psychiatric symptoms, physical illness and lower degrees of social adjustment.

Lieberman (1970) in his eminent "case for the small family", demonstrated lowered intelligence scores in children as family size increased. This relationship held true even when social class was held constant. Lieberman points to studies conducted by the National Institute of Mental Health, which found that children from large families exhibited a disproportionate amount of dependency behaviors when compared to children from small families.

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The work of Belmont and Marolla (1973) tend to confirm the work of previous investigators who found independent relations of birth order and family size to intellectual performance. They found an inverse relationship between family size and Raven matrices score. As family size grew larger, the level of intellectual performance decreased. And, as expected, as birth order position grew higher, performance declined. The effects of family size on intellectual performance were not present across all social classes studied, but birth order did maintain such a consistent pattern.

Many other negative consequences have been thought to have resulted from unwanted conceptions. These include:

> ...nausea and vomiting of pregnancy, spontaneous abortion, toxemias of pregnancy, problems of labor and delivery, emotional illness surrounding birth, marital friction, and divorce (Siegel and Morris, 1974, p. 996).

Poverty. More poor than nonpoor women of reproductive age suffer from medical conditions which are related to high-risk of natality (U.S. Department of Health, Education and Welfare, 1965, U.S. Public Health Service, 1963). These conditions include poor nutrition and anemia, toxemia, premature labor, diabetes and vascular related diseases.

Poverty among parents compounds the dangers of high-risk for infants. In a well-to-do section of Detroit, a baby has only eleven chances in a thousand of dying before his first birthday. The Detroit city average is 27 per thousand, a risk increase of nearly 250 percent (D.M.I.C., 1970). In a high-income Chicago area, babies have twice the chance of survival of their counterparts born to the poorest couples (Sheppard, 1967). Unwanted pregnancies seem to intensify family poverty and

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Birth Planning Intervention. There are several measures available which may reduce perinatal and infant mortality and morbidity. Among these measures are improved prenatal care, including the identification and management of the high-risk maternity patient, improved pediatric care for infants, intensive care for newborns and comprehensive birth planning services. In an analysis released by the U.S. Department of Health, Education and Welfare (1966), it was concluded that family planning is the single most cost-effective intervention measure available to reduce infant mortality by a margin of six to one over the next most effective program.

Campbell (1968) believes that the prevention of unplanned births would have a substantial positive impact on families living in poverty. The $100.000 cost of family planning for one year would be more than offset by the estimated $8,000.00 cost of the child over the years. The working wife could similarly add income which might have otherwise been lost to the family. Campbell's general thesis received an updating by the President's Commission on Population Growth and the American Future (1972). In this study the total cost of the first child through 18 years of age is estimated at $59,627.00.

Marmol and others (1967) have effectively argued that many maternal health benefits occur when potentially high-risk maternity patients are placed on a birth control regime, at least until their medical problems are alleviated. Permanent methods are recommended for those patients with unalterable medical risks. The World Health Organization concurs and in one example points out that:

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> A mathematical prediction made in 1966 that the use of birth control methods to eliminate these periods of highest risk from the child-bearing period would reduce the number of mongoloid children born by one-third appears to be substantiated by recent studies in Japan, Australia, and the United Kingdom (World Health Organization, 1970, p. 14).

In summary, the achievement of small, thoughtfully spaced families seems to increase the health and well-being of the mother, child and family unit. These benefits include less low-weight infants; lower maternal, perinatal and infant mortality; greater growth and development in children and a greater likelihood of a more harmonious and satisfying family life. Largely as a result of reviewing findings similar to those presented above, the President's Commission on Population Growth and the American Future (1972) recommended

> ...a national policy and voluntary program to reduce unwanted fertility, to improve the outcome of pregnancy, and to improve the health of children.
>
> In order to carry out such a program, public and private health financing mechanisms should begin paying the full cost of all health services related to fertility, including contraceptive, prenatal, delivery, and postpartum services; pediatric care for the first year of life; voluntary sterilization; safe termination of unwanted pregnancy; and medical treatment of infertility.

Present Concerns for Overpopulation

In viewing global population increases, the growth of highly industrialized nations, including the United States, seems mild in comparison to the growth rate in much of the economically underdeveloped nations. Low birth rate regions of the world include Europe, Northern America, USSR and Oceania. High birth rate regions include Asia, Africa, Middle America and South America (Bogue, 1969). The net rate of reproductive change (crude birth rate minus crude death rate) also

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closely parallels the regional birth rate breakdown given above. In spite of the comparatively low reproductive rate in the United States, we can still expect to see our population doubled in 70 years. Why is there any need for concern about population growth in the United States? In a recent Message on Population, the President stated,

> For some time population growth has been seen as a problem for developing countries. Only recently has it come to be seen that pressing problems are also posed for advanced industrial countries when their populations increase at the rate that the United States, for example, must now anticipate. Food supplies may be ample in such nations, but social supplies--the capacity to educate youth, to provide privacy and living space, to maintain the processes open, democratic government--may be grievously strained (Nixon, 1969).

The Committee on Resources and Man points to the increase of "strip cities" or megalopolises in the United States and warns,

> the response of society to higher density is usually the very opposite of reserve and respect for the privacy of individuals; it is usually interference and planning (Keyfitz, 1969).

Urban life intensifies interpersonal competition in many areas of an individual's life, and these conditions seem to grow worse as population density increases.

Additional reasons why the United States should be concerned about its population growth are summarized by Elliot, Landman, Lincoln and Tsuoroka (1970).

1. The United States should put its own population house in order if it is to maintain international credibility and good will in its efforts to help other nations stem their population increases.

2. The United States even though it contains only 6 percent of the world's population uses a disproportionate amount of the world's resources. For example the United States uses 34 percent of the world's energy production, 29 percent of

all steel production, and 17 percent of all timber cut. Thus we are not only depleting the world's resource reserves at an alarming rate, but are preventing future industrial growth in the now underdeveloped nations of the world.

3. An evergrowing population is not desirable in terms of raising per capita income in the United States. Similarly a growth economy with minimal controls over technologically produced pollution, only reduces the overall quality of life which the average citizen leads.

Many arguments have been made that the United States must merely plan for the expected increases in population, by creating new cities and redistributing the population into uninhabited areas, thus avoiding further build-up in the big cities. Borgstrom (1969), however, notes that many areas of the country are less populated for good reasons, either lack of resources needed for development and industrial growth, such as water, or the need to maintain crop production including timber and as well as preserving some elements of resource conservation.

The United States has experienced the so-called "demographic transition" and in recent years, particularly, has experienced a decline in birth rate. The point is raised, however, of how much population growth is too much. What is the "optimum population" for a country? This is usually a much smaller figure than the total "carrying capacity of the environment." Day (1969) argues that it would have been "better" if the United States' population had stabilized at around 150 million. Others are willing to accept increase in U.S. population up to 300 million with few qualms (Nixon, 1969). The report of the First National Congress on Optimum Population and Environment (1970) stated:

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> Our (U.S.) human population has already strained the carrying capacity of our natural environment. To arrest this decline we recommend that our population be rapidly stabilized and that we take the necessary steps to make optimum use of our natural environment.

Although the bulk of family planning efforts in this country have been directed at the poor, the poor themselves contribute little to the overall U.S. growth rate in spite of their 50 percent higher fertility rate. This is due to the relatively small aggregate number of poor people existing in the society today. As minority group people enter the higher income levels, their total family size begins to closely approximate that of the white population (Office of Economic Opportunity, 1969).

Two hundred years of disastrous relationships among the different racial, ethnic and cultural groups in America have left their mark on the reaction of minority group persons to family planning programs and especially any hint of a population policy.

Dr. Eugene Callender, president of the New York Urban Coalition, in a hearing before the U.S. Population Commission (1972) said:

> Minority groups must share the generally growing concern for the quality of life available to us as the population increases. However, it must also be kept in mind that minority groups have only recently been allowed to become participants in this system, to receive its benefits, and to share in shaping its future. We are even more anxious about our position within the society, since our few gains are even now, tenuous (p. 72).

Leaders, such as the Reverend Jesse Jackson, have succinctly expressed black fears of genocide and loss of political power through implementation of population policies.

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> You have to recognize that the American group that has been subjected to as much harassment as our community has is suspect of any programs that would have the effect of either reducing or leveling off our population growth. Virtually all the security we have is in the number of children we produce (Commission on Population Growth, 1972, p. 73).

American society has not successfully answered the charges leveled by black, Chicano, Indian and other minority groups. Until there is a massive and effective effort to ameliorate the survival problems faced by the poor and a sharing of opportunity, status and productive social roles, policymakers should realize that cooperation from minority leadership on any population control program will be unenthusiastic. In fact, one could expect serious opposition to any such plan.

Research Philosophy

Davis (1967) has indicated that family planning policy is not a substitute for population policy. The goals of each policy, in his opinion, while complementing one another in some cases, are opposed to each other in other areas, i.e., the family which practices adequate birth planning, but who has large numbers of children. A country might achieve a near perfect "contraceptive society" through family planning programs, but the population growth rate could continue to increase at an unacceptable rate because the average family had large numbers of children. Osborn (1963), in contrast to Davis, calculated that if unwanted conceptions alone were eliminated, the United States' birth rate would drop to near replacement. Freedman and Takeshita (1969) argue that family planning programs are not the answer to problems of population stabilization but contribute in large measures to the achievement of a stable population.

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While there is great concern for the problems posed by overpopulation, there has been great reluctance on the part of elected public officials to endorse population measures which might apply the coercive power of government to such a highly personal area of human behavior. The constituency to vocally support such measures generally exists in a few organizations with small memberships. "Right to Life" lobbies, however, are gaining strength daily, financing their efforts through Wednesday night bingo. These later groups have begun to branch out from abortion related issues to the entire gamut of family planning, population, pornography and sex education policies.

Public officials find it difficult to face any controversial issue head on, primarily because it may result in a fracture to their winning coalition of voters. If a leader does "risk his political neck" he is much more likely to do it on a here-and-now issue like campaign reform or tax policy rather than a long-run issue such as population policy. Of course, this predisposes the "system" to a series of incremental changes which often overlook key survival problems and their solutions.

The United States was probably fortunate in a historical sense to have adopted a national family planning policy before the abortion issue found its way into the headlines. By the year 1974 a law similar to the Family Planning and Population Research Act of 1969 probably could not have passed. Even continuation funding has been difficult to obtain for the modest programs set forth in the 1969 legislation.

In Michigan a family planning policy was enunciated by the Governor (Milliken, 1973) in a message to the Legislature:

> Ideally, our system of health care should be capable of providing ready access to preventive health services for all Michigan citizens.

> Unwanted and mistimed pregnancies are associated with the wide range of health, social and economic problems such as individual and family disorganization, economic dependency, illegitimacy, divorce, separation, child abuse, elevated maternal and infant mortality and morbidity, interruption of education, and unemployment. Comprehensive family planning services represent a basic weapon for combating these problems.
>
> I believe that everyone in Michigan should have the opportunity to determine the number and spacing of their children. It is the policy of my administration to see that information about family planning be made generally available and to actively promote access to family planning services for all individuals desiring them. The State should stimulate further development of family planning resources, while continuing to purchase, subsidize, or directly provide needed services for those with economic or other access problems.
>
> Family planning programs provided by government agencies should be part of preventive health services and should include medical, social, and educational components. Such programs must respect the sanctity of the individual conscience, of course.

Programs in Michigan then are a result of the Federal focus on health-related family planning efforts as opposed to a demographic and environment-oriented population policy.

In general, the present research is in philosphical agreement with Bernard Berelson (1969) who proposes that we should be thoroughly evaluating voluntary birth planning measures rather than throwing up our hands and resorting to hard measures in the absence of unequivocal evidence that "soft" family planning and other voluntary education programs will not do the job. Berelson describes the ethical parameters of the voluntary approach which would:

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2. promote other goals that are worth supporting on their own merits...and would not indirectly encourage undesirable outcomes, e.g., bureaucratic corruption,

3. not weigh heavily upon the already disadvantaged and tend further to deprive the poor, and

4. be comprehensible to those directly affected... and subject to their response.

The First Congress on Optimum Population and Environment (1970) also lists the principles which they feel should be contained in any program to achieve reduced population growth. They are:

1. be voluntary and consistent with human rights, individual conscience and freedom of choice,

2. do not penalize children,

3. be consistent with stability of the family,

4. avoid coercion and compulsion,

5. avoid raising death rate; for example, through war, famine and disease,

6. provide for political participation and social and economic justice for minority groups.

Probably one of the key tenets in all of the above is the concept of allowing people to make a free choice and making available to them the information needed to make their choice. The basic program must not violate democratic and humanistic values and it must be acceptable to the average citizen. This project was, therefore, structured as an experimental search for the most effective means of communicating birth planning information.

Considerations In Designing A Voluntary Birth Planning Experiment

Public policymakers in both the executive and legislative branches of government are increasingly aware of the high cost attached to

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intervention programs which begin with high hopes and a "Bon Voyage", but end in failure. Unintended program consequences, cost overruns, taxpayers in revolt and poor revenue conditions have combined to dull the appetite of those who believed government could conceivably be useful in spearheading an effective attack on the many ills of the nation. Failure has not always led public policymakers into the waiting arms of social scientists capable of conducting meaningful research and development projects. Nevertheless, the field experiment can, if well designed, contribute to a realistic examination of public policy alternatives.

The synthesis of humanistic values and scientific methods has led to a new set of strategies for developing testing and diffusing social and technological changes called "methods for experimental social innovation" (Fairweather, 1967). This approach, which is at once problem-oriented and multidisciplinary, takes the view that:

> ...scientific methods can be applied to social problems so that changes can occur in a society in a systematic, planned and orderly manner which is compatible with, indeed is essential to, humanitarian values (p. 2).

Methods of experimental social innovation combine many of the scientific methods known by social scientists. These methods include the following characteristics:

1. address a significant social problem,
2. involve multidisciplinary observation and measurement of phenomena in the naturalistic environment,
3. develop innovative social subsystems with the full knowledge and informed consent of those participating,
4. design experiments,

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5. implant innovative social subsystems in the naturalistic environment,

6. operate and evaluates the subsystem over a period of time,

7. researcher takes responsibility for the welfare of experimental subjects (Fairweather, 1967, p. 21).

The role of a society's processes to maintain and perpetuate itself comes into sharp focus when a social change must be made as opposed, for example, to a physical or technological change. Resistance to social changes must often be overcome by altering strongly maintained norms, roles and institutions. The experimental method is particularly appropriate for analysis of those situations which involve complex social and environmental interrelations, are longstanding chronic problems or are major problems which are foreseen in the future.

Contraceptive Failures

Recent fertility studies conducted in the United States make it clear that couples in all socio-economic groups have been unable to control the number and spacing of their children according to their wishes (U.S. Department of Health, Education and Welfare, 1971; Ryder, 1973). From 1960-1965, an estimated 15 percent of births to nonpoor and 32 percent of births to poor couples were unplanned at the time of conception.

Data from the 1970 National Fertility Survey suggest that, of those couples using contraception, twenty-six percent wishing to delay a pregnancy fail within one year (Ryder, 1973). Couples using contraception to completely terminate childbearing experience a lower, fourteen percent, level of failure within one year. Differences in contraceptive success rate by planning goal, either "spacing" or "limiting", are

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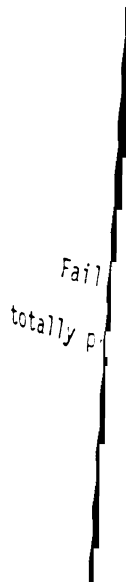

substantially responsible for the finding that younger persons are much less likely to succeed with contraception than those in the oldest age groups.

With the exception of sterilization, the birth control pill continues to be the most effective contraceptive in actual use, followed by the IUD. The condom and the diaphragm are moderately successful in preventing an unplanned pregnancy. Couples who use foam, rhythm and the douche, however, have much high failure rates. Table 1.2 gives the percent of contraceptors who had an unintended pregnancy in the first year of exposure to risk by contraceptive method used (standardized for intent to delay or prevent pregnancy and relative age at previous pregnancy).

Table 1.2

Contraceptive Method By Percent Failing

Method	Percent Failing
Pill	6
IUD	12
Condom	18
Diaphragm	23
Foam	31
Rhythm	33
Douche	39

Source: Ryder, 1973, p. 140.

Failure rates are strikingly different when intent to delay versus totally prevent a pregnancy are considered (see Table 1.3).

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Table 1.3

Twelve-Month Failure Rates
(By Intention to Delay or Prevent a Pregnancy)

Method	Delay	Prevention
Pill	7 %	4 %
IUD	15	5
Condom	21	10
Diaphragm	25	17
Foam	36	22
Rhythm	38	21
Douche	47	40

Source: Ryder, 1973, p. 140.

Younger couples, with the intention of delaying a first birth or spacing their children at appropriate intervals, must pay particular attention to the relative use-effectiveness of alternative methods to have a fair chance of success.

Current Fertility Levels

Between 1970 and 1974 the number of livebirths in Michigan declined from 171,667 to 137,414. The livebirth rate fell from 19.3 to 15.1, reaching its lowest level recorded in the twentieth century. The previously low livebirth rate occurred in 1933 during the Great Depression, when a level of 16.2 was observed. Additional perspective can be placed on this occurrence by comparing observed birthrates with the concept of zero population growth (ZPG). Under the ZPG concept, each generation of women would have only those numbers of children needed to replace that generation. Based on present survivorship rates in Michigan, attainment of ZPG would mean that each woman would have an average of 2.11 children (Gorwitz and Siddique, 1972). This idea can be translated in Michigan to

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Source:

achievement of an annual fertility rate of 70.3. In 1974 the fertility rate had declined to a level of 70.0.

Young wives in the prime childbearing years (18-24) seem to want substantially fewer children than did previous cohorts, even in the recent past (U.S. Bureau of Census, 1972). By 1971, this group lowered its expected number of births from 2.9/women in 1967 to 2.4/women in 1971. This survey, according to the Census Bureau, represented the first time that the level dropped greatly below 3.0, where it had remained for years. Actual births in the 18-39 age group also declined to a level of 2.8/women. At least sixty-four percent of the young wives (18-24) expected two or fewer children.

Median age at marriage for women rose between 1960 and 1971 from 20.3 years to 20.9 and the proportion of never marrieds among women 20-24 years old to thirty-seven percent.

The above data strongly suggest that there is a national trend which is being closely paralleled in Michigan toward reduction in expected and actual family size. Previously wide gaps in fertility expectations between income, racial and religious groups also appeared to close (see Table 1.4).

Table 1.4

Average Number of Total Births Expected by Currently Married Women & Actual Births, Per Wife, According to Age & Income Status

	Births Expected By 1971 Family Income			
	≤ $5,000		> $5,000	
Age of Wife	Total Expected	To June 1972	Total Expected	To June 1972
14-24	2.3	1.0	2.2	0.9
25-29	2.1	2.5	2.4	1.8
30-39	3.8	3.6	3.0	2.9

Source: U.S. Census Bureau, 1973.

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Alternative Change Strategies

There are a number of alternative modes of communication which may be used to induce change. The type of communication method chosen could depend on the type of change target.

> If an innovation is to be adopted by individuals, and it involves little change in role specification and normative behavior, a communication having wide scope but limited intensity or persuasive power might be the method of choice (a memo or a pamphlet). However, if the innovation is one in which radical changes in role behavior are called for and in which the adopting unit is a cohesive social group within the organization, a communication of limited scope but of high intensity to overcome existing peer group norms and make specific action recommendations (a task-oriented consulting session) might be needed (Fairweather, et. al., 1974, p. 24).

The current research is aimed at improving birth planning knowledge, attitudes and practices. While birth planning knowledge might be improved by a communication device of "limited intensity" it is doubtful that deeply held family norms or contraceptive practices could be altered with similar ease. It would be worthwhile, therefore, to examine several alternative modes of communication for their potential usefulness in a voluntary birth planning experiment.

The written word has been used throughout history to communicate information to large numbers of people (Havelock, 1971, p. 9-4). According to Havelock (1971), however, at least three major characteristics of the target audience impact on the effectiveness of written media: (1) education and socio-economic status, (2) cosmopoliteness and (3) innovativeness. Written media users tend to be better educated and to have a higher socio-economic status (Schramm, 1962; Clausen, Seidenfeld and Deasy, 1954, and; Youmans, 1958). Persons changed through written media approaches tend to be high consumers of all media

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or "cosmopolitan". Havelock also cites additional evidence which indicates that written materials may provide an important informational function to highly specialized audiences, like professional groups, but may be less effective where the target audience is highly heterogeneous. Written media are most effective when the message content is salient to an audience with the above personal characteristics.

The social group can be used as a medium of change (Cartwright, 1967). The group can be seen as a potentially strong source of influence, either in support of or as a stumbling block, to change. To change the behavior of individuals it may be necessary to alter the norms and behaviors of groups to which the individual belongs. Several principles have been identified which may have a bearing on the outcomes of social change efforts which use groups as a medium of change.

1. If the group is to be used effectively as a medium of change, those people who are to be changed and those who are to exert influence for change must have a strong sense of belonging to the same group.

2. The more attractive the group is to its members the greater is the influence that the group can exert on its members.

3. In attempts to change attitudes, values or behaviors, the more relevant they are to the basis of attraction of the group, the greater will be the influence that the groups can exert upon them.

4. Efforts to change individuals or subparts of a group, which, if successful, would have the result of making them deviate from the norms of the group, will encounter strong resistance (Cartwright, 1967, p. 15-17).

Havelock (1971, p. 5-27), based on an extensive review of the literature, believes that group participation renders an individual more open to persuasion and change. This is especially true if the group is

cohesive and if the norms of the group are open to innovation and change. Individuals who are highly accepted within the group, however, may operate quite independently of the group's normative structure. Some evidence also is cited by Havelock (1971) which indicates that even when some group members are subjected to enormous social pressures, there are circumstances under which they still strongly follow their own ideas. This is particularly true when individuals are not called to a "public accounting" of their beliefs and actions. If group participation is effective, then there is a greater likelihood that individual resistence to change can be overcome.

Finally the use of "change agents" has been extensively discussed by Rogers and Shoemaker (1971). A change agent is defined as, "a professional who influences innovation - decisions in a direction deemed desirable by a change agency" (Rogers and Shoemaker, 1971, p. 227). These social scientists believe that the change agent could contribute several factors to the change process:

1. develops a need for change on the part of his client,
2. establishes a change relationship with them,
3. diagnoses their problems,
4. creates intent to change in his client,
5. translates this intent into action,
6. stabilizes change and prevents discontinuances, and
7. achieves a terminal relationship with his client (p. 248).

The success of the change agent seems to depend on the degree to which the agent works hard, is both empathetic and credible, and the extent to which he shares major personal characteristics with his clients.

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The change agent idea was used in part by Fairweather, Sanders and Tornatsky (1974, p. 34) when an action consultation technique was developed to assist mental hospitals in establishing a community based treatment program called the "lodge society". The role of the outside action-consultant was to aid the hospital through telephone calls and three site visits to develop such a program. When the action-consultant was compared with provision of written materials in achieving those tasks necessary to create a new lodge, a highly significant difference in favor of the action consultant was found (Fairweather, et. al., 1974, p. 140).

The three mediums of change discussed above, the written word, group interaction and the use of change agents can be conceptualized along an action-inaction dimension. Inactive mediums such as the written word may prove effective if the audience is highly interested and receptive. Expected changes might include increased knowledge and awareness. Group participation, when used as a successful means for change may require a group process in which there is cohesiveness, responsiveness and homogenity of group membership. Behavioral changes may be difficult to obtain if strongly held group norms are violated. The use of change agents may be particularly effective if the type of change agent selected meets several personality and demographic criteria and is oriented toward behavioral compliance and task accomplishment (Fairweather, et. al., 1974, p. 187).

Previous Efforts At Family Planning

Although a great deal of work has been done in family planning, most research in this area is in the form of pilot service programs with an evaluation component (Beasley, et. al., 1969). However, there

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have been some comparative field experiments done, both in the United States and around the world which present empirical data on the relative effectiveness of alternative methods of influencing family planning knowledge, attitudes and practices.

In a noncomparative social change project, Bogue (1965) mailed a family planning pamphlet to Chicago slum dewellers. In the follow-up study he found that this mass communication effort had the effect of increasing the birth planning knowledge of those that read the pamphlet, and large numbers did so. Bogue also reported that subjects who received the pamphlet passed it on to other persons to read.

O'Leary and Bogue (1969) did a comparative field experiment on dilatory birth control acceptors in several predominately black counties in Alabama. They compared the effectiveness of nurses, social workers and indigenous educators in getting public assistance clients to accept contraceptive devices. The indigenous workers persuaded 58% of their subjects to initiate family planning, nurses persuaded 27%, social workers withdrew from the experiment and convinced no one, and in the control group 19% decided to initiate family planning. Placek (1973), a Vanderbilt graduate student, investigated the effectiveness of direct mail as a public family planning recruitment technique. He also measured the joint impact of three birth control brochures on birth planning knowledge. A random sample of 300 mothers receiving public assistance in one Tennessee county was selected for the study. Half of this group received no contact, except at follow-up, and the experimental group received a mailing which included:

1. a cover letter stating the availability of free birth control services at fourteen public clinics and a request to discuss these services with friends and neighbors,

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2. a list of the addresses and telephone numbers of the family planning clinics,

3. three short informational pamphlets on birth control methods concentrating on the "pill" and "IUD". Subjects were asked to distribute an extra enclosed supply of the pamphlet to friends.

From one to three weeks later, all subjects in both groups were interviewed. Placek concluded from his analyses that:

1. Direct mail has no effect on recruitment to public clinics.

2. The birth control brochures were read by 83% of the subjects. The experimental group had consistently higher family planning knowledge scores than controls. Even so, only half the experimental group could correctly explain how pregnancy occurred.

3. The direct mailing had a positive impact on diffusion of the pamphlets. More than half of the experimental group distributed the booklets to an average of two additional persons, discussed the public clinics with them or both.

The cost of the direct mailing was small indeed averaging only 77¢ per person. Included in the cost were the pamphlets, stationary supplies, postage and clerical time.

Freedman and Takeshita (1969) in the landmark Taiwan study, obtained the following specific results:

1. Approaching "wives only" was as effective as the more difficult and expensive measure of approaching both husbands and wives.

2. Letters were not effective in increasing the acceptance rate, although this may be because the letters did not focus on the most popular method and were not addressed to the couples most likely to respond--those with a recent birth.

3. Effective group meetings were especially productive as compared with either home visits or other stimuli.

4. Diffusion of influence from concentrated foci of effort played a major role in circulating the effects of the program. It was not necessary to contact every potential acceptor directly. The power of diffusion through informal channels was considerable.

Stycos, Hill and Back (1959), in their Puerto Rico study, compared the persuasiveness of alternative approaches:

1. values favorable to family planning and information about birth control,

2. family organization--mainly communication between husband and wife,

3. a combination of the values-information and family organization approaches.

They also investigated two modes of presentation in each content area:

1. group meetings,

2. pamphlet distribution.

The Stycos team reported that there were no significant differences between all content of presentation programs and the control group in the number of people who improved their birth control practices.

The pamphlets (all kinds, but especially the values-birth control information ones) were better for initiation of birth control use. The combined content program apparently had detrimental effects on the improvement of birth control usage when used in the group meeting mode of presentation.

The Lansing Family Life Survey

The Lansing Family Life Survey (Tornatsky, et. al., 1970) was conducted to further define the demographic, value, attitudinal and social determinants of fertility and to measure the acceptability of various persuasion methods designed to alter fertility behaviors. Ninety-two

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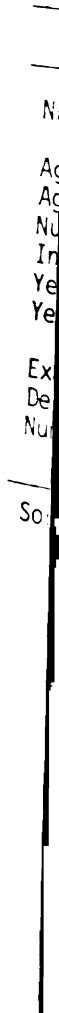

middle class subjects (based on median income by census tract) were selected for the survey, using a stratified random block method from neighborhoods in the Lansing, East Lansing and Meridian Township areas. The ninety-two subjects were all females between the ages of 18 and 40 years and were contacted "at the door" for a 50 minute interview. The subjects had general characteristics as listed in Tables 1.5 through 1.7.

Table 1.5

General Characteristics of the Subjects
Selected for the Lansing Family Life Survey

Characteristic	Mean	Sigma	N
Number of Children Per Married Subject	2.3	1.15	72
Age of Female Subject	27.5	6.1	92
Age of Female Subject at Marriage	20.4	2.8	68
Number of Years Married	5.7	5.5	91
Income of Family	$9,333	$2,333	90
Years of Education of Female	12.9	2.2	92
Years of Education of Husband (if any)	13.7	2.7	71
Expected Family Size	3.0	1.4	92
Desired Family Size	2.9	1.4	92
Number of Times Female Has Changed Mind Regarding Desired Family Size	1.5	.70	90

Source: Tornatsky, et. al., 1970.

Table 1.6

Number and Percent of Lansing Family Life Survey Subjects By Race and Marital Status

Characteristic	Number In This Category	Total N	Percent N In This Category
Race:			
White	81	91	89 %
Nonwhite	10	91	11
Marital Status:			
Single	15	92	17
Married	72	92	78
Divorced	4	92	4
Separated	1	92	1

Source: Tornatsky, et. al., 1970.

Table 1.7

Number and Percent of Lansing Family Life Survey Subjects Currently Using Birth Control Methods By Marital Status

Birth Control Usage Among	Currently Using Birth Control	Total N	% N Using Birth Control
Single	3	15	20
Married	50	72	69
Divorced	1	4	25
Separated	1	1	100
All Marital Statuses Combined	55	92	60

Source: Tornatsky, et. al., 1970.

Of those women who used birth control, the most frequent methods were the highly effective ones such as the pill, IUD, sterilization or condom and foam combined.

The subjects reported perceiving the effectiveness of their contraceptive device as 4.7 on a 5 point effectiveness scale, which was between moderately effective (4.0) to extremely effective (5.0).

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In response to the question, "How satisfied are you with your physician's help on birth vontrol matters?", mean response of 4.0 on a 5 point satisfaction scale was obtained. This indicated the average subject was "moderately satisfied" with her physician.

Only 4 of 92, or 4% of the subjects, had been to an organized public clinic although 87 of 92, or 95% of the women, had heard of Planned Parenthood.

Three modes of presentation of birth planning programs were measured for "acceptability" to the target population. These three modes were the written brochure, the small group discussion and the population worker who makes home visits. The 5 point acceptability scale was as follows:

1.0 - strongly oppose
2.0 - moderately oppose
3.0 - undecided
4.0 - moderately favor
5.0 - strongly favor

As Table 1.8 suggests, the acceptability of each condition declined as interpersonal involvement increased. Receiving the brochure was the most highly favored mode, and the home visit was the least favored mode. Although the home visit was least favored, its overall mean level of acceptability was not so low as to cause rejection of that mode of presentation.

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Table 1.8

Mean Level of Acceptability of Three Modes of Presentation

Condition	Mean	Sigma	N
Brochure on Population Problems	4.1	.9	92
Brochure on Birth Control	3.5	1.4	91
All Brochure Mean	3.8		
Group Discussion Population Problems	3.6	1.1	92
Group Discussion Birth Control	3.3	1.4	91
All Group Discussion Mean	3.45		
Home Visit on Population Problems	3.0	1.2	92
Home Visit on Birth Control	2.5	1.4	90
All Home Visit Mean	2.75		

Source: Tornatsky, et. al., 1970.

It is also readily apparent from Table 1.8 that middle class persons are more in favor of a presentation which concerns population problems rather than birth control matters. Since these are survey findings, there is no way of directly knowing which mode of presentation would be the most acceptable or effective in modifying family planning knowledge, attitudes or practices. Freedman and Takeshita's (1969) work in Taiwan, however, suggests that the group discussion is just as effective as the more expensive individual worker approach.

An empirical V-cluster analysis (Tryon and Bailey, 1970) was performed on the 153--social, attitudinal, demographic, value and preferences for mode of presentation--variables contained in the survey to determine their relationship to fertility. Seven rotated oblique clusters of variables were obtained in this analysis and were given the following titles:

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Cluster 1. Agreement with Use of Semi-hard Measures To Control Fertility

Cluster 2. Use of Birth Control Methods

Cluster 3. Autonomy from Local Religious and Physician Authority

Cluster 4. Fertility Rate

Cluster 5. Joining Community Organizations

Cluster 6. Rational Attendance To Birth Planning Presentations

Cluster 7. Respect for Rational Authority and Values.

Keeping in mind the restriction of range problem encountered by surveying only middle class persons mentioned earlier, it is nevertheless interesting to note that the fertility rate in these subjects was not correlated with use of birth control methods, lending support to the idea that the middle class is effectively using birth control methods to achieve its present desired family size. It should be underlined that the normal population was not sampled and a restriction in the range of certain variables occurred (income, education, organizations belonged to), and the correlations between some variables may be artificially weakened. Fertility correlates slightly negatively (-.25) with Clusters 6 and 7. But the key to middle class fertility seems to lie in the norm of expected or desired family size as shown in Table 1.9 where the expanded fertility cluster is shown. Some implications for any action-research program seem obvious. In order to change middle class fertility, one might attempt to change the norm of desired family size.

Table 1.9

Expanded Oblique Unifactor Cluster for
Fertility From the Lansing Family Life Survey

Variable	Oblique Fact. Coeff.	Communality
*(D) Expected Family Size	.8763	.8150
(D) Number of Male Children	.8499	.8603
(D) Desired Family Size	.7925	.6829
(D) Total Number of Children (Fertility)	.7810	.6485
Number of Female Children	.4114	.2319
Mean Number of Children that Brothers-in-law Have	.3902	.3189
Believability of Local Religious Leader on Population Problems	.3550	.4958
Age of Female at Time of Marriage	-.3542	.3704

Source: Tornatsky, et. al., 1970.

* The A-Reliability of the cluster score on the set of defining variables (D) = .9164.

Bumpass (1967) investigated the stability of family size expectations over a two-year period. He concluded that expected family size is as stable for recently married couples as it is for women who have already had one to four children (see Table 1.10). Major life changes

Table 1.10

Average Number of Children Expected When Family is Completed, by Parity

Expected Number and Interview	Parity				
		Higher Parities			
	0	Total	1	2	4
Mean Number:					
First Interview	3.56	3.84	3.36	3.36	4.79
Second Interview	3.59	3.83	3.38	3.32	4.76
Difference in Mean Number Minus First Interview	- .05	- .01	- .06	- .02	+ .06
				N = 1099	

Source: Bumpass, 1967, p. 86.

were experienced by those women at zero parity, since two-thirds of this group had their first child. It is especially noteworthy that, in spite of these changes, for those starting at zero parity, the stability of expected family size over time was quite comparable to those who began the study at a higher parity level. Bumpass felt that, while aggregate stability in expected family size resulted from many small counterbalancing changes, it was not simple chance of work. Rather, he suggested that changes in expected family size seem to be made in relation to social norms about family size.

Selecting A Change Strategy

The purpose of a voluntary birth planning change program should be to strengthen knowledge, attitudes and behaviors which assist families to meet their reproductive goals. The action situation can be a great opportunity for the social scientist (Freedman, 1962). A great deal of basic research must be performed with an action component if it is to be successful.

> Experiments involving social innovation may also be differentiated from other researches because they are primarily empirical in nature. Most theoretical models in the social sciences are specific to a given subject matter such as psychology, sociology, and economics. Since the subject matter for social problems comes from all disciplines, there are few, if any, appropriate theoretical models. Therefore it is probable that theoretical models will necessarily follow the empirical findings of such experiments. Indeed, it is possible that this sequence of events represents the historical development of theories in all the sciences (Fairweather, 1967, p. 27).

The change strategies available to this investigator lie primarily in the verbal as opposed to overt domain. This limitation results both from the realization that humane change strategies are not congruent

with coercive measures and a lack of resources which would favor a more behavioral approach (e.g. provision of subsidized or free birth planning clinic services, home visits by indigenous workers, etc.). The innovative experiment must use verbal change strategies which present a realistic opportunity to change birth planning knowledge and attitudes and thereby result in behavioral changes such as contraceptive usage and fertility.

But association between verbal and overt behaviors is often extremely tenuous at best. Wicker (1969), in a review of at least seventy-six major researches, found little evidence to support the idea of stable underlying attitudes within the individual which congruently influence both verbal expressions and actions. Bandura (1969) and Mischel (1968) both suggest that behavior seems situationally specific, and there is a surprising lack of relationship between supposedly related verbal and overt behaviors. Previous sections have suggested, however, that one of the few areas of apparent congruence is the relationship between expected number of livebirths and actual fertility.

Many previous family planning efforts have combined various approaches in such a way that it is difficult to determine which element of the approach was responsible for the change (Stycos, Hill and Back, 1959). Accordingly, this investigation will attempt to distill both content and mode of presentation to their most simple, nonduplicating structure.

Presentation of written birth control information has been shown by Bogue (1965), Placek (1973) and Stycos, et. al. (1959) to favorably influence birth control knowledge and/or practices. Freedman and Takeshita (1969) found group meetings with wives only to be an

especially productive means of increasing contraceptive knowledge and improving birth planning behaviors. The Bumpass (1967) study indicated a close and stable relationship between expected family size, actual fertility and adherence to broad social norms which appear to influence these choices.

The major issues faced by the researcher are: the relative effectiveness of written materials versus group interaction versus home visitors (change agents) in changing family planning knowledge, attitudes and behaviors; the relative effectiveness of birth control information versus normative information on family size in changing family planning knowledge, attitudes and behaviors; and the relationship between changes in one variable domain (knowledge) with other domains (attitudes and behaviors).

CHAPTER II

THE FIRST PLAN

Initial Hypotheses

Equally important as hyotheses are the problems that lie behind the hypotheses (Kerlinger, 1965). In this sense a problem is usually a question which asks what relation exists between two or more variables. Do educational change strategies cause improvement in birth planning knowledge (K), attitudes (A), and practices (P); hereafter referred to as (KAP)? When stated in this fashion the problem implies the possibility of empirical testing of alternative methods.

The literature review suggested that many previous efforts at change in KAP variables by educational means have combined various approaches in such a way that it is difficult to determine which element of the approach was responsible for the measured change (Stycos, Hill and Back, 1959). Written birth control information in the form of pamphlets has been shown to favorably influence birth control knowledge and/or practices (Bogue, 1965; Placek, 1973; Stycos, et. al., 1959). Freedman and Takeshita (1969) concluded that group meetings were especially effective when compared to other means in increasing contraceptive knowledge. While the close relationship between family size norms and fertility has been discussed in the literature (Bumpass, 1967; Tornatsky, et. al., 1970), no experiments have been conducted which attempt to influence fertility behaviors through a change in the norm structure. Experiments have not been conducted which have distilled educational methods and informational content to a simplified set of referents which could then be systematically compared.

Investigations by Fairweather, Sanders and Tornatsky (1974, pp. 76-103) on the effectiveness of alternative modes of presentation, such as brochures, workshops or demonstrations in persuading mental hospitals throughout the nation to agree to establish a new community treatment program strongly indicate significantly different effects can be expected from each method.

> ...initial entry into the hospital was considerably easier in the brochure and workshop conditions (69.4 percent and 80 percent respectively permitting the persuasion attempt), than in the demonstration ward condition (only 22.4 percent of the hospitals permitting the demonstration project). However, of those hospitals that received the treatments, it is clear that the more active the persuasion intervention the greater the likelihood that a positive decision about the lodge would be reached (6.8 percent for the brochure condition, 14.7 percent for the workshop condition, and 47.4 percent for the demonstration ward condition) (p. 77).

If some of the same principles translate from approaching and persuading complex organizations to individuals, then one could expect a more positive initial reaction to receiving written materials but more behavior change from such approaches as group discussions or home visits.

On the basis of the opinion research data gathered by the Lansing Family Life Survey (Tornatsky, et. al., 1970) it would appear that receiving brochures is more acceptable than attending group meetings. The additional behavioral commitment required to attend and participate in group meetings, however, could effectively bridge the gap between verbal change strategies and the dependent variables of birth planning knowledge, attitudes and practices. Thus, while subjects assigned to group discussion conditions which they have to attend would conceivably have a high "drop out" rate from the experiment, those who remained

might have a higher "stake" in the outcome of the session and exhibit greater changes in the KAP variables (Fairweather, et. al., 1969, p. 322 and Fairweather, et. al., 1974).

The previous review of information from the Lansing Family Life Survey strongly indicated that fertility was strongly related to norms of desired and expected family size. Bumpass (1967) has presented evidence that expected family size is stable over at least a two-year period and is highly predictive of attained parity. The implication here is that change in altering fertility patterns might better be achieved by attempting to alter social norms of family size. This view places less importance on the teaching of actual birth control methods, with the underlying belief that these methods are fairly well known in the dominant American society at this time. The lack of relationship between the fertility cluster and use of more effective birth control methods in the Family Life Survey is supportive of this view. The evidence on contraceptive failure, however, across all social classes suggests that while lower socio-economic classes do experience greater numbers of unplanned births and presumably need greater amounts of birth control information and access to services, middle class families also experience such failures, if only to a lesser degree. Nevertheless the high degree of utilization of effective methods by the middle class population in the Lansing area combined with favorable birth planning attitudes suggests that greater decreases in fertility and related practice variables might be achieved by normative education.

The general notion of the experiment; that birth planning knowledge, attitudes and practices are in part a function of informational

Initial Experimental Design

Figure 2.1

content and method of presentation can be tested by formulating the following initial hypotheses.

A. Content of Presentation

Normative education on the consequences of choosing a particular family size is more effective than birth control education in:

1. increasing birth planning knowledge,
2. strengthening favorable birth planning attitudes,
3. increasing the use of effective birth planning methods, and
4. reducing fertility.

B. Mode of Presentation

Home visits are more effective than brochures or small group discussions in:

1. increasing birth planning knowledge,
2. strengthening favorable birth planning attitudes,
3. increasing the use of effective birth planning methods, and
4. reducing fertility.

Initial Experimental Design

The initial experimental design was a 2 x 3 factorial experiment with a single control (Winer, 1962). It is represented below in Figure 2.1.

Information Content	Presentation			
	Brochure	Small Group Discussion	Home Visit	Total
Birth Control	60	60	60	180
Family Size	60	60	60	180
Total	120	120	120	360

Control
60

Ⓡ

Administrative Agreements

Longitudinal action research undertaken in the community lacks the insularity of the social scientist's laboratory. Research which may alter the daily lives of its participants, is controversial, or affects the interests and folkways of pressure groups and institutions will require an often complex web of administrative agreements to maintain its integrity. The types of agreements needed depend on the setting in which the experiment is conducted (Fairweather, 1967). If the research is being wholly conducted within an institution, like a mental hospital, correctional facility or nursing home, it may be sufficient to develop comprehensive agreements to obtain the needed cooperation, support and protection with the management of that single institution. Research which takes place in the community may require agreements with several interested community groups and agencies. The present experiment operated from an institutional context, the University, into the community. Thus, agreements were needed from both the University and those community agencies which could either support or conceivably cripple the research protocol. Since the project to be undertaken was also intended to serve as the topic of the investigator's doctoral dissertation, it was also necessary to obtain agreements from the graduate guidance committee.

Obtaining Funds

Research of the scope initially proposed requires substantial funding if it is to be carried out.

Before making the rounds of potential funding sources, it makes reasonable sense to determine if the experiment that is being developed

has enough merit to warrant serious consideration. An obvious source of expertise are those academicians who teach and/or conduct research in the general fields of population studies and family planning problems. Since Michigan is one of the few states to have a federally subsidized Center for Population Planning, it seemed a natural starting point. A letter was sent to a well-regarded professor outlining the problem which had been selected and requesting a consultation to formulate a grant proposal for it. The following reply was received:

> Dear Mr. Taylor: (or should I say Traylor)
>
> My name is FINKLE, not Frinkle. (No psychological hang-ups; simply an affinity for correctness.) In response to your letter of March 12 I am enclosing a bibliography compiled by Dr. Donald J. Bogue of the University of Chicago dealing with social and psychological aspects of fertility. I hope you find it of some help, although it is a couple of years old.
>
> I am sure it would be possible to meet with you and your colleagues to talk about the project and proposal you are developing.

Notwithstanding this less than enthusiastic response, the researcher did obtain more positive offers of assistance. One of the latter was from a Professor of Communications who was quite interested in the problems of birth planning.

> I was happy to hear of your plans for a series of studies in the family planning area. I shall be happy to work with you as your plans mature. I suspect that I can be of most help in the design of the messages and materials you plan to use, but perhaps I can also be of help in assisting you with some of the testing instruments as they relate to assigning impact of various sources and of various messages.
>
> At any rate, if I can be of help, please feel free to call on me in any way.

Shortly after this a small Biomedical Sciences support grant was obtained through the University for the purpose of planning and initiating the field experiment. A grant proposal was developed and sent to academicians and state family planning officials for review prior to submission to funding agencies.

Dr. Paul Ehrlich (Harriman, 1970) was overwhelmed by his volume of mail, but Edward Pohlman (1971) took the time to review the entire proposal and send suggestions.

> There is a mood swing in the U.S. about population...Ehrlichean stances are getting out of style...I suspect many of the people in power, reviewing your proposal have this moderate bias...

This was probably good criticism, so a few moderating changes were made in the literature review and the grant proposal sent for review by persons "in power" on the family planning scene in Michigan.

> Thank you for the opportunity to review your grant application entitled "A Field Experiment in Voluntary Birth Planning."
>
> The Michigan Department of Public Health Family Planning Program congratulates you for the fine work you have done in designing the project, and we sincerely hope that you are awarded funds to implement the experiment. We shall be happy to support you and offer any assistance we can in bringing this project to a successful result.
>
> You may be interested in contacting Mrs. _____ in the Bureau of Maternal and Child Health for assistance in coordinating your birth planning education with expectant parents' education in this department.
>
> Again, the best of luck to you!

A second state official had similarly favorable comments for the grant proposal.

> Thank you for the opportunity to review your research proposal, "A Comparative Field Experiment in Voluntary Birth Planning."
>
> The written proposal and bibliography indicate a depth of study into the problem of attempts to secure general public acceptance of birth planning.
>
> We strongly endorse this project and are happy to cooperate with you in any way to assure its success. What you are planning to investigate is most important for further utilization of family planning services.

But even with all these endorsements and offers of help, funding could not be found. The Rockefeller Foundation thought highly of the proposal but:

> Your letter of March 4 has come to me for reply, as I have initial responsibility for the Foundation's population program.
>
> I am very sorry to say that under that program there is no way in which the Foundation could assist with the costs of the study planned by you and Miss _____. I regret that this is the case, particularly since the amount required is relatively modest, but I hope that you will be able to obtain the support needed for the study.

The Population Council also declined financial support of the research. It is difficult to face rejection, particularly so when the rejection slip is authored by a psychologist who inspired many by writing that:

> Outlets for individual initiative are not lacking and there can be little doubt that, if psychologists will pit their skills and knowledge against population problems, valuable knowledge will accrue (Fawcett, 1970, p. 125).

Nevertheless, there seemed little ambiguity in the letter that was received.

> It is unfortunately very difficult for students to obtain research funds in large amounts. Usually

> research support comes either from a fellowship held by the student or from the university where the student is working. For a large project, it is of course common for a faculty member to apply as principal investigator, in which case he assumes responsibility for the project but graduate students may use parts of it as dissertation research. I am not aware of any specific agency to which it would be appropriate to send your proposal in its present form.
>
> I'm sorry I cannot be of help.

Finally the National Science Foundation came to the rescue.* It had just initiated a new program called "Special Projects In Graduate Education (1971)". The purpose of this program was to:

> ...support during fiscal year 1972, a limited number of interdisciplinary research projects designed and carried out by graduate students ...(p. 1).

It was nice to see an agency with money to spend on improving the quality of graduate student research projects. It was even nicer to receive this first major administrative agreement.

> You have by now doubtless received a copy of Mr. _____'s letter of May 28 notifying President _____ that an award has been made to Michigan State University for support of "Interdisciplinary Student-Originated Research Training: Study of Voluntary Birth Planning."
>
> The purpose of this letter is to confirm and supplement the information contained in pages 34-35 of the grant enclosure "Grants for Education in Science--A Guide to Policies and Procedures" (NSF 69-19). A substantive report will be due within two months after the termination of the project, or by August 31, 1972. It should include examples of any publications that result from the study, and a review of the information and data you collect as well as a report on your methods.

---

* Special recognition is due the National Science Foundation which provided support for the Research (Grant Number GZ-2179).

> Please accept our good wishes for a successful outcome of this very interesting study.

The University

The University President was "pleased to accept" the grant award (Wharton, 1971). The University's letter named this researcher as the project director, a fact that was of extreme importance in the initial months. The University administration, from the Office of Research Contacts to the Academic Department, had difficulty in understanding that the project director was a graduate student and not a faculty member. The Wharton letter coupled with the insistence of this student's advisor eventually succeeded in persuading the University's infrastructure to recognize the role of the student-researcher as the project director. This recognition of the student as grant research director also carried with it the burden of responsibility as was clearly outlined by the student's advisor:

> Now that you are in possession of your first research grant, I think it is appropriate to call to your attention some of the monetary responsibilities you have. It is absolutely essential that your expenditures do not exceed the $18,720 permitted by the grant. This is particularly true now since it would be impossible for the Department of Psychology to pay for any overexpenditures you might make. You should pay particular attention to your computer costs since it is very easy to accumulate a large expenditure in that area. As you know, each computer run gives you a cost printout. When you are using the computer, a daily record of these costs should be kept. When you have expended the money permitted for computer use in the grant, you can do no further computer analyses on those funds.
>
> The recent overrun of approximately $5,000 by a local student group when handling their own funds indicated how easy it is to overspend one's account. I call this to your attention prior to the onset of your experiment so that you will give as much attention to managing your grant as you will give to the

> more academic aspects of your research. It must be borne in mind that keeping accurate cost records of a research grant is as much a part of your training as any other aspect of the research.

An important part of conducting research is having the facilities and equipment needed to adequately carry out the investigation. Although the University, by accepting a payment of indirect cost, agreed to provide these necessities, it does not mean that the task of obtaining them would be an easy one. Fairweather (1967) has characterized the often puzzling lack of understanding on the part of institutional administrators of the reciprocities involved in the following way:

> Because of the prestige given to research by society at this time, and particularly since the advent of large-scale research grants, some administrators have developed a willingness to commit themselves to research without full knowledge of their obligations. This has often been labeled as the "yes-no" phenomenon...researchers are told by management...that management is indeed interested in a research program. Upon attempting to implement the program and to obtain adequate space...and other necessities, the answer becomes "No" (pp. 53-54).

The investigator, however, was able to gain the support of the Dean of the College of Social Science, who provided a large subterranean room (used before and after the project for storage), and a telephone. The Academic Department provided desks and chairs, file cabinets and a typewriter. A sign "Family Life Service Project" was placed on the door and activity was initiated.

Not long after the project was in operation, a request came from the University to enter into a major agreement.

> It has been brought to my attention that the grant identified above was not reviewed, and subsequently approved, by the Michigan State University Committee on the Use of Human Beings in Research.

> In order to be in compliance with federal regulations it is essential that the University Human Subjects Committee review the proposed research, resolve any questions that are raised and indicate their approval.
>
> I have, today, discussed this issue with Dr. _____, Chairman, University Committee on the Use of Human Beings in Research. His suggestion is that a simple protocol be prepared and submitted to his committee for review. The statement should indicate how human subjects will be involved in the proposed research and, further, how their rights will be protected and preserved.
>
> This statement and a record of the subsequent review will become a part of the official records which are subject to scrutiny by Federal auditors.

Naturally, a negative response by the Human Subjects Committee could jeopardize the entire research program. A lengthy report was filed for review by the Committee. Great joy was apparent in "the cave" when the following response was received.

> The University Committee on Research involving Human Subjects has reviewed your subject proposal and finds that you are adequately protecting the rights and welfare of the human subjects involved.

The University proved to be a good research partner. The Family Life Service Project became a recognized unit--received its mail, was able to employ clerical, interviewing and instructional personnel and was sent regular reports on the state of the treasury. At the termination of the grant on March 30, 1974, there was a grand total of $19.54 in unexpended funds. The University expressed its pleasure that the research had "finished in the black."

The Community

Before funding was actually obtained, an effort was made to obtain support from several community agencies and individuals that were

expected to play a vital role in the experiment. The initial research design basically called for presentation of persuasive educational materials to recently married couples in the Lansing, Michigan area. No funds were available for medical care or birth planning services. Realizing that our presentation could and should arouse interest in birth planning behaviors, an agreement was sought with the local public family planning program. An agreement to that effect was successfully negotiated.

> The Ingham County Family Planning Project would like to cooperate in implementing the grant, A Comparative Field Experiment in Birth Planning.
>
> We feel this service and research project would contribute to the overall Ingham County Family Planning Program.
>
> If you would like to refer your birth planning patients to the Ingham County Family Planning Clinic program, please do so.
>
> Please feel free to call if we can assist you in any way, especially in coordinating referral services.

The research proposal was also submitted to the local "B" agency of Comprehensive Health Planning. It was felt that their endorsement of the project would greatly assist our efforts to obtain funds, since they had been given extensive review and comment functions on projects that were requesting federal funds. In addition, the composition of the Health Planning Committees and Executive Board was such that Lansing citizens, health agencies, businessmen and political leaders were represented. If support could be obtained from this cross-section of the community, unforeseen repercussions from the project might be more readily overcome. The agreement, with qualifications, was obtained.

> This is to inform you that the Executive Committee of Capitol Area Comprehensive Health Planning Association, in its April 29, 1971 meeting, approved the proposed study, "Comparative Field Experiment in Voluntary Birth Planning", with the following recommendations: that all members felt more time was needed to carry out the project than the time specified in the proposal; that greater consideration should be given to the lower income population; that the criteria of measurement (time to first child) needs to be further validated; and that this study be considered as a first phase towards a more broader consideration of the birth planning problem.
>
> We thank you for your time spent in assisting the committees in reviewing your application.

It was a great surprise to the researcher, however, that strong attempts were made to change the purpose and procedures of the experimental design. Very often the actual proposal was not even read by the various members of the Comprehensive Health Planning subcommittees. It was obvious that many members of the planning agency were more concerned with the service potential of the project than the research aspects.

Another key community group was the local Planned Parenthood Society. This group had been weakened by development of well-funded public family planning clinics but still had an interest in public education. Several members of the Association were influential citizens of the Lansing area. Again, it was felt appropriate to make them aware of activities that were planned under the project and have them in our "camp" in case of unforeseen difficulties.

> After a review of the study (the researcher) was given the unanimous approval of the Board for this study. The results should be of considerable interest to the Planned Parenthood organization.

The administrator of the Statewide Family Planning Program was also willing to commit both moral and material support (if need be) to the birth planning experiment. The terms of this agreement were utilized

only in contacting potential subjects. The agreement permitted the Family Life Service Project to use the name of the State Health Department as a cosponsor of the service and research project.

AGREEMENT OF COSPONSORSHIP

> The Family Planning Services-Bureau of Maternal and Child Health-Michigan Department of Public Health agrees to cosponsor, in conjunction with the National Science Foundation, the services and research project entitled, "Comparative Field Experiment in Voluntary Birth Planning."
>
> Consumers of the project, media outlets and others receiving information about the Birth Planning Project may be informed of our cosponsorship.
>
> The Family Planning Services-Bureau of Maternal and Child Health-Michigan Department of Public Health will provide such consultations and other helpful services, consistent with the aims and powers of said cosponsor, to further the successful outcome of the Birth Planning Project.

An Agreement of Cosponsorship, identical to the one negotiated with the State Health Department, was also obtained from the Michigan State University School of Nursing.

Approximately one month after the project was funded and formally begun, copies of all administrative agreements were forwarded to the National Science Foundation. In its response the Foundation expressed confidence that a potentially controversial action experiment had been able to lay a base of support for its activities in the community.

The Research Team

Experimental intervention on a contemporary social problem normally requires a multidisciplinary approach. The problem selected for investigation will usually be the determining factor in identifying the types of disciplines which may make a meaningful contribution

(Fairweather, 1967). Since the present research involved an effort to modify birth planning knowledge, attitudes and behaviors, it was important to recruit team members or consultants who were knowledgeable in such fields as psychology, sociology, demography, clinical medicine, nursing, human ecology, education, research methods and data processing.

It is important to form the research team during the planning stages of the research program. Following the completion of the Lansing Family Life Survey mentioned earlier (Tornatsky, et. al., 1970), several members of that research team were asked if they wished to continue to work in this problem area. Three graduate students, a general social science doctoral candidate (the author), a psychology master's level candidate and a doctoral candidate in education initially agreed to help plan the research program. After two organizational meetings, it was determined that while all of the students wished to work as a team, the University required each student to pursue distinctly different research topics for their dissertations. In part, this University requirement meant that distinctly different problem orientations, hypotheses, variables and measurement instruments needed to be used. The participant population, however, could be shared by all the investigators. The general social science graduate student was selected as the principal investigator for the purpose of drafting the grant application to the National Science Foundation and other possible sources of funding. The literature review and hypotheses of the experimental design, with regard to the impact of content and mode of the birth planning presentations, were developed by the principal investigator. An allied study relating to the psychological versus sociological determinants of fertility was developed by the psychology student.

During this time, the education student determined that his individual interests would not be adequately served by working on a team project. This student eventually developed an independent study which focused on the effectiveness of alternative methods of psychology instruction at the junior college level.

Part of the requirements for National Science Foundation funding of "Special Projects in Graduate Education" were:

> The research proposed must be interdisciplinary and involve at least two students. By "interdisciplinary" it is meant that the project should focus on a problem whose solution will require a broader range of academic skills than is usually found within a single department. Thus, in most cases, it is expected that the principal student investigators will be drawn from more than one department or school of the institution submitting the proposal. In some cases, however, students may be drawn from the same department if they have sufficiently different backgrounds and can bring complimentary skills to the project (N.S.F., 1970).

The two student investigators that were left just met this personnel guideline.

During the long period in which several grant applications were rejected, the psychology student became increasingly dubious of the project, particularly of ever completing her proposed study. The long months of waiting had enabled the student to develop new interests in the field of comprehensive health planning. Her specific interests came to focus on the education and training of consumers to participate in health planning activities. In cooperation with the local health planning agency, this student was able to identify a problem of significant importance to the leadership of that agency. Realizing that her interests had greatly shifted and the prospects of ever having an opportunity to work on the birth planning study were slim, this team

member also resigned. This left the principal investigator as the only "keeper of the faith". As Fairweather (1967) has observed:

> ...the experimentalist should have a high degree of motivation and interest in the social problem to be investigated because he must be willing to devote several years of his life, if necessary, to finding a solution for it. The possession of this attitude and the willingness to make such a commitment usually eliminates from consideration those individuals who have a temporary curiosity about the problem... (p. 65).

The resignation of two of the three member research team did little to increase the morale of the principal investigator. This brief exercise in self-pity was interrupted by the appearance of a first-year psychology graduate student who naively asked to participate in the project. After a period of four and one-third years, she was eventually able to obtain her M.A. degree having completed a study of volunteers versus nonvolunteers for a program of birth planning education (Hedrick, 1975). If only these two young committed students had known that research-oriented intervention programs were truly "longitudinal" in nature.

While the grant application was awaiting approval, both of the investigators worked to obtain the needed administrative agreements. Subsequent to the Foundation's grant award differential roles were developed. The principal investigator created and field tested measurement instruments, was responsible for obtaining space and equipment needed to conduct the research, employed clerical personnel, managed the budget and developed educational materials. The coinvestigator selected and trained the interviewers, established interviewing procedures and also worked to develop educational materials.

Regular research meetings were held between the experimentalist and the interviewers. The purpose of these meetings was to keep all participants informed about progress, to make necessary changes in schedules and interview procedures, and to maintain both the task orientation and morale of the team. Completed interview protocols were reviewed and suggestions were continuously made about how to obtain a more complete data set.

Several consultants were used during the first year of the original experiment. Two physicians reviewed the written birth planning educational materials. One of these physicians was a psychiatrist, employed by the University, who wrote a popular syndicated newspaper column on sexuality. The second was a board certified obstetrician employed by the Michigan State Health Department. A sociologist gave many consultations on the employment and training of the interviewers. Statisticians at both the University and the State Health Department were used to review the experimental design and proposed methods of analyses. The project's major University advisor made several suggestions throughout the course of the research and was particularly helpful in establishing effective procedures for research conducted in a field setting. His extensive knowledge of experimental design and statistical analyses was frequently drawn upon.

The final research team was composed of the principal investigator, secretary, nurse-educator, family life educator and follow-up coordinator. All of these personnel worked on a part-time basis. Regular research meetings were held between these team members, all of whom were well aware of the difficulties that would be involved in recruiting and retaining sufficient subjects to conduct the experiment.

The secretary's role was to mail out recruitment letters to all women living in married student housing, based on the listing obtained from the Registrar's Office. Those women who returned the postcard indicating an interest in participating were immediately telephoned by the secretary, who explained the nature of the project, the alternative birth planning programs that might be offered to her and answered any questions. If the potential subject continued to be interested in the program, a registration form was mailed to her. This form also contained the pre-test questionnaire. The secretary received the returned pre-test and established a file on each subject. The principal investigator randomly assigned all subjects to experimental groups.

The nurse-educator conducted the small group discussion sessions on "Choosing Birth Control Methods". The Family Life educator, who had an M.A. from the College of Human Ecology, conducted the small group discussion sessions on "Choosing Family Size". Detailed written reports were obtained from each educator on each small group session. The educators also obtained a rating form from each subject at the end of the discussion session. Subjects who were in the brochure condition each received a mailing of the appropriate material from the secretary.

The follow-up coordinator mailed each of the experimental and control subjects the post-test questionnaire. Subjects who failed to return the questionnaire within one week were contacted by the follow-up coordinator at their homes. This person also scored and coded the questionnaires based on instructions given by the principal investigator. The principal investigator also scored and coded many of the questionnaires and checked the follow-up coordinator's accuracy.

Computer keypunching was accomplished through the University's keypunch service. The principal investigator ran all statistical analyses, often using consultants in the University's Computer Institute for Social Science Research and the Michigan Department of Public Health. This stage of the experiment was accompanied by feelings of near-euphoria on the part of the principal investigator, who many times during the two and three-quarter year period found it difficult to maintain a sense of optimism about the project's outcome.

Trial, Failure and Change

It will be recalled from an earlier presentation in this chapter that the experiment was funded for a one-year period and originally planned for a total of 420 subjects to be used in a 2 x 3 factorial design.

Recently married women from Ingham County were selected as the subject group. Interviewers were employed to conduct a home interview "pre-test" and determine if the person was willing to volunteer for an educational program in birth planning (Hedrick, 1975). Since there are not large numbers of marriages in Ingham County each week and there is a delay in publishing these marriages in the newspaper, many potential participants were lost to the pre-test. Many times the interviewer would make an appointment only to find on arrival that the potential subject was not home. Often, the recently married woman was employed and the interviewers found it difficult to make large numbers of evening calls. The rate of volunteering was not high (62%) and only fifty-four volunteers had been obtained after five months of interviewing.

By the end of the first project year only 150 volunteers had been identified. A request for a second year of funding by the National Science Foundation was rejected. An agreement was reached, however, for a no-cost time extension to March, 1974.

Although the design was modified from requirements for 420 subjects to the number available, the subjects themselves did not cooperate in the action phase of the experiment.

The first small group discussion session planned for ten to twelve persons produced three live, not-so-recently married volunteers. Subsequent sessions were not attended at all, in spite of letters and telephone reminders. Apparently, several things had occurred. The interval between initial interview, volunteering and the actual presentation of birth planning information approached nine months in some cases. Subjects had moved, lost interest or, perhaps, had never truly been committed in the first place. It is difficult to conduct statistical analyses on cell sizes of three. After additional, largely fruitless, efforts the initial experiment was scrubbed.

A new research design was developed as were sampling techniques, timing of educational presentations and other procedures. It was determined that married college students would be used as the subject population. This necessitated the development of one new, but important, administrative agreement with the University. In order to contact all married women living in University housing, a complete mailing list was needed. The University responded cooperatively and the revised experiment was begun two years after the initial start of the project.

CHAPTER III

THE EXPERIMENT

The Revised Hypotheses

The rationale presented in the beginning of the previous chapter for the "initial hypotheses" is the same as that used for the revised and expanded set of hypotheses stated for the final experiment. Briefly, this rationale points out that while several investigators have attempted to change individual respondent's birth planning knowledge, attitudes and practices, their methods have combined various approaches in such a way that clear causative or associated factors were not isolated. More recent survey research conducted by others strongly suggests that for certain individuals the norm of desired or expected family size is much more strongly associated with the "bottom line" (fertility) than with knowledge or use of effective birth control methods. The underlying stability of family size expectations has also been documented. Finally research into alternative methods of presenting information in an effort to induce change suggests that high initial acceptance of a method might require less behavioral commitments on the part of the participants, and less change.

The revised hypotheses are set forth below:

A. Method of Presentation

Group discussions are more effective than brochures in:

1. imparting knowledge of contraceptive methods,
2. imparting knowledge of considerations in choosing family size,
3. imparting a positive attitude toward birth planning activities,

4. imparting a positive attitude toward small family size norms,
5. imparting a negative attitude toward over-population,
6. improving contraceptive practices, and
7. reducing fertility.

B. Content of Information

1. Contraceptive information is more effective than family size information in imparting knowledge of contraceptives.
2. Family size information is more effective than contraceptive information in:
   a. imparting knowledge of considerations in choosing family size,
   b. imparting a positive attitude toward birth planning activities,
   c. imparting a positive attitude toward small family size norms,
   d. imparting a negative attitude toward overpopulation,
   e. improving contraceptive practices, and
   f. reducing fertility.

Thus, two major sets of statistical hypotheses can be tested: the significance of the differences between group discussion and brochure methods of presentation; and the significances of the differences between contraceptive and family size information. The analysis itself will reveal the interplay or interaction, if any, between these two major sets of experimentally controlled variables. Finally, a correlational analysis will be performed to determine if there are significant associative relationships between the major dependent variables.

Experimental Design

A 2 x 2 factorial design with a single control group was chosen (Winer, 1962). The advantage of using the factorial design is that it

fa

ta

not only compares the effect of methods of presentation and information content, but also reveals interaction effects (Fairweather, 1967, pp. 158-159).

The design of the experiment is shown in Figure 3.1.

Information Content	Presentation		
	Brochure	Small Group Discussion	Total
"Choosing Birth Control Methods"	19	10	29
"Choosing Family Size"	14	11	25
Total	33	21	54

Control 20

Ⓡ

Final Design for A Comparative Field Experiment In Voluntary Birth Planning

Figure 3.1

There are five groups altogether--four groups in the 2 x 2 factorial experiment and a control group. The analysis of variance takes the following form:

Between Groups (pq + 1) - 1	= 4
Control vs all others	= 1
A (Information Content) p - 1	= 1
B (Method of Presentation) q - 1	= 1
AB (p - 1) (q - 1)	= 1
Within Cell pq (n - 1) & (n_0 - 1)	= 69

Analysis of Variance for The Birth Planning Experiment

Figure 3.2

It may also be of interest to compare the control group with each experimental group. In this case the statistic becomes

$$t = \frac{\bar{C}_o - \overline{AB}_{ij}}{\sqrt{MS_{w.cell}\ [(1/n_o) + (1/n)]}}$$

and $\bar{C}_o$ is the mean of the control group.

Participants

The participants for the experiment were married women living in married student housing on the campus of Michigan State University. All 2,118 women living in Spartan, University and Cherry Lane Apartments were mailed an information letter and stamped postcard by which they could indicate interest in participating in the "Family Life Service Project". Of the 2,118 women who received a letter, 116 (7.8%) returned the postcard. Complete registrations were obtained on 108 of those who were then randomly assigned to one of the four experimental groups or to the control group.

Table 3.1

Attrition By Group From Registration Through Follow-Up

Group	# Originally Assigned	Completing Experimental & Follow-Up Phases	
		#	%
ALL GROUPS	108	74	68.5 %
Brochure Birth Control	21	19	90.5
Brochure Family Size	22	14	63.6
Group Discussion Birth Control	21	10	47.6
Group Discussion Family Size	22	11	50.0
Control	22	20	90.9

Materials

Two major sets of materials were developed for use by the Family Life Service Project. The first was a thirty-two page brochure entitled "Choosing Birth Control Methods" (Taylor & Hedrick, 1972). The brochure contained human physiology, conception, contraceptive methods including sterilization, the cost and effectiveness of using alternative birth control methods and information on how to obtain birth planning services in the Ingham County Area (see Figure 3.3).

The Women's Sex Organs and What They Do

The Man's Sex Organs and What They Do

Effective Birth Control Methods
- The Pill
- Intrauterine Device
- Diaphragm
- Condoms
- Foams, Jellies and Creams

Less Effective Birth Control Methods
- Vaginal Foaming Tablets
- Vaginal Suppositories
- Rhythm
- Withdrawal

Birth Control Methods Not Recommended at Any Time
- Douches
- Feminine Hygiene Projects
- Breastfeeding

Voluntary Sterilization

New Ideas in Birth Control Being Developed by Scientists

Conclusion

Referral

Content Outline for "Choosing Birth Control Methods"

Figure 3.3

The lecture material for the group discussions on birth control methods strictly conformed to the content of the brochure. Large diagrams of human reproductive organs were used for demonstration purposes as were actual contraceptive devices. The group had the opportunity to question the registered nurse presenting the materials. Discussions were kept on the subject of the various birth control methods and were not permitted to stray into the area of family size norms.

The second brochure that was developed was entitled "Choosing Family Size" (Taylor & Goldsmith, 1972). This brochure had an identical cover, except for the title. The brochure was of comparable length with somewhat fewer illustrations than the one on birth control.

The brochure on family size was designed to portray the small family (two children or less) in a highly favorable light without being so brutal as to arouse resentment. Reactance theory (Brehm, 1966) offers the empirically validated advice to avoid giving the subjects in the study the impression that they are being manipulated. This is especially important where the behavior and/or values being discussed are highly salient matters for that subject. Thus, one should present both sides of the argument when discussing the consequences of carrying out a decision on desired family size and should not violate strongly held values related to the subject under discussion.

Five major factors which can be considered in making a family size choice were addressed in the brochure: (1) wants and desires; (2) psychological state; (3) physical fitness; (4) future goals; and (5) relationship stability (see Figure 3.4).

Introduction
- Rationale for Spacing and Limiting the Number of Children
- Social Implications

Family Size and Its Effect on Children
- Infant Death Rates
- Physical Growth
- Intellectual Development
- Illness and Malnutrition
- Maternal Health
- Economics
- Emotional Stress

Intervals Between Children
- Prematurity
- Economics
- Emotional Stress
- Excessive Crowding of Children

Number of Children in a Family
- Childless Family
- One-child Family
- Two-child Family
- Three-child Family
- Four-child Family

Marital Satisfaction and Family Size

Having Fewer Children

Alternatives to Childbearing

Content Outline for "Choosing Family Size"

Figure 3.4

The script for the group discussions again was drawn totally from the content of the brochure. The illustrations used in the brochure were expanded in size so they could be effectively used in front of a small group. Discussions were held to the major themes of the presented materials and were not permitted to digress into the management of specific birth control strategies.

This section reviews the many procedures that were developed for executing the field experiment including recruiting subjects, conducting

the experiment, follow-up and physician referral. Regular weekly or bi-weekly research meetings were held among the research team. These meetings necessarily involved more people during the registration and experimental phases of the investigation than during the follow-up and analysis phases. A detailed research log was maintined throughout the study. The log, which included the decisions and assignments made in the research meetings, proved to be a key method by which the investigator could review the progress being made and reconstruct the sequence of events for the research report. The importance of keeping such a log should not be underestimated.

Recruitment

The earlier section on subjects gave a brief overview of recruitment procedures. Once the computer printed mailing labels for all students living in married student housing were received from the University, a recruitment letter was mailed to student wives.

> Women know that three of the key problems facing married couples today often concern these central issues: money, the use of leisure time and planning a family.
>
> While the Family Life Service Project cannot help married couples in all three areas, it is prepared to offer information and education in family planning.
>
> This FREE educational service will be offered in the spring of 1973.
>
> The Family Life Service Project is funded by the National Science Foundation and is located in the Department of Psychology at Michigan State University. It is cosponsored by the MSU School of Nursing and the Michigan Department of Public Health - Division of Maternal Health.
>
> If you are interested in further information, please complete and return the enclosed postcard.

A pre-addressed and stamped postcard for reply was included in the recruitment letter. The postcards when returned were given to the part-time project secretary who opened a file jacket on each potential subject. A telephone call was placed to each subject by the secretary who gave further information about the project. Each potential subject was told at this time they would either receive a brochure or be invited to a small-group discussion on either the subject of "Choosing Birth Control Methods" or "Choosing Family Size." Potential subjects were sympathetic to the fact that the exact content and method of presentation were not completely set at this time. Many, however, indicated a preference for one type of material over another. Less sentiment was expressed over whether they might receive a brochure or attend a group discussion. Each potential subject was asked if certain week nights were "out" for attending a group discussion. These conflicts were noted in the subject's folder for future reference. Finally, each subject was alerted that a registration form would be mailed to them. The registration form contained pre-test questions on attitudes toward birth planning and birth control practices as well as demographics. The cover letter for the registration form, dated May, 1973, reiterated much of the previous telephone conversation.

> Thank you for returning our postcard indicating your interest in the Family Life Service Project. This letter will give you further information on the format.
>
> There are two kinds of materials:
> 1. Birth Control Methods,
> 2. Choosing the Size of Your Family.
>
> You will either receive educational material in the mail, or you will be contacted by phone and invited to attend just one 90 minute presentation at a time and a place to be determined at a later date.

> Should you be invited to a Presentation Group, you are encouraged to bring your husband to the meeting; and free babysitting facilities will also be available.
>
> Enclosed you will find a registration form. Please fill it out and return it in the stamped, self-addressed envelope within the week.
>
> Should you be moving from your present address before Fall term, please indicate on the back of your registration form a permanent address where mail can be forwarded to you.
>
> We welcome any of your friends that may be interested in a program such as this, but they must fill out a registration form in order to participate. The form can be obtained by contacting Mrs. _____.
>
> This service program is FREE to all those who participate.
>
> Thank you for your interest and welcome to our program.

Once the registration form was returned the subject was randomly assigned to one of the four treatment groups or the control group.

Conducting the Experiment

The mailing of brochures and presentation of group discussions was completed in May, 1973. Subjects were mailed their brochure or scheduled for a group discussion immediately upon receiving the registration form. This procedure was designed to avoid the many problems reported earlier when the experiment failed in part because of the long delay between recruitment and the action phase of the experiment.

The brochures were mailed with the following cover letter and an evaluation form. The first paragraph of the letter was altered depending on which brochure was mailed.

> We are pleased to enclose our brochure entitled "Choosing Birth Control Methods." The brochure reviews all methods, including advantages and disadvantages, as well as some exciting new advances in the field of contraception.
>
> If, after reading this brochure, you desire referral to a private physician or osteopath, or a free public clinic, please call Mrs. _____. You may also reach me at _____.
>
> The enclosed evaluation sheet will enable the Family Life Service Project to determine the usefulness of the enclosed material. Please return the evaluation form as soon as possible in the postpaid envelope.
>
> I sincerely hope this community service will be of benefit to you and your family.

The subject was asked to complete the one-page evaluation sheet and return it in a pre-paid, pre-addressed envelope.

Subjects assigned to the group discussion mode of presentation were contacted both by telephone by the secretary and by postcard ten days prior to the scheduled meeting. The subject was contacted again by telephone two days before the scheduled session to remind the participant of the date, place and time. Sessions were ninety minutes in length, beginning at 7:30 p.m., held in a local church within walking distance of all subjects. Tuesday and Wednesday evenings were used to avoid potential conflicts including university class schedules. Free babysitting services were offered and used by the subjects. Husbands were invited to attend and most did so. Immediately prior to each class the following procedures were carried out by the instructor:

1. ask if everyone has signed the attendance sheet at the door,
2. make sure everyone has a name tag,
3. on board--"Family Life Services Project" phone number _____,

4. make sure room is ready (chairs, charts, coffee, etc., all in order), and

5. put up signs on church door and inside directional signs to class.

The instructor began each session by welcoming the participants and explaining the format. For example, each discussion on "Choosing Family Size" was introduced as follows:

> I would like to welcome you to this discussion class on choosing family size and spacing of children. This class is part of a Family Life Services project funded by the National Science Foundation. I'd like to hear your reactions to the concepts brought up tonight--just speak right out.
>
> My name is _____ and I have a Masters degree from MSU in Family Studies. I'd like each of you to introduce yourself to the group and say how many children you have.
>
> For the next hour and a half we'll talk about some of the factors for you to consider in choosing how many children to have and when to have them. There will be a coffee break in the middle of class--but feel free to help yourself anytime. At the end, there will be a short evaluation sheet for you to fill out.
>
> Any questions before we start?

The size of the group discussions, including husbands, varied in the following way. At the end of the session a "process" evaluation questionnaire was administered.

Session	"Choosing Birth Control Methods"	"Choosing Family Size"
	No. of Participants	No. of Participants
A	7	3
B	5	6
C	5	4

Group Size by Content of Presentation

Figure 3.5

In the final effort to increase attendance, one of the following letters, instead of the regular postcard, announced Session C. The two planning telephone calls were also placed.

> Thank you for your interest in the Family Life Service Project. Our last presentation of the school year will be held next Tuesday, and you and your husband are cordially invited to attend. A free babysitting service is available at the class for your children.
>
> The presentation entitled "Choosing Family Size" will be delivered by Mrs. _____, M.A. Several factors which you and your husband may wish to consider in making this important decision are reviewed, including:
>
> The ideal age range for childbearing,
> Health factors in timing and spacing births,
> The financial costs of child rearing,
> The effect of children on marital satisfaction.
>
> The presentation will be held:
>
> Date:
> Time:
> Place:
>
> Please telephone me for additional information at _____. We look forward to seeing you there.

or

> Thank you for your interest in the Family Life Service Project. Our last presentation of the school year will be held next Wednesday, and you and your husband are cordially invited to attend. A free babysitting service is available at the class for your children.
>
> The presentation entitled "Choosing Birth Methods" will be delivered by Mrs. _____, R.N. Several factors which you and your husband may wish to consider in making this important decision are reviewed, including:
>
> How long you can safely stay on the pill,
> Use of the IUD,

New developments in birth control
methods, and
Techniques of sterilization, including
vasectomy.

It is obvious by studying the data on subject attrition presented earlier that direct mail and telephone solicitation do have their limitations.

Persons assigned to the control group were informed by letter that the discussion sessions being held that spring were "filled" and they would be recontacted in the fall regarding the new schedule of classes. No mention was made at this time to this group about the availability of brochures.

Follow-up

Six months after the completion of the action phase, in November of 1973, letters were sent to all subjects. The purpose of the letters was two-fold: to re-establish contact with the subjects, and to inform them of the next step in the study, i.e. that they would be receiving a follow-up questionnaire to fill out. Subjects assigned to one of the four treatment groups each received a letter. An example of one of these letters is presented below.

> We hope you enjoyed the family planning brochure sent to you last spring by the Family Life Service Project. From a broad range of comments we learned that readers liked the clear concise style, pictures of birth control devices and listing of methods by price and effectiveness. Although in some cases the material was familiar, it was often presented in a new and different light.
>
> In an effort to gain a deeper understanding of the meaning and impact of the brochures, and to fulfill our obligation to evaluate the Family Life Program, we have prepared a brief questionnaire for distribution. The questionnaire will be mailed or delivered to you, and we would appreciate your

> completing it as soon as possible. As before, all information will be kept confidential under procedures approved by Michigan State University. Ms. _____ is responsible for coordinating the follow-up phase and will be in contact with you in the near future.
>
> Please assist us in fulfilling our responsibility to evaluate and improve our educational program. Your cooperation is greatly appreciated.

Subjects in the control group were also asked to participate in the follow-up with the stipulation that each would receive a brochure. A letter was sent to each of these persons to enlist their cooperation.

> We were disappointed that the family planning classes presented last Spring by the Family Life Service Project were filled, and you were unable to participate. An attractive brochure has been prepared for those persons who are still interested in obtaining information on "Choosing Family Size" and "Choosing Birth Control Methods".
>
> Women who did attend the classes completed a brief questionnaire on their knowledge and opinions of family planning. It would be most helpful to the project evaluation team if they could compare the responses of persons attending the classes with those who did not attend. Such a comparison will enable the team to assess the impact, if any, of the materials presented.
>
> It is with the above goal in mind that we request your assistance in completing a brief questionnaire. The questionnaire will be mailed or delivered to you, and we would appreciate your completing it as soon as possible. As before, all information will be kept confidential under procedures approved by Michigan State University. Ms. _____ is responsible for coordinating the evaluation team, and she will be in contact with you in the near future.
>
> Please assist us in fulfilling our responsibility to evaluate and improve our educational program. Your cooperation is greatly appreciated.

Once the follow-up questionnaire was received from each control subject, the brochure "Choosing Birth Control Methods" was mailed to each one.

Each subject who was not living in married student housing was mailed her questionnaire and a postpaid addressed return envelope. Most of these subjects live within the Lansing area or in the Great Lakes Region (Flint; Saginaw; Grand Rapids; the Chicago area; Parma, Ohio; etc.). A few questionnaires were mailed to places as far away as Florida, Texas, or California, and one was mailed to Ankara, Turkey.

Questionnaires were personally delivered to the subjects living in married student housing. The evaluation coordinator would introduce herself to the subject and leave the questionnaire, saying she would return the next evening (or at another agreed upon time) to pick it up. If the subject was not home, she would leave the questionnaire with her husband, explaining to him what needed to be done and when she would return. In the instances where she found no one at home, she would try again the next day. If there was no one home again the coordinator would leave the questionnaire and an explanatory note inside the door. Five subjects refused to fill out the questionnaire; two from the control group and three from the two brochure conditions.

The following are notes written by the evaluation coordinator and taken from the research log in December of 1973.

> As I picked up the questionnaires I dated each one as it was returned to me. If the subject had not completed the questionnaire, I said that I would come back for it the next day. If no one was home, I would try again the next day. If I continued to find no one at home, I left a stamped, addressed return envelope and a note asking the subject to please return the questionnaire as soon as possible. As I collected a questionnaire from a member of the control group, I would leave with her the Family Life Service Project brochure "Choosing Birth Control Methods".

> Underlying the above method is the personal contact between myself and the subjects. Most of the subjects were very friendly and cooperative. I believe that the weather was a factor in the subjects' cooperation. The weather was very cold and rainy during much of the time that I was delivering and picking up the questionnaires, and I think that many people felt sorry for me. From my standpoint this is a time consuming method of collecting data, but it seems to be effective when a high rate of response is desired in a short period of time.

Physician Referrals

Subjects in either the brochure or group discussion groups of "Choosing Birth Control Methods" were offered free public clinic or private physician referrals in the Greater Lansing area. Only one person requested such a referral, rendering somewhat meaningless the many hours required in contacting all obstetricians and family practioners to compile the information contained in Figure 3.6.

Measures and Scoring Methods

The measures taken during the course of the experiment consisted of:

1. A registration form (23 questions),
2. A "Process" Evaluation Sheet (6 questions), and
3. A follow-up questionnaire (71 questions).

Each of the questionnaires was completed by the wife. The 100 items measured during the course of the experiment were grouped into the following general areas (see Figure 3.7). Each of these sets of measures, including scoring methods, are detailed below.

1.	Do you see patients for family planning services?	Yes	No
2.	Some women included in the Family Life Services Project may request referral to a physician or osteopath for family planning. We intend to give the patient a list of three or more names from which to choose. Would you like your name included on such a referral roster?	Yes	No
3.	(If yes on 2) What methods of family planning do you prescribe:		
4.	(If IUD) Do you insert the IUD in nulliparous women?	Yes	No
5.	(If rhythm) Would you like to see patients who use only the rhythm method?	Yes	No
6.	Do you prescribe the morning after pill?	Yes	No
7.	Do you perform tubal ligations?	Yes	No
	(If Yes) Do you have special requirements as to the age, number of children, etc. of the women?	Yes	No
	(If Yes) Do you use the new procedure with the laparoscope?	Yes	No
8.	Do you perform vasectomies?	Yes	No
	(If Yes) Do you have any specific criteria which the patient must meet? (i.e. age, number of children, wife's consent)	Yes	No

Physician Referral Roster

Figure 3.6

A. Demographic Variables,
B. Process Measures,
C. Birth Control Knowledge Scale,
D. Family Size Knowledge Scale,
E. Birth Planning Attitude Scale,
F. Family Size Norm Scale,
G. Attitude Toward Overpopulation Scale,
H. Birth Control Practice Scale, and
I. Change in Pregnancy Status.

Measures Obtained By The Family Life Service Project

Figure 3.7

Group Discussion Process Evaluation

Figure 3.9

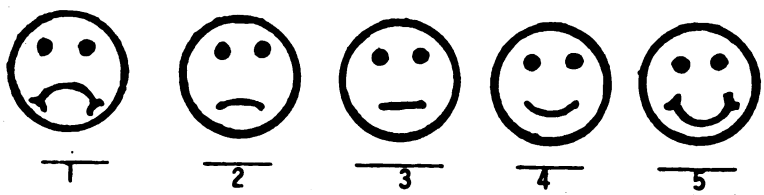
Demographic Variables

Fifteen demographic variables as shown in Figure 3.8 were recorded for each subject.

Process Evaluation

Immediately following each group discussion a short evaluation questionnaire (Figure 3.9) was administered to each subject. A similar questionnaire (Figure 3.10) was included with each brochure, which was to be returned after the subject had read the material.

1. HOW DID YOU FEEL ABOUT THE PRESENTATION? (check one)



2. WHAT I LIKED MOST ABOUT THE PRESENTATION:

3. WHAT I LIKED LEAST ABOUT THE PRESENTATION:

4. HOW SATISFIED ARE YOU THAT THE PRESENTATION AND DISCUSSION MET YOUR PERSONAL NEEDS?

   5 very satisfied
   4 satisfied
   3 neither satisfied nor dissatisfied
   2 dissatisfied
   1 very dissatisfied

5. HOW WAS YOUR INTEREST IN USING FAMILY PLANNING AFFECTED BY THIS PRESENTATION?

   3 increased interest
   2 interest not affected
   1 decreased interest

6. TO WHAT EXTENT DID YOU FEEL ACTIVELY INVOLVED IN THE SESSION?

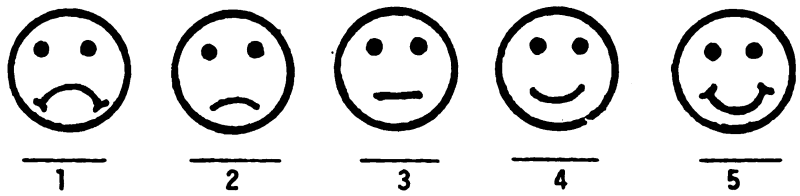
   1 none
   2 very little
   3 moderately
   4 a great deal

1. WHAT IS YOUR AGE? (give in years)
2. WHAT IS YOUR HUSBAND'S AGE? (give in years)
3. HOW MANY YEARS HAVE YOU BEEN MARRIED?
4. HOW MANY YEARS OF FORMAL EDUCATION HAVE YOU COMPLETED? (i.e. high school graduate = 12 years, college graduate = 16 years)
5. HOW MANY YEARS OF FORMAL EDUCATION HAS YOUR HUSBAND COMPLETED?
6. ARE YOU CURRENTLY EMPLOYED?
   1. no
   2. part-time
   3. full-time
7. IS YOUR HUSBAND CURRENTLY EMPLOYED?
   1. no
   2. part-time
   3. full-time
8. WHAT IS YOUR RACE?
   1. white
   2. black
   3. American Indian
   4. other
9. WHAT IS YOUR HUSBAND'S RACE?
   1. white
   2. black
   3. American Indian
   4. other
10. WHAT IS YOUR RELIGIOUS PREFERENCE?
    1. Jewish
    2. none
    3. Protestant
    4. Catholic
    5. other
11. WHAT IS YOUR HUSBAND's RELIGIOUS PREFERENCE?
    1. Jewish
    2. none
    3. Protestant
    4. Catholic
    5. other
12. WHAT IS YOUR NATIONALITY?
    1. foreign
    2. U. S. Citizen
13. HOW MANY PREGNANCIES HAVE YOU EVER HAD?
14. HOW MANY CHILDREN OF YOURS ARE NOW LIVING?
15. HOW OLD IS YOUR YOUNGEST CHILD? (give in years)

Demographic Variables

Figure 3.8

1. HOW DID YOU FEEL ABOUT THE BROCHURE? (check one)



2. WHAT I LIKED MOST ABOUT THE BROCHURE:

3. WHAT I LIKED LEAST ABOUT THE BROCHURE:

4. HOW SATISFIED ARE YOU THAT THE BROCHURE MET YOUR PERSONAL NEEDS?

   5 very satisfied
   4 satisfied
   3 neither satisfied nor dissatisfied
   2 dissatisfied
   1 very dissatisfied

5. HOW WAS YOUR INTEREST IN USING FAMILY PLANNING AFFECTED BY THE BROCHURE?

   3 increased interest
   2 interest not affected
   1 decreased interest

Brochure Process Evaluation

Figure 3.10

Birth Control Knowledge Scale

The eighteen questions comprising the Birth Control Knowledge Scale shown in Figure 3.11 were administered in the follow-up questionnaire. The correct answer to each question is indicated by an asterisk. For questions where either of two answers were considered correct, the subject was required to identify only one correct response to receive full credit. The total number of correct responses over each of the eighteen questions was recorded as a "sum score" for the subject on this scale.

1. WITH RELATION TO THE FEMALE MENSTRUAL PERIOD (monthly bleeding), ON WHICH DAYS DO YOU THINK IT IS EASIEST TO GET PREGNANT?

    1. 1-7 days before period begins
    2. 1-7 days after period begins
    *3. 8-21 days after period begins
    4. don't know

2. THE TERM "RHYTHM METHOD" MEANS HAVING SEX TO MUSIC.

    1. true
    *2. false

3. CONTRACEPTIVE FOAM IS HIGHLY (95%) EFFECTIVE ALONE AS A MEANS OF BIRTH CONTROL.

    1. true
    *2. false

4. DO DIAPHRAGMS FOR CONTRACEPTION COME IN DIFFERENT SIZES?

    *1. yes
    2. no

5. IF A WOMAN FIRST STARTING TO USE BIRTH CONTROL PILLS EXPERIENCES NAUSEA, BREAST ENLARGEMENT AND TENDERNESS, AND SOME WEIGHT GAIN, THIS MEANS:

    1. she should stop the pills
    *2. she should continue the pills and this will all adjust
    3. she is pregnant

6. AFTER A MAN HAS A VASECTOMY THERE WILL BE A DECREASE IN HIS SEXUAL ACTIVITY AND INTEREST.

    1. true
    *2. false

7. WHEN USING CONDOMS AS A MEANS OF BIRTH CONTROL THE RUBBER MUST BE PUT ON:

    1. before ejaculation (when a man comes)
    2. before he penetrates the vagina
    *3. before any contact with the female genitals

8. THE DIAPHRAGM IS AN OLD FASHIONED MEANS OF BIRTH CONTROL WHICH IS NO LONGER CONSIDERED USEFUL.

    1. true
    *2. false

9. WHEN FIRST STARTING BIRTH CONTROL PILLS ONE IS INSTRUCTED TO START THEM ON THE _____ DAY OF THE MENSTRUAL PERIOD.

    1. 7th day
    *2. 5th day
    3. 1st day.

10. IF USING THE BIRTH CONTROL PILLS, CAN A COUPLE HAVE SEX DURING THE WEEK THE WOMAN IS OFF THE PILL (OR ON THE COLORED PILLS IF USING A 28 DAY PILL) AND STILL BE PROTECTED?

    1. no
    *2. yes

Figure 3.11 (cont'd.)

11. FERTILIZATION USUALLY OCCURS:

    1. in the uterus
    2. near the cervix
    3. in the vagina
    *4. in the fallopian tube
    5. in the ovary

12. THE FIRST MONTH A WOMAN STARTS THE PILL, SHE IS:

    1. fully protected from pregnancy, and need not worry
    *2. in need of a back-up method (such as foam or condoms)
    3. likely to experience no side effects--too early yet

13. THE I.U.D. WORKS TO PREVENT PREGNANCY BY:

    1. interfering with the movement of the sperm through the uterus
    2. speeding up the passage of the egg through the fallopian tubes, so it can't be fertilized
    3. preventing the implantation of the egg in the uterus
    *4. it is not definitely known how the I.U.D. works; all of the above theories have been suggested

14. FOLLOWING INTERCOURSE, A DIAPHRAGM SHOULD NOT BE REMOVED:

    1. for at least 30 minutes
    2. for at least 4 hours
    *3. for at least 6-8 hours
    4. for at least 24 hours

15. I.U.D's ARE ALMOST AS EFFECTIVE AS:

    *1. the pill
    *2. foam and condoms used together
    3. the diaphragm
    4. condoms used alone

16. FOAM AND CONDOMS, WHEN USED CORRECTLY TOGETHER, HAVE AN EFFECTIVENESS RATE WHICH APPROACHES:

    1. 85%
    2. 90%
    *3. 95%
    *4. 100%

17. WITHDRAWAL IS NOT A RECOMMENDED FORM OF BIRTH CONTROL BECAUSE:

    *1. some semen can escape before ejaculation
    2. it is physically harmful
    *3. pregnancy can occur even if semen is deposited on the female's external sexual organs

Figure 3.11 (cont'd.)

18. DOUCHING IS NOT A METHOD OF BIRTH CONTROL BECAUSE:
    - *1. thousands of sperm are already in the uterus before a woman has time to douche
    - *2. douching may even push some sperm closer to the uterus
    - 3. it acts as a spermacide and kills the sperm
    - 4. it is physically harmful

Birth Control Knowledge Scale

Figure 3.11

Family Size Knowledge Scale

The twenty-two question Family Size Knowledge Scale as shown in Figure 3.12 was administered in the follow-up questionnaire. The correct answers are indicated by an asterisk. Each subject was given a single "sum score" representing the total number of correct responses.

1. ONE OF THE MAIN GOALS OF FAMILY PLANNING IS TO:
    - 1. help rebuild the emotional resources of the parents between pregnancies
    - 2. make everyone have 2 children
    - 3. help mothers and their children achieve maximum health and well-being
    - *4. both 1 and 3
2. WHICH OF THE FOLLOWING IS NOT A MAIN FACTOR TO CONSIDER IN PLANNING YOUR FAMILY?
    - 1. your future goals
    - 2. your physical fitness
    - *3. your parent's wishes
    - 4. your psychological stability
3. WHAT DO MOST DOCTORS SUGGEST ARE THE BEST CHILD-BEARING YEARS OF A WOMAN?
    - *1. between 20 and 30 years
    - 2. between 18 and 20 years
    - 3. between 30 and 35 years
    - 4. above 35 years

Figure 3.12 (cont'd.)

4. WHICH OF THE FOLLOWING STATEMENTS IS FALSE?

    1. Women over 35 run a high risk of producing mongoloid babies.
    2. Women younger than 18 run a high risk of having premature babies.
    *3. The age of the father does not affect the health of his children.
    4. Women over 35 run a high risk of producing stillborn babies.

5. WHICH OF THE FOLLOWING IS TRUE?

    *1. Almost any potential disease can be aggravated by numerous births.
    2. The number of children a woman has does not affect her health.
    3. Child abuse is more prevalent in small rather than large families.
    4. Most young college educated couples want only 1 child.

6. WHICH OF THE FOLLOWING STATEMENTS IS FALSE?

    1. Statistically, large families are poorer.
    2. Statistically, large families are less educated.
    *3. Statistically, large families are less likely to suffer mental illness.
    4. Statistically, large families are less well medically attended.

7. I.Q. (INTELLIGENCE QUOTIENT) IS SIGNIFICANTLY AFFECTED BY ALL BUT WHICH OF THE FOLLOWING?

    1. the age of the mother at her child's birth
    2. nutrition
    *3. birth weight
    4. spacing intervals between children

8. WHICH OF THE FOLLOWING STATEMENTS IS FALSE? THE LARGER THE FAMILY, THE MORE CHANCES THAT THE CHILDREN WILL HAVE:

    1. decreased height and weight
    2. fetal, neonatal, postnatal mortality
    3. lower I.Q.
    *4. increased intellectual and creative stimulation

9. AFTER THE BIRTH OF THEIR FIRST CHILD, MOST PARENTS REPORT ALL BUT WHICH OF THE FOLLOWING?

    1. less sexual satisfaction
    *2. less stability in their marriage
    3. a decrease in privacy
    4. seeing negative personality changes in each other

Figure 3.12 (cont'd.)

10. WHAT MINIMUM LENGTH OF TIME DO MOST DOCTORS RECOMMEND SHOULD PASS BETWEEN THE END OF ONE PREGNANCY AND THE BEGINNING OF THE NEXT?

    1. less than 1 year
    *2. 2-3 years
    3. 3-4 years
    4. 1-2 years

11. WHICH ONE OF THE FOLLOWING FACTORS SHOULD BE CONSIDERED IN TERMS OF PLANNING AND SPACING INTERVALS BETWEEN YOUR CHILDREN?

    1. finances
    2. career plans
    3. housing needs
    *4. all of the above

12. WHICH OF THE FOLLOWING TIME PERIODS HAD THE LOWEST NUMBER OF BIRTHS PER WOMAN IN THE UNITED STATES?

    1. during the Depression
    2. 1965-1970
    3. 1895-1900
    *4. during World War II

13. WHEN DID THE FAMOUS "BABY BOOM" OCCUR?

    1. 1960-1965
    2. 1950-1955
    3. immediately after World War I
    *4. immediately after World War II

14. RESEARCH STUDIES HAVE NOT SHOWN WHICH OF THE FOLLOWING?

    *1. fewer children=less marital satisfaction
    2. the first child has the biggest impact on the marriage
    3. more children=less marital satisfaction
    4. more people=more emotional stress

15. IN THE YEAR 2,070 (ABOUT 100 YEARS FROM NOW), IF THE 2-CHILD PER FAMILY NORM IS ESTABLISHED, THE APPROXIMATE POPULATION OF THE UNITED STATES WILL BE:

    *1. 350 million
    2. 950 million
    3. 210 million
    4. 600 million

16. WHICH OF THE FOLLOWING STATEMENTS IS FALSE?

    1. the wife rather than the husband first considers adoption
    *2. the wife usually decides how many children to have
    3. the husband usually decides on the birth control method the couple will use
    4. the husband usually takes longer than the wife to feel comfortable with their adopted child

Figure 3.12 (cont'd.)

17. IN 1969, THE APPROXIMATE ESTIMATED COST OF RAISING A NORMAL CHILD FROM 0-18 YEARS INCLUDING THE MONEY LOST BY A WOMAN NOT WORKING FOR 14 YEARS (OPPORTUNITY COSTS) WAS ABOUT:

    1. $40,000
    *2. $60,000
    3. $75,000
    4. $49,000

18. IN 1972, THE AVERAGE WEEKLY FOOD BILL FOR 2 ADULTS AND 2 YOUNG CHILDREN WAS:

    1. $24-$26
    *2. $34-$36
    3. $20-$24
    4. $41-$45

19. WHICH OF THE FOLLOWING STATEMENTS IS FALSE?

    1. most I.Q. development takes place between 10-18 months of age
    2. children spaced more than 6 years apart are more or less raised as only children
    3. the oldest child in a family usually has the highest I.Q.
    *4. statistically speaking, the 2nd child born in a family is usually heavier and taller than the 1st born

20. STUDIES SHOW THAT CHILDREN BORN AT A 3rd OR LATER PREGNANCY HAVE A GREATER CHANCE OF WHICH OF THE FOLLOWING:

    1. respiratory difficulty
    2. parasitic disease
    3. congenital malformations
    *4. all of the above

21. GENERALLY, WHICH OF THE FOLLOWING GROUPS OF CHILDREN GO ON TO COLLEGE, AND BECOME PRESIDENTS AND ASTRONAUTS?

    1. second born children
    2. only children
    *3. first born children
    4. both 2 & 3

22. WHY DO DOCTORS RECOMMEND A WAITING PERIOD BETWEEN PREGNANCIES?

    1. it is better for the woman physically
    2. it is better for the woman emotionally
    3. it eases the parents' work loads
    *4. all of the above

Family Size Knowledge Scale

Figure 3.12

Birth Planning Attitude Scale

The Birth Planning Attitude Scale as shown in Figure 3.13 and the several scales which follow are summated rating scales (Likert-type scales) which have been slightly modified to include some pre-post change scores. The sets of approximately equal attitude items provided the subjects with the opportunity to respond with degrees of agreement or intensity (Kerlinger, 1965, p. 484). The subject responding to these items were "scaled" by summing the individual responses. The value of each response is noted as is the method of computation if any. *Change Scores on certain items as shown in Figure 3.13 (2) were given a small proportionately increased weight in comparison with the remaining items on the scale. This is justified by the importance given by the experimental design to induce change in birth planning knowledge, attitudes and practices. All items with the exception of change scores were taken six months after the experimental education treatment administered.

Family Size Norm Scale

The fourteen item Family Size Norm Scale is displayed in Figure 3.14.

Attitude Toward Overpopulation Scale

The six item scale which attempted to measure the strength of attitudes toward overpopulation is shown in Figure 3.15.

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* Change Scores are computed by examining differences in pre-post measures.

1. SOME MARRIED COUPLES DO SOMETHING TO KEEP FROM GETTING PREGNANT. HOW DO YOU FEEL ABOUT THIS?

    5 strongly disapprove
    10 disapprove
    15 neither approve nor disapprove
    20 approve
    25 strongly approve

2. SOME MARRIED COUPLES DO SOMETHING TO KEEP FROM GETTING PREGNANT. HOW DO YOU FEEL ABOUT THIS?

    Change Score = 2 [(Posttest Score - Pretest Score)+ 11]

    1 strongly disapprove
    2 disapprove
    3 neither approve nor disapprove
    4 approve
    5 strongly approve

3. THE GOVERNMENT SHOULD MAKE AVAILABLE MEDICAL SERVICE TO ANYONE IN THE COUNTRY WHO WANTS TO REGULATE THE SIZE OF HIS/HER FAMILY.

    15 approve
    10 neither approve nor disapprove
    5 disapprove

4. THE GOVERNMENT SHOULD HAVE A PROGRAM TO TEACH EVERY FERTILE COUPLE IN THE COUNTRY HOW TO CONTROL THE NUMBER OF CHILDREN THEY HAVE, SO THAT EACH COUPLE KNOWS HOW TO REGULATE THE SIZE OF ITS FAMILY.

    15 approve
    10 neither approve nor disapprove
    5 disapprove

5. HOW IMPORTANT DO YOU THINK IT IS THAT A FAMILY HAVE AT LEAST ONE SON (A MALE HEIR) TO TAKE OVER FROM THE FATHER AND CONTINUE THE FAMILY NAME AND TRADITION?

    15 <u>not important</u> at all
    10 <u>desirable</u>, but not worth getting upset about if it doesn't happen
    5 <u>very important</u>--must be done if at all possible

Birth Planning Attitude Scale

Figure 3.13

1. IF YOU COULD HAVE THE NUMBER OF CHILDREN YOU WANT, NOT INCLUDING ADOPTIONS, HOW MANY CHILDREN WOULD YOU LIKE TO HAVE?

Number of Children	Score
0	20
1-2	15
3-4	10
5+	5

2. IF YOU COULD HAVE THE NUMBER OF CHILDREN YOU WANT, NOT INCLUDING ADOPTIONS, HOW MANY CHILDREN WOULD YOU LIKE TO HAVE?

   Change Score: 2 [(pretest score - posttest score) + 11], where the number of children equals the raw score.

3. HOW MANY CHILDREN, NOT INCLUDING ADOPTIONS, DO YOU EXPECT YOU WILL END UP WITH?

Number of Children	Score
0	20
1-2	15
3-4	10
5+	5

4. HOW MANY CHILDREN, NOT INCLUDING ADOPTIONS, DO YOU EXPECT YOU WILL END UP WITH?

   Change Score: 2 [(pretest score - posttest score) + 11], where the number of children equals the raw score.

5. HOW MANY CHILDREN MUST A COUPLE HAVE FOR YOU TO THINK THEY HAVE <u>TOO</u> <u>MANY</u> CHILDREN?

Number of Children	Score
2 & below	20
3	15
4	10
5 & above	5

6. AND HOW MANY CHILDREN MUST A COUPLE HAVE FOR YOU TO THINK THEY HAVE TOO FEW?

Number of Children	Score
0	20
1	15
2	10
3 & above	5

Figure 3.14 (cont'd.)

7. IN THE IDEAL SITUATION, HOW LONG DO YOU THINK THE INTERVAL SHOULD BE BETWEEN THE DATE OF MARRIAGE AND THE BIRTH OF THE FIRST BABY? (give in years)

Years	Score
1 or less	5
2	10
3	15
4 & above	20

8. IN THE IDEAL SITUATION, HOW LONG DO YOU THINK THE INTERVAL SHOULD BE BETWEEN THE DATE OF MARRIAGE AND THE BIRTH OF THE FIRST BABY? (give in years)

   Change Score: 2 [(pretest score - posttest score) + 11], where the interval expressed in number of years equals the raw score.

9. HOW LONG DO YOU THINK THE INTERVAL BETWEEN EACH CHILD SHOULD BE? (give in years)

Years	Score
1 or less	5
2	10
3	15
4 & above	20

10. HOW LONG DO YOU THINK THE INTERVAL BETWEEN EACH CHILD SHOULD BE? (give in years)

    Change Score: 2 [(posttest score - pretest score) + 11], where the interval expressed in number of years equals the raw score.

11. WHAT DO YOU THINK IS THE BEST AGE FOR A WOMAN TO BE WHEN SHE GETS MARRIED?

Age	Score
19 & below	5
20 - 21	10
22 - 23	15
24 & above	20

12. WHAT DO YOU THINK IS THE BEST AGE FOR A MAN TO BE WHEN HE GETS MARRIED?

Age	Score
19 & below	5
20 - 21	10
22 - 23	15
24 & above	20

Figure 3.14 (cont'd.)

13. DO YOU BELIEVE THERE ARE ADVANTAGES OR BENEFITS FOR A COUPLE TO HAVE A SMALLER FAMILY, SAY NO MORE THAN TWO OR THREE CHILDREN? THESE ADVANTAGES CAN BE TO THE FATHER, TO THE MOTHER, OR TO THE CHILDREN ALREADY LIVING IN THE FAMILY.

    10 yes, there are advantages and benefits
     5 no, there are no advantages and benefits

14. DO YOU BELIEVE THERE ARE SOME HANDICAPS OR DISADVANTAGES IN A COUPLE HAVING NO MORE THAN TWO OR THREE CHILDREN? THESE HANDICAPS COULD BE TO THE FATHER, TO THE MOTHER, OR TO THE CHILDREN THEMSELVES.

     5 yes, there are disadvantages and handicaps
    10 no, there are no disadvantages or handicaps

Family Size Norm Scale

Figure 3.14

1. WHAT IS YOUR OPINION ABOUT THE NUMBER OF PEOPLE WHO LIVE IN THE U.S.? DO YOU THINK THE U.S. HAS TOO MANY PEOPLE, JUST ABOUT THE RIGHT NUMBER, OR NOT ENOUGH PEOPLE?

    15 too many people
    10 just about the right number
     5 not enough people

2. DO YOU THINK THE NUMBER OF PEOPLE IN THE U.S. RIGHT NOW IS:

     5 not increasing fast enough
    10 increasing at just about the right pace
    15 increasing too fast

3. THE GOVERNMENT SHOULD PASS A LAW THAT REQUIRES STERILIZATION OF EITHER THE MAN OR THE WOMAN AS SOON AS THEY HAVE BORNE FOUR LIVING CHILDREN.

    15 approve
    10 neither approve nor disapprove
     5 disapprove

4. WE SHOULD TEACH YOUNG PEOPLE IN SCHOOL THE IMPORTANCE OF HAVING SMALL FAMILIES SO THAT THEY WILL WANT TO CONTROL THEIR FERTILITY WHEN THEY GET MARRIED.

    15 approve
    10 neither approve nor disapprove
     5 disapprove

Figure 3.15 (cont'd.)

5. THE GOVERNMENT SHOULD PASS LAWS FORCING YOUNG PEOPLE TO DELAY GETTING MARRIED UNTIL THE WOMAN IS AT LEAST 20 AND THE MAN IS AT LEAST 22 YEARS OF AGE.

   15 approve
   10 neither approve nor disapprove
    5 disapprove

6. HOW DO YOU FEEL ABOUT THE SUPREME COURT DECISION PERMITTING ABORTION IN THE FIRST TRIMESTER OF PREGNANCY?

    5 not in favor of
   10 no opinion
   15 in favor of

Attitude Toward Overpopulation Scale

Figure 3.15

Birth Control Practice Scale

The three item Birth Control Practice Scale as shown in Figure 3.16 concentrated on current birth control usage, change from previous practice, and physician contact.

1. ARE YOU CURRENTLY USING ANY METHOD TO KEEP FROM GETTING PREGNANT?

    5 none
   10 withdrawal; rhythm
   15 foam; diaphragm; condoms; jelly
   20 IUD; pill; foam & condoms
   25 sterilization

2. ARE YOU CURRENTLY USING ANY METHOD TO KEEP FROM GETTING PREGNANT?

   Change Score: 2 [(posttest score - pretest score) + 11], where 1 = none; 2 = withdrawal, rhythm; 3 = foam, diaphragm, condoms, jelly; 4 = IUD, pill, foam & condoms; 5 = sterilization.

3. HAVE YOU BEEN TO SEE A PHYSICIAN IN THE LAST SIX MONTHS REGARDING FAMILY PLANNING?

    5 no
   10 yes

Birth Control Practice Scale

Figure 3.16

Pregnancy Status

The final study followed subjects for up to nine months after presentation of the birth planning intervention. This period is too brief to permit a well-defined analysis of fertility. In the present sample, however, pregnancy status was obtained at the time of follow-up as shown in Figure 3.17.

DID THE SUBJECT BECOME PREGNANT DURING THE COURSE OF THE STUDY (period ending at six month follow-up)?

1. no, not pregnant
2. maybe, subject not certain
3. yes, pregnant

Pregnancy Status

Figure 3.17

Reliability

Fourteen items from the pool of pretest and posttest items were subjected to reliability testing according to the test-retest method. This testing took place on a sample of twenty-two women who resided in married student housing two years prior to the initiation of the field experiment. Twenty-four hours elapsed between the first and second administration of the items. The reliability score was computed by Pearson R. The following item reliability scores were found.

In all cases the reliability coefficients were of sufficient magnitude to give some confidence in the use of these measures in the actual experiment.

Table 3.2

Item Reliability Scores On Selected Measures

	Item	N-Size	R
1.	How many pregnancies have you ever had?	20	1.00
2.	How many children of yours are now living?	20	1.00
3.	Are you pregnant now?	20	1.00
4.	If you could have the number of children you want, not including adoptions, how many children would you like to have?	20	.98
5.	How many children, not including adoptions, do you expect to end up with?	20	.96
6.	In the ideal situation, how long do you think the interval should be between the date of marriage and the birth of the first baby? (give in years)	18	.99
7.	How long do you think the interval between each child should be? (give in years)	20	.85
8.	How many children must a couple have for you to think they have too many children?	18	.96
9.	And how many children must a couple have for you to think they have too few?	16	1.00
10.	Some married couples do something to keep from getting pregnant. How do you feel about this?	20	.85
11.	Are you currently using any method to keep from getting pregnant?	20	1.00
12.	With relation to the female menstral period (monthly bleeding), on which days do you think it is easier to get pregnant?	18	1.00
13.	How important do you think it is that a family have at least one son (a male heir) to take over from the father and continue the family name and tradition?	20	.89

A "preset cluster analysis" (Tryon and Bailey, 1970) was conducted on the three attitude scales and the Birth Control Practice Scale. The A-Reliability (reliability coefficient of the cluster score on the full set of defining variables) is reported in Table 3.3. These scale reliabilities are also of sufficient magnitude to warrant use of the measures.

Table 3.3

Reliability of Four Birth Planning Scales

Scale	A-Reliablity
Birth Planning Attitude	.76
Family Size Norm	.86
Attitude Toward Overpopulation	.89
Birth Control Practice	.87

CHAPTER IV

RESULTS

The results of the experiment are presented in three major sections. First the adequacy of the random assignment of subjects to each of the five groups is examined. Secondly, the results of "process" measurements taken during the course of the investigation are reported. Finally, the major results of the factorial experiment are set forth.

Sample Comparability

The impossible task of totally eliminating an extraneous variable(s) usually leads the researcher to adopt one of several methods to control such variance. Among these methods are randomization, matching or building the extraneous variable into the design as an independent variable.

> This (randomization) is the best way, in the sense that you can have your cake and eat some of it too. Theoretically randomization is the only method of controlling all possible extraneous variables...if randomization has been thoroughly accomplished, then the experimental groups can be considered statistically equal in all possible ways (Kerlinger, 1965, p. 284).

The inability of the researcher to predict all sources of variance and the limitations of matching on two or more variables inevitably lead to randomization.

Measures were taken during registration on fifteen demographic variables. In Table 4.1 the four treatment groups and the single control group were compared by use of a one-way AOV.

Table 4.1

Comparison of the Four Experimental Groups and a Single Control Group on Demographic Characteristics.[a]

VARIABLE[b]	BCB[c]	FSB	BCG	FSG	C	F STATISTIC	SIGNIFICANCE PROBABILITY
Subject's Age	23.9	25.2	24.6	26.3	23.4	.929	.453
Husband's Age	25.9	26.5	25.7	29.8	26.5	.985	.422
Years Married	2.36	3.22	3.62	4.78	2.73	1.021	.403
Subject's Education	14.8	13.6	14.0	13.5	14.6	1.005	.412
Husband's Education	16.9	16.3	16.1	16.8	17.0	.398	.809
Subject's Employment	2.06	2.21	2.22	1.87	1.70	1.032	.398
Husband's Employment	2.12	1.57	1.66	1.50	1.70	2.193	.080
Subject's Race	1.06	1.64	1.00	1.75	1.75	1.620	.180
Husband's Race	1.06	1.64	1.00	1.75	1.60	1.406	.242
Subject's Religion	3.25	3.42	4.00	3.87	3.55	1.109	.360
Husband's Religion	3.06	3.28	3.44	3.62	3.20	.439	.780
Nationality	1.84	1.71	1.70	1.72	1.80	.307	.872
No. of Pregnancies	1.00	.81	1.11	1.22	1.44	.467	.759
No. Living Children	.56	.79	1.00	1.11	.95	.566	.688
Age Youngest Child	2.9	3.6	2.8	2.2	2.5	.309	.868

a. BCB - Birth Control Brochure; FSB - Family Size Brochure; BCG - Brith Control Group Discussion; FSG - Family Size Group Discussion; C - Control

b. Non-numerical variables scored continuously according to fertility ranks. See previous section on measures and scoring.

c. Group mean scores are reported.

None of the group comparisons reached the .05 level of significance. The random assignment even after subject attrition appears to have been valid.

Process Measures

Subjects who were assigned to the group discussion mode of presentation completed measurements immediately after the ninety minute educational presentation. Their rate of response to these measures was high except for those who received brochures where only five subjects in the "Choosing Birth Control" group returned the process evaluation sheet. Accordingly, the information presented below applied basically to comparisons between the discussion groups.

Global Reaction

The response of the three treatment groups on which data is available was quite favorable. To the question, "How did you feel about the presentation?", out of a possible score of 5.0 the following group means were recorded (Table 4.2):

Table 4.2

Mean Feeling of Group Toward Presentation or Brochure

Group	Freq	Mean
Birth Control, Group Discussion	9	4.33
Family Size, Group Discussion	10	4.40
Birth Control, Brochure	5	4.20

An analysis of variance was performed. Table 4.3 shows no significant differences between the means of the three groups tested.

Table 4.3

Analysis of Variance on Feeling Toward Presentation or Brochure

SOURCE OF VARIANCE	SS	DF	MS	F	P
Between Categories	.1333	2	.066	.269	.767
Within Categories	5.2000	21	.247		
Total	5.3333	23			

Written Comments

The comments by the participants about what they liked most and least about the presentation were enlightening. A list of these comments and their frequency is presented in Figure 4.1.

Personal Satisfaction

In addition to requesting their global reaction and written comments each participant was asked the extent to which the particular presentation met her personal needs. Of a possible high rating of 5.0 the following group means are reported in Table 4.4.

Table 4.4

Mean Satisfaction of Group with the Presentation or Brochure

Group	Freq	Mean
Birth Control, Group Discussion	9	4.11
Family Size, Group Discussion	9	4.11
Birth Control, Brochure	5	3.60

Written Comments By Participants
Regarding Content and Mode of Presentation

Figure 4.1

A. Choosing Birth Control Methods - Group Discussion

1. Liked most about the presentation.

Showing of different devices
The actual display of devices
Opportunity to ask questions
Pleasant and knowledgable instructor
Very good visual aids
The personal presentation

Very much to the point - in language I could understand
All methods are very interesting
Explained in terms easily understood and it was to the point

2. Liked least about the presentation.

Nothing
None
I liked it all
Small class - I knew almost all of this before
The material did not include anything I did not know previous to the presentation
Very little new information for me
Already knew how to make baby, this part unnecessary for me.

B. Choosing Family Size - Group Discussion

1. Liked most about the presentation.

Open discussion with the group
I liked the part about the physical aspects - mother and child
The informality of presentation - relaxed atmosphere
Instructor seemed sincere, open
The psychological aspect and the rate of growth of population
Interesting statistics
Informal group discussion. Liked the charts.
The casual converstaion
No specific part, was very interesting

2. Liked least about the presentation.

We had already spent much time considering what would be best for us, so it didn't have much effect on us
Nothing. Enjoyed the presentation entirely.

An analysis of variance was performed as shown in Table 4.5. It suggests that personal satisfaction did not vary significantly among the three groups.

Table 4.5

Analysis of Variance on Satisfaction with the Presentation or Brochure

SOURCE OF VARIANCE	SS	DF	MS	F	P
Between Categories	1.02	2	.5111	1.138	.340
Within Categories	8.87	20	.4488		
Total	10.00	22			

Interest in Using Family Planning

Mean interest in using family planning was slightly increased by the group discussion on "Choosing Family Size". This increase, measured on a possible 3.0 scale was greatest between the family size group and the Birth Control Methods Brochure as shown in Table 4.6.

Table 4.6

Mean Interest in Using Family Planning

Group	Freq	Mean
Birth Control, Group Discussion	9	2.55
Family Size, Group Discussion	10	2.80
Birth Control, Brochure	5	2.20

The analysis of variance, however, as shown in Table 4.7 revealed an approximate significance probability of .09 for the F statistic.

Table 4.7

Analysis of Variance on Interest in Using Family Planning

SOURCE OF VARIANCE	SS	DF	MS	F	P
Between Categories	1.211	2	.605	2.751	.087
Within Categories	4.622	21	.220		
Total	5.833	23			

Active Involvement

The final process measure taken was directed only toward those who participated in a group discussion. The item stated "To what extent did you feel actively involved in the session". On a possible scale of 4.0 both groups reported means of "moderate" involvement as depicted in Table 4.8.

Table 4.8

Mean Subject Involvement in the Presentation

Group	Freq	Mean
Birth Control, Group Discussion	9	3.22
Family Size, Group Discussion	10	3.60

The mean differences between the groups failed to reach the .05 level of significance as shown in Table 4.9.

Table 4.9

Analysis of Variance on Subject Involvement in the Presentation

SOURCE OF VARIANCE	SS	DF	MS	F	P
Between Categories	.676	1	.676	1.929	.183
Within Categories	5.955	17	.350		
Total	6.631	18			

Factorial Experiment

Preliminary to performing the analysis of variance on the seven major dependent variables, Bartlett's test for equality of variance was applied to the four treatment groups and single control group for each dependent measure. The results presented in Table 4.10 indicate that the requirements of homogeneity were satisfactorily met.

Table 4.10

Equality of Variance for Seven Dependent Measures

SCALE	F	P
Birth Control Knowledge	1.1959	.3104
Family Size Knowledge	1.5514	.1845
Birth Planning Attitude	.6964	.5944
Family Size Norm	1.8240	.1212
Attitude Toward Overpopulation	1.6247	.1650
Birth Control Practice	1.0972	.3561
Change in Pregnancy Status	.4995	.6826

Birth Control Knowledge

The group means obtained on the Birth Control Knowledge Scale are presented in Table 4.11.

Table 4.11

Group Means - Birth Control Knowledge Scale

Information Content	Presentation		
	Brochure	Small Group Discussion	Total
Birth Control Methods	14.16	14.20	14.17
Family Size	11.57	12.36	11.92
Total	13.06	13.24	13.13

Control
12.90

The analysis of variance presented in Table 4.12 suggests evidence for rejecting the hypothesis that group discussions are more effective than brochures in imparting knowledge of contraceptive methods. There is, however, evidence which warrants retention of the hypothesis related to content of presentation. The teaching of birth control methods either by brochure or group discussion appears to significantly increase birth control knowledge when compared with education in choosing family size. When all experimental groups combined were compared with the control, no significant differences were revealed.

Table 4.12

Analysis of Variance - Birth Control Knowledge Scale

SOURCE OF VARIATION	SS	DF	MS	F
Control vs Others	0.77	1	0.77	0.11
Content	69.80	1	69.80	9.71***
Presentation	2.10	1	2.10	0.29
Interaction	1.79	1	1.79	0.25
Error	495.90	69	7.19	

*** Significant at .001 level

Family Size Knowledge

The group means obtained on the Family Size Knowledge Scale are presented in Table 4.13.

Table 4.13

Group Means for the Family Size Knowledge Scale

Information Content	Presentation		
	Brochure	Small Group Discussion	Total
Birth Control Methods	13.11	11.70	12.62
Family Size	11.43	14.09	12.60
Total	12.40	12.95	12.61

Control
11.10

The analysis of variance presented in Table 4.14 provides evidence for rejecting the major hypothesis regarding method and content of presentation. Group discussions as measured in this study appear no

more effective than brochures in imparting knowledge of considerations in choosing family size. Providing subjects with direct information on choosing family size is likewise no more effective than simple birth control material in imparting such knowledge.

Table 4.14

Analysis of Variance - Family Size Knowledge Scale

SOURCE OF VARIATION	SS	DF	MS	F
Control vs Others	33.33	1	33.33	4.73*
Content	0.07	1	0.07	0.01
Presentation	4.07	1	4.07	0.58
Interaction	52.53	1	52.53	7.46**
Error	486.03	69	7.04	

* Significant at the .05 level
** Significant at the .01 level

The test which compared the control to all experimental groups provided evidence of a significantly higher level of family size knowledge among the experimental participants. Certain experimental groups exhibited significantly greater knowledge scores than others as indicated by the interaction effect. Family size information presented in a group setting and birth control information presented by brochures contributed to higher family size knowledge scores. While there is good theoretical justification that high scores should be produced by presentation of directly programmed material in a reinforcing group setting, there is little reason to expect such an effect from unrelated

material being provided in brochures. This finding would require further investigation to determine its validity.

Birth Planning Attitude

This scale was designed to measure the participants' attitude toward using methods of birth control and approval of societal efforts to provide birth control education and medical services. The group means for the Birth Planning Attitude Scale are presented in Table 4.15.

Table 4.15

Group Means for the Birth Planning Attitude Scale

Information Content	Presentation			
	Brochure	Small Group Discussion	Total	
Birth Control Methods	86.63	86.40	86.55	Control 87.10
Family Size	83.21	83.73	83.44	
Total	85.18	85.00	85.11	

The analysis of variance performed on this dependent measure indicates that neither the hypothesis for methods of presentation nor content could be retained (Table 4.16). None of the experimental modes appeared to significantly alter birth planning attitudes as measured in this research. There was also no significant measured difference between the favorability of birth planning attitudes of all experimental groups combined when compared to those participants in the control condition.

Table 4.16

Analysis of Variance - Birth Planning Attitude Scale

SOURCE OF VARIATION	SS	DF	MS	F
Control vs Others	57.73	1	57.73	1.36
Content	129.74	1	129.74	3.05
Presentation	0.18	1	0.18	0.00
Interaction	1.76	1	1.76	0.04
Error	2931.25	69	42.48	

Family Size Norms

The Family Size Norm Scale attempts to measure a series of variables that are related to the participants' ideas regarding the number and spacing of children for their emerging family. Higher scores indicate acceptance of a smaller family size norm. Lower scores would suggest a complex of attitudes which are compatible with production of larger families. The group means for this scale are presented in Table 4.17.

Table 4.17

Group Means for the Family Size Norm Scale

Information Content	Presentation		
	Brochure	Small Group Discussion	Total
Birth Control Methods	213.05	207.00	210.96
Family Size	210.64	219.36	214.48
Total	212.03	213.47	212.59

Control
216.40

While the higher group mean was as hypothesized in the group discussions held on choosing family size, the major hypotheses in relation to content and method of presentation must be rejected. The obtained evidence as shown in the analysis of variance (Table 4.18) indicates that none of the experimental conditions significantly altered family size norms.

Table 4.18

Analysis of Variance - Family Size Norm Scale

SOURCE OF VARIATION	SS	DF	MS	F
Control vs Others	211.57	1	211.57	0.77
Content	516.25	1	156.25	0.57
Presentation	17.25	1	17.25	0.06
Interaction	692.94	1	692.94	2.54
Error	18849.63	69	273.18	

Attitude Toward Overpopulation

The participants' general attitude toward overpopulation was measured in a series of items which moved from relatively mild ideas of population stabilization to the coercive means which might be employed to achieve fertility control. The group means for the Attitude Toward Overpopulation Scale are presented in Table 4.19.

Table 4.19

Group Means for the Attitude Toward Overpopulation Scale

Information Content	Presentation		
	Brochure	Small Group Discussion	Total
Birth Control Methods	61.05	55.50	59.14
Family Size	58.93	66.82	62.40
Total	60.15	61.43	60.65

Control 62.25

The table of group means suggests that the most "hardline" attitudes towards overpopulation seem to result from group discussions on "Choosing Family Size" and the least "hardline" from group discussions on birth control methods. While the direction of the mean scores was as hypothesized, the analysis of variance as shown in Table 4.20 reveals that sufficient evidence does not exist for retention of the major contentions regarding content and method presentation. However, an apparent significant interaction was discovered. As on the previously discussed Family Size Knowledge Scale, the same two experimental groups--birth control methods brochure and family size group discussions--contributed to significantly more severe attitudes toward overpopulation. Since this topic was included as a persuasive factor in choosing family size, one could expect such attitudes to result from group discussions. The birth control methods brochure group actually had a lower mean score than the control. Small group discussions on birth control methods produced the lowest group mean. At this point, no rational explanation can be offered with the possible

exception that brochures read within the home may lead to free ranging discussions within the family on related topics including population concerns. In the formal small group discussions on birth control methods, however, the dialogue was not permitted to range far off the experimentally controlled topic.

Table 4.20

Analysis of Variance - Attitude Toward Overpopulation Scale

SOURCE OF VARIATION	SS	DF	MS	F
Control vs Others	37.45	1	37.45	0.41
Content	133.63	1	133.63	1.48
Presentation	11.70	1	11.70	0.13
Interaction	573.69	1	573.69	6.34*
Error	6247.87	69	90.55	

* Significant at the .05 level

Birth Control Practice

The Birth Control Practice Scale was developed to measure the effectiveness of the birth control method practiced by the participant and/or her husband following the experimental intervention. Upgrading of birth control methods (pre-post) was also monitored as were physician visits for family planning following the presentation. The group means for this scale are presented in Table 4.21.

Table 4.21

Group Means for the Birth Control Practice Scale

Information Content	Presentation		
	Brochure	Small Group Discussion	Total
Birth Control Methods	44.37	46.60	45.14
Family Size	44.79	44.36	44.60
Total	44.56	45.43	44.90

Control
49.70

The best reported practice of birth control occurred in the control group. The table of means indicates that none of the experimental groups when contrasted individually (t-test) with the control group did significantly worse in the area of birth control practice. The analysis of variance presented in Table 4.22, however, suggests a significant difference when the control group is contrasted with all experimental groups taken as a whole. The hypothesis that group discussions are more effective than brochures in improving contraceptive practices was rejected. Similarly the major hypothesis for content of information was rejected. Insufficient evidence existed to warrant retention of the belief that family size information is more effective than contraceptive information in improving birth planning practices.

Table 4.22

Analysis of Variance - Birth Control Practice Scale

SOURCE OF VARIATION	SS	DF	MS	F
Control vs Others	337.82	1	337.82	5.73*
Content	5.29	1	5.29	0.09
Presentation	11.41	1	11.41	0.19
Interaction	22.36	1	22.36	0.38
Error	4067.73	69	58.96	

* Significant at the .05 level

Pregnancy Status

The last major measure, "Change in Pregnancy Status" during the six month period following introduction of the experimental models was not subjected to an analysis of variance due to the relatively small occurrence of this phenomenon. Instead a Fisher's Exact Test was performed with the results reported in Table 4.23. There were eleven pregnancies in all experimental groups combined and none reported in the control condition.

Table 4.23

Fisher's Exact Test on Change in Pregnancy Status

Status	Control	Others	Total	P
Pregnant	0	11	11	0.0229**
Not Pregnant	20	43	63	
Total	20	54	74	

** Significant at the .02 level

The significently lower number of pregnancies in the control group parallels the results found by contraceptive practice analysis. These sets of information taken together, suggest that the untouched controls exhibited those behaviors which might have more realistically been expected from one or more of the treatment groups.

Summary

A summary of the preceding six analyses of variance performed on the factorial design can be found in Table 4.24. As this table shows

Table 4.24

Chance Probability of Obtaining at Least Five Statistically Significant Tests at the .05 Level from A Total of Twenty-Four Performed

	Total Tests	Number of Tests Significant at Level ≤.05	P*
Control vs Others	6	2	
Content	6	1	
Presentation	6	0	
Interaction	6	2	
TOTAL	24	5	.01

* Sakoda, et. al., 1965

the probability of obtaining five statistically significant tests (.05 level or below) out of a total of twenty-four performed is slightly less than .01. Therefore, although the number of findings were few, one can be somewhat confident that more were documented than could have been expected by chance alone.

A correlational analysis was also performed in order to further assess the associative relationships among all seven major scale measures taken in the factorial phase of the experiment. The matrix is presented in Table 4.25.

The results of this analysis reveal four significant correlation coefficients of a total of twenty-one performed. Again greater than chance factors appear to be operating. When the measures are divided into three basic conceptual domains--knowledge, attitudes and practices--one notes that three of the significant r's involve a correlation of a scale measures with its conceptual counterpart. Thus, two knowledge scores correlate with each other, two attitude measures with each other and two behavior measures with each other. With the single exception of birth control knowledge and birth planning attitude being significantly related, there are no other cross linkages. This argues not only for the independence of the measures but also the underlying contention that knowledge, attitudes and behaviors may in fact constitute separate spheres of influence within the individual's life. Knowledge may not uniformly precede or predict a change in attitude, and a change in attitude does not necessarily reflect concomitant changes in knowledges nor is it predictive of behavioral change. These concepts will be further elaborated in the final discussion.

Table 4.25

Correlation Matrix for Seven Dependent Measures Performed In the Factorial Experiment

	Birth Control Knowledge	Family Size Knowledge	Birth Planning Attitude	Family Size Norm	Over-Population Attitude	birth Control Practice	Pregnancy
Birth Control Knowledge	1.00	.4036*	.3421*	-.0615	-.1029	.0579	.0172
Family Size Knowledge		1.00	.0897	.0817	-.0454	-.1093	.0922
Birth Planning Attitude			1.00	.2153	.2753	.1630	.0402
Family Size Norm				1.00	.4322*	.1900	-.1315
Overpopulation Attitude					1.00	-.0144	.0121
Birth Control Practice						1.00	-.5249*
Pregnancy							1.00

* Significant at the overall .05 level

CHAPTER V

DISCUSSION

The unfolding history of mankind, not withstanding civilization's many failures, is a banner of achievement--an endless display of ingenuity, innovation, social cohesion and adaptability in the face of circumstances which threatened survival. Contemporary listings of major problems with the destructive power to permanently alter the course and quality of life on earth usually include a reference to the "population explosion". As Pohlman (1969, p.3) is want to say, "Our world is watching its weight in population." Has the human community in many parts of the world outstripped the carrying capacity of the environment? What are the consequences in terms of biological growth and development, of privacy and dignity, and of precious human freedoms in crowded lands? The threatened worldwide crisis of overpopulation has drawn scientific interest in developing these and other questions. Largely as a result of the tremendous ecological implications for the pacific evolution of human affairs, professionals of all persuasions have begun to formulate serious inquiries into the wide range of birth planning issues.

Recent attempts by social scientists to change individual and societal birth planning phenomena, e.g. altering the number, sex, timing and even the quality of children, are also responsive to many other "themes" which serve as a backdrop of cultural encouragement. The family health theme, first espoused by Charles Knowlton, gives recognition to the damage that may be an encumbrance on both mother and child by frequent, closely spaced pregnancies. The work of Day (1967),

Morris (1974), Nortman (1974), Kessler (1967) and many others examined the birth planning determinants of health outcomes. The family health theme has matured as a major rationale for intervention efforts by government agencies including public health. As the rate of population increase has slowed in the United States, the health theme has consistently received greater attention in relation to the ecologic or "overpopulation" rationale. As contraception becomes more effective and its use increases, at least in the Western world, birthrates may begin to more closely reflect the parents' norms and expectations of family size. Whatever the researcher's thematic perspective, changes in both the size and health of the population

> ...may become less a matter of getting couples to use contraception and more a matter of influencing people to want fewer children (Pohlman, 1969, p. 8).

The present experiment represents an effort to identify the relative effectiveness of alternative information/education models in altering birth planning knowledge, attitudes and behaviors. Previous persuasive campaigns contained little in the way of systematic empirical investigations. Unfortunately a majority of the field studies that have been done have combined various approaches in such a way that it is difficult for present day readers to determine which element of the approach was responsible for the observed changes in birth planning outcomes. For example, Stycos, Hill and Back (1959) used the following approaches in their Puerto Rican study:

1. Values favorable to family planning and information about birth control, and
2. Family organization--mainly communication between husband and wife, and
3. A combination of the values--information and family organization approaches.

Each of these approaches included a fairly complex set of materials directed at a highly illiterate population. When Stycos reported that the values-birth control pamphlet was especially good for initiation of birth control use, one is left wondering to what degree the "values" part or the "birth control" part of the presentation contributed to the observed outcome. Accordingly, the present research attempted to distill both content and mode of presentation into a simple, nonduplicative structure.

Among the major issues faced by the researcher were: the relative effectiveness of written materials versus group interaction, and contraceptive information versus normative information in changing birth planning knowledge, attitudes and behaviors; and the relationship between changes in one variable domain (knowledge) with other domains (attitudes and behaviors). It was further hoped that the evidence gained through such an investigation would bear on the issue raised by Pohlman; that change in birth planning outcomes, particularly fertility, may in industrialized societies be "more a matter of influencing people to want fewer children" and less a matter of getting couples to use contraception.

The Approach

There are many avenues open in a free society to pursue knowledge. The Congress of the United States used one of these in 1969. They acted on the implicit assumption that a measure of fertility control could be achieved by passing a statute which insured access to contraception for the medically and economically indigent. In their view, the testimony heard in committee by expert witnesses was accepted at face value and the law passed. The "proof of the pudding" would be

in evaluation studies conducted by the Department of Health, Education and Welfare after the inception of the program. These studies and annual testimony usually guarantee the continuance of the program unless its methods are an abject failure clear to even the dullest observer. Government programs once begun in good faith are protected by insulating layers of organization infrastructure bent on self-perpetuation. New programs provide the monetary growth necessary to promote agency self-survival.

Other methods to approach knowledge and change include mass movements, violent confrontations, alterations in patterns of education and more (Fairweather, 1972). But the synthesis of humanistic values and scientific methods led to the development of new strategies for testing and diffusing social and technological changes.

> ...progress, in the long run, can be made in an orderly, rational fashion only through the use of...evaluative research systems. Comparative empirical evidence is urgently needed. Society's needs are so great that it can no longer allow its social scientists to give anything less than their utmost to the solution of its critical problems. It seems inevitable that the alternative to planned social change based upon empirical research findings in a humanistic setting is a continuation of inadequate and temporary problem solutions forced upon the leaders of society through social upheaval. (Fairweather, 1967, p. 11).

In spite of the difficulty in conceiving, finding and carrying out socially innovative research projects, this process may become a social science tradition.

Kerlinger (1965) has summarized the virtues and weaknessses of field experiments. The major strengths are:

1. The variables have a stronger effect than those of a laboratory experiment. The more realistic

> the research situation, the stronger the variables.
>
> 2. Field experiments are often the most appropriate way of studying complex social processes and changes. They are well-suited both to the testing of theory and to the solution of practical problems.
>
> 3. Field experiments may be used to test broad hypotheses (p. 383).

The major limitations of field experiments are practical:

> 1. Can more than one independent variable be manipulated satisfactorily from an experimental standpoint?
>
> 2. Can randomization be achieved?

The pressures to choose alternatives to the field experiment are enormous, particularly for the graduate student seeking a speedy degree or the academician who must produce large numbers of publications. Research efforts under these circumstances tend to be short-term and concern static institutional or social processes. Nevertheless, experiments which involve alternative models for social change must, to receive a fair trial, be conducted over a period of years in naturalistic field settings.

The principal problems of the present research have been outlined previously. The usually insurmountable problem of funding was solved rather easily when the investigator learned of a new federal grant program which appeared specifically tailored to problem-oriented field research.

Administrative agreements were also obtained without major difficulty. As Kerlinger (1965) has stated:

> A field investigator has to be, to some extent at least, a socially skilled operator. He should

> be able to work with people, talk to them and convince them of the importance and necessity of his research. He should be prepared to spend many hours, even days and weeks, of patient discussion with people responsible for the institutional or community situation in which he is to work. (p. 385).

This investigator enjoyed the interplay of people, institutions and events which resulted in the needed administrative agreements. These research "politics" eventually involved the author in full-time employment with the major agency responsible for the State's birth planning program.

The "ideal" experimental design had to be revised many times in light of practical realities. Lack of funds during the second and succeeding years, subject attrition and other problems forced the cancellation of the first major experimental test of the hypotheses. A smaller, less representative sample of the total population was chosen and several design changes were made to simplify the experiment and avoid pitfalls. It is during periods of failure that some measure can be taken of the researcher's attitude and conviction toward carrying out experimental social innovation. Researchers who have not failed, may not have reached beyond the world of known events to the firebase of scientific inquiry.

The formation and retention of a research team is vital to most experimental interventions on contempory social problems. At least three separate teams were used at various phases of the project. During the planning stages the team membership involved a wide spectrum of disciplines from the social to the physical sciences. Many of these persons had a predominately theoretical interest in the problem, but began to fall by the wayside as action components were built in. For

example, the planning group that designed the Lansing Family Life Survey experienced initial reductions in membership as it came time to perform the actual survey work in the city neighborhoods. Once data were collected. others became involved who were interested in computer analysis and report writing. The reductions in available funds from the first to the second year also contributed to reductions in the size and scope of the team.

An important aspect in retaining the final team members, composed of the principal investigator, secretary, nurse-educator, family life educator and follow-up coordinator, was a commitment by the members to the goals and objectives of the project. Regular research meetings were held and all kept a log of their activities, thoughts and recommendations for the project. This weekly meeting eventually produced the cohesion necessary to stabilize attrition. The research logs were valuable records to introduce and solve problems as they arose in the field and as a permanent record of the research.

The underlying notion of the experiment was that birth planning knowledge, attitudes and practices are in part a function of informational content and method of presentation. Two alternative information modes were chosen for study--birth control information and normative information on choosing family size. Two alternative methods of presentation were also selected--brochures and group discussions. A 2 x 2 factorial design with a single control group was chosen as the experimental format. It was hypothesized that group discussions would be more effective than brochures in imparting the desired birth planning knowledge, attitudes and practices. With the exception that contraceptive information was hypothesized to be more effective than family

size information in imparting knowledge of birth control, the balance of the KAP variables were believed to be more susceptible to change by the normative mode. Slightly over one hundred married women living in student housing on the campus of Michigan State University registered to participate of which seventy-four completed the action and follow-up phases. The recruitment technique of mass mailing is seen as producing a relatively small (7.8%) but committed group of respondents. The door-to-door technique using training interviews to collect pre-test information and obtain volunteers seems to elicit higher volunteering rates, but of less committed participants. This could reflect the social acceptability of responding in the affirmative to a request that can always be avoided later on a different pretext.

The follow-up period of six months was deliberately chosen to obviate the problems of subject loss. This abbreviated follow-up period came at some cost to long-term information on fertility patterns. Since the experimental intervention was a relatively brief "one-shot" educational approach, six months was probably long enough to determine if there were relatively long-standing effects on knowledge and attitudes.

Since the number of participants was relatively small it became imperative that the measures used be relatively powerful attempts to monitor changes in the variables under study. Six scales were constructed based on clustering techniques performed on the Lansing Family Life Survey and the pretest measures developed for the first trial of the experiment. The high intra-correlations obtained for items on the scales assured a relatively high degree of internal consistency. Additionally, items which after two field trials did not demonstrate high

content and empirical associations with the scale, were dropped. The use of six major scales plus the measure of change in pregnancy status insured that the number of major variables measured was appropriate for the relatively small sample size.

The Results

The random assignment of participants to the five groups appeared to have resulted in the statistical equality sought. Measures were taken on fifteen demographic variables at time of registration and compared using a one-way analysis of variance. None of these comparisons reached the .05 level of significance. This or other procedures should be used in similar research where participant attrition could be a potentially biasing factor.

The reaction of the subjects participating in the group discussion "Choosing Birth Control Methods" and "Choosing Family Size" was quite positive. Subjects in both experimental groups were equally satisfied with and involved in the presentations. Subjects in both groups related many favorable comments regarding their instructor. This may have have reduced the possible effect of the different personalities of two instructors. Research meetings and practice sessions seemed to have produced instructors who were able to informally present moderately large amounts of material and maintain the interest of their audience. The remarkable lack of process evaluation data returned by subjects in the two brochure conditions did not permit an accurate assessment of their satisfaction with the educational materials. The process evaluations that were available, however, suggest that a condition of psychological "reactance" (Brehm, 1966) was conceivably avoided. The salient

values of the participants were apparently not violated by either a frank presentation of contraceptive materials and techniques or introduction of persuasive materials which frankly favored formation of the one- or two-child family.

Six major analyses of variance were performed on knowledge, attitude and practice dependent variables. Five of the possible twenty-four separate tests were significant at the $p = .05$ level. The probability of obtaining this many significant tests by chance alone is one in a hundred.

The evidence suggests that contraceptive knowledge can be taught equally well by either the brochure or group discussion method to university student wives. Bogue (1965) and Placek (1973) were also able to demonstrate knowledge increases using brochures. Subjects given these materials scored significantly higher on tests of contraceptive knowledge than did those who received information on family size norms or no information whatsoever. This finding contrasts with that of Freedman and Takeshita (1969) who found group meetings to be more productive than other stimuli in increasing knowledge and acceptance of contraception. In the present study the attrition among those in the group meeting conditions closely followed the predictions of such behavior from the Lansing Family Life Survey (Tornatsky, et. al., 1970). This was apparently not as much of a problem in Freedman's work which took place in the neighborhoods of the Taiwanese culture. Finally it seems important, particularly for schools, public agencies and service providers, to realize that contraceptive methods can be taught, even on a "one-shot" basis, and that knowledge increases on the part of participants are measurable.

While the greatest level of normative information in choosing family size was recorded for the hypothesized group (family size--small group discussion) the major contentions were rejected for lack of statistical significance. This seems to mean that the materials and possibly the measures need further refinement before challenging a new group of participants. When the control group was compared to all experimental groups combined, it was determined that a general positive effect was contributed by all types of education. It may be that education in a related area, such as birth control, can contribute to some cognition within the participant relating to norms of family size. At this point, however, no theoretical justification can be offered. The demonstrated interaction effect contributes to a "muddying of the waters" a factor which led to simplification of the design in the first place. Under the brochure presentation, participants receiving contraceptive information scored higher on family size knowledge than those who were given specific information on choosing family size. Under the group discussion presentation, the effect was reversed with the contraceptive group scoring lower on family size knowledge and the "choosing family size" group scoring higher as expected. If further research were to bear out this finding, one would be persuaded that a brochure on "Choosing Birth Control Methods" is the single most cost-effective strategy among the current four models to increase both types of birth planning knowledge.

None of the experimental modes appeared to significantly alter birth planning attitudes as measured in this experiment. The previously reviewed literature offered little in the way of formulating expectations for predicting attitudinal changes. Rogers (1969) seems to

suggest that formal channels of communication such as mass media and printed matter are effective in creating a knowledge base, but that attitudinal changes leading to adoption of innovations are better orchestrated by informal and interpersonal communication channels. This contention was not borne out in the present research.

The production of lower family size attitudes and norms was thought to be of great importance in achieving later behavioral change. While the direction of the group means was generally in the hypothesized direction, no statistically significant effects were elicited. Since differential norms were not produced, the idea of linking such changes to behavioral changes was not put to a reasonable test. The question posed early in this chapter by Pohlman remains unanswered.

The four presentations differentially affected participant attitudes toward overpopulation. As on the previously discussed Family Size Knowledge Scale, the same two experimental groups--birth control methods brochure and family size group discussion--contributed to significantly more severe attitudes toward overpopulation. This unexpected effect cannot be explained on the basis of present information. It is apparent, however, that these two modes appear more powerful than the other models developed and are worthy of further investigation.

The findings with regard to behavioral change include the suggestion that the untouched controls use more effective contraception and sustain fewer pregnancies after a six month follow-up period than do the four experimental groups taken together. This finding strikes fear into the heart of any educator. Brehm (1966) in his theory of "psychological reactance" suggests that such a phenomenon can be explained if the message or technique isolates the salient views of the

subject. While the process evaluation measures do not lend support to the idea that "psychological reactance" did in fact occur in this experiment, the possibility that it might have cannot be totally dismissed. It defies credulity, however, to believe that sufficient hostility could have been generated toward the experimental format which was then turned inward against oneself. For pregnancies which did occur, an accurate determination of the extent to which they were "planned or unplanned" was not, unfortunately, accomplished. The differentially poor birth planning behaviors of all experimental groups taken as a whole when compared to the control group lend support to the old physician maxim to "do no harm." Much of the previously cited literature (O'Leary and Bogue, 1969; Stycos, Hill and Back, 1959; and Freedman and Takeshita, 1969), however, shows a fundamental disregard of the use of "untouched controls" as one of the comparison groups. While the present finding may hopefully be spurious, it cannot be ignored if the researcher takes seriously his responsibility for the lives and welfare of all participants.

Central to the conclusions of the present research are the inconsistencies of performance by the experimental models across knowledge, attitude and behavioral measures. Wicker (1969), Mischel (1968) and others have postulated that knowledge, attitudes and behaviors may under certain conditions constitute highly independent variable domains. The assumption in much of the family planning literature (Rogers, 1969) that knowledge leads to attitude change and finally to behavioral change is open to serious challenge. The intercorrelations between all KAP dependent measures suggested some significant associations within content domains but little across such domains.

Future Research

The representativeness of the current experiment in voluntary birth planning was considerably reduced by three major factors: (1) the sample approached consisted of married university student wives; (2) the initial response rate to participate was 7.8% of the total group; and (3) 68.5% of potential subjects remained active in the experiment through the six month follow-up period. Any future research must attempt to devise better solutions to the problems of participant recruitment and retention. One principle to be followed must surely be further reductions in the timing between obtaining a positive volunteering response and initiation of the experimental action. The timing of initial contact with subjects could well be lowered in terms of subject age to the late adolescent years prior to marriage. Presentation of birth planning information and possible initial reduction in family size norms could then be subjected to the test of increasing sexual activity, marriage and childbearing. Participants could then be followed through peak fertility periods.

The limited type of educational intervention conducted in the present study should be expanded both in frequency and intensity. In addition, the problem of recruitment and retention could be improved if the intervention included both education and medical services. The referral mechanisms in the present project were not used by subjects and give added weight to a more holistic approach. The development of new intervention models should also concentrate on the design of a family size persuasion approach which in the pilot stages can actually demonstrate an impact on the participant's normative framework. The

birth control brochure model should continue to be used because of its intriguing ability to demonstrate unanticipated effects on KAP variables.

Finally, it would be well for future investigators to "dig further" into family communications theory (Rainwater, 1965). The possibility that provision of new information on birth control and choosing family size leads to discussions and "experimentation" with tried and true practices could explain the instability of such behaviors as presently observed.

Public Policy Implications

The difficulty of performing comparative field experiments in the field of birth planning should not detract from the seriousness and urgency of the problem. Large numbers of American citizens are still burdened by undesired fertility. Those who suffer the greatest excess fertility are also those least able to cope with the often increased psychological, social and economic tensions. Future experiments should continue to identify humanistic and practical models to enable individuals to meet their reproductive goals in a socially responsible manner.

The present findings should provide little comfort to policy-makers. The old birth control "brochure" used by Planned Parenthood and Public Health agencies across the land is apparently accomplishing part of its mission--increases in knowledge. Whether this utility can justify the printing expenses is clouded. From a democratic viewpoint, however, their purchase could be justified in recognizing a people's inherent right "to know".

Policy-makers do, however, have a responsibility to consider the effects of their programming. The recent period in the United States of funding large scale social programs must be supplemented with support for longitudinal field experiments which are not only less costly, but expose their effects empirically before widespread unintended consequences burden the people (Fairweather, 1974).

Summary

Birth planning is voluntary planning and action by individuals to have the number of children they want, when and if they want them. Short intervals between pregnancies, large numbers of children and pregnancy in very young or old women are linked to abnormal rates of mortality and morbidity for mother and child. Recent fertility studies in the United States make it clear that couples in all socio-economic groups have been unable to control the number and spacing of their children according to their wishes. In spite of the comparatively low reproductive rates in the United States, we can still expect to see our population doubled in seventy years. Citizens must align their normative reproductive goals with those needed to produce an "optimum population."

Previous efforts at social change in birth planning have combined various approaches in such a way that it is difficult to determine which element of the approach was responsible for the change. This investigation attempts to distill both content and mode of presentation into their most simple, non-duplicating structure. Four such educational strategies are measured for their effect on birth planning knowledge, attitude and practice (KAP) variables.

A naturalistic field setting was chosen in which to conduct the experiment. Seventy-four married student wives who volunteered to receive birth planning education were randomly assigned to one of the four treatment groups or the control group. Two methods of presentation (brochure and small group discussion) and two types of educational content ("Choosing Birth Control Methods" and "Choosing Family Size") were used in a 2 x 2 factorial design with a single control group. New materials were developed to conduct the alternative modalities. Subjects were followed for six months.

Six major analyses of variance were performed on birth planning knowledge, attitude and practice summated rating scales. Five of the possible twenty-four separate tests were significant. The evidence suggests that knowledge of contraception can be taught equally well by the brochure or group discussion methods. Subjects receiving these materials scored significantly higher than those receiving information on choosing family size or no information. None of the experimental groups differentially changed birth planning attitudes or family size norms. Two of the presentations--birth control methods brochure and family size group discussion--contributed to significantly more severe attitudes toward overpopulation. The control group practiced more effective contraception and sustained fewer pregnancies after six months. A correlational analysis was performed among all major dependent measures. The conceptual inter-relationships of birth planning knowledge, attitude and practices are questioned. Changes in birth planning knowledge may not uniformally precede or predict a change in attitude or behavior.

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