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**AN ANALYSIS OF PRIMARY PREVENTION
IN A STATE MENTAL HEALTH SYSTEM**

by

Salvatore Cullari

**A Dissertation
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
requirements for the
Degree of Doctor of Philosophy
Department of Psychology**

**Western Michigan University
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AN ANALYSIS OF PRIMARY PREVENTION
IN A STATE MENTAL HEALTH SYSTEM

Salvatore Cullari, Ph.D.

Western Michigan University, 1981

This study analyzed ten primary prevention demonstration projects located in various counties of Michigan. While only two programs showed significant post intervention effects, the amount of data available for interpretation was insufficient to allow any general conclusions. Problems encountered in program implementation and evaluation were cited, and procedures that may reduce these difficulties were discussed. A theoretical model for primary prevention based on a systems approach was also presented.

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Finally, I would like to thank my grandfather for giving me a glimpse of enlightenment, and my parents for their total and uncritical support, even when I didn't deserve it.

Salvatore Cullari

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INTRODUCTION

The idea of preventing physical or mental diseases is not new. Many of early man's beliefs in the supernatural, such as witchcraft, sorcery, and animal sacrifices were based on the hope that future diseases or unhappy events could be prevented. In the same way, most modern organized religions also promise an escape from future suffering and damnation to their supporters. In addition to these, concepts of prevention can be found in the writings of almost all major civilizations of recorded time (e.g., Watson, 1963, Chap. 1).

While a great deal can be said about preventative efforts through the centuries, it is beyond the scope of this paper to attempt such a task. This study will limit itself to prevention as it is practiced in the United States, especially in more recent times.

In this country, modern attempts at prevention began about two centuries ago. In the early part of the nineteenth century, the prevailing idea of how diseases were spread was that they were contracted from the air. This "miasma theory" as it was called dated back to the time of the Greeks, who believed that waste products in the soil gave off mists, which caused disease (Bloom, 1965). The miasmatisists sought to reduce and prevent diseases by promoting sanitary conditions and cleaning up the environment. Their ideas later developed into the public health movement, which continued to encourage prevention through the use of pure food, air, water, and

pleasant surroundings.

Supporters of the public health model believed that all illnesses developed or were different manifestations of one major disorder. Thus a person could have a cold, develop the flu, and ultimately die of typhoid fever, but all three were viewed as having evolved from the same underlying cause. In the same way, mental disorders were also considered as a different manifestation of one underlying physical problem. Thus, in practice, physical or mental disorders could be treated in the same way. For this reason, early public health workers also attempted to prevent mental disorders (e.g., Bloom, 1965). Eventually, as the germ theory of physical diseases gained popularity, those interested mainly in mental disorders separated from the larger public health group and started the mental hygiene movement. In general, practices similar to those used in public health were followed, with an emphasis on prevention, and changes directed toward the total community rather than individuals. Many of the current beliefs and practices of prevention developed during this time. For example, as early as 1859, physicians were promoting the idea of treating infants to prevent future disorders and encouraging "positive" mental health (Roberts, 1967).

Similarly, Clifford Beers, a former mental patient, promoted institutional reform with an emphasis on smaller units, less crowded conditions, and the use of better food and open environments. Beers and his followers argued that by cleaning up cities and slums, many mental disorders could be prevented, and through his writings the

idea of mental hygiene gained much support.

Despite early enthusiasm for mental hygiene and preventing mental illness, some researchers cautioned against being overly optimistic. Wechler (1930) pointed to the many obstacles facing the area of prevention in mental health and many of these are still true today, e.g., the problems associated with defining mental illnesses or determining their causes. Some of Wechler's predictions became realities, and when the promises of mental hygienists did not materialize, many mental health professionals gave up on the idea of prevention.

Recently, the tide has turned again, with renewed interest in prevention beginning just after World War II, and developing most rapidly during the 1960's.

Currently, the concept of prevention is divided into three levels, including primary, secondary, and tertiary components (Caplan, 1961). Generally speaking these terms are analogous to the common notions of prevention, treatment, and maintenance, respectively. This study will concern itself mainly with primary prevention, so at times the terms "prevention" and "primary prevention" will be used interchangeably.

Primary prevention, as it relates to the mental health field, is vast and complex. Kessler and Albee (1975) offer a very appropriate description of it: "The field of primary prevention is analogous in many ways to the great Okefenokee Swamp. Attractive from a distance and especially from the air, it lures the unwary into quagmires, into uncharted and impenetrable byways (p. 352).

Some of the complexity surrounding prevention can be attributed to its numerous definitions (Beier, 1969; Bellak, 1964; Bloom, 1971; Bower, 1965; Caplan, 1964; Caplan and Grunebaum, 1967; Chalke and Day, 1968; Cowen, 1973; Cowen and Zax, 1968; Dorr, 1972; Eisenberg, 1962; Foley and Gorham, 1973; Golonn and Eisdorfer, 1972; Gruenberg, 1959; Joint Commission on the Mental Health of Children, 1970; Kiesler, 1965; Leighton, 1967; Lemkau, 1966; Plog and Edgerton, 1969; Poser, 1970; Roberts, 1967; Rosenblum, 1971; Sanford, 1965; Van Antwerp, 1970; Van Antwerp, 1971).

Most of these definitions suggest that primary prevention efforts should reduce the incidence and prevalence of maladaptive behaviors in the general population and promote mental health. The methods of accomplishing these goals, however, vary among professionals, and the following section summarizes the more common approaches.

Probably the most widely referenced professional in the field of prevention is Gerald Caplan (Van Antwerp, 1970). Caplan notes that primary prevention should enable the individual to avoid stress, and increase his or her capacity for dealing with future stress. He is generally given credit for revitalizing the concept of prevention in the early 1960's, and for its typology into primary, secondary, and tertiary components.

Among the methods offered by Caplan for prevention are preschool programs, parent education, crisis intervention, nutritional education and treatment, an emphasis on community mental health, and greater use of professional consultation. All of these methods are

seen by Caplan as ways of reducing the incidence of mental illness.

In recent years, Caplan's emphasis on secondary and tertiary prevention has been criticized, and many professionals (Klein and Goldston, 1977) currently recommend limiting the use of the term "prevention" to include only primary prevention.

Similar to Caplan, Bower (1963) was an early proponent of prevention, and defines it as "any biological, social or psychological intervention that promotes or enhances the mental and emotional robustness or reduces the incidence and prevalence of mental or emotional illnesses in the population at large" (p. 837). Bower believes that preventative interventions should be specific enough to be operationally defined, capable of being measured, and carried out in existing institutions, such as schools, places of employment or other settings where individuals spend a great deal of time.

Bower suggests using a somewhat complicated framework for primary prevention in which the individual and services are divided into four major zones. Zones one and two are largely concerned with prenatal and early development, where services are provided for families that are not yet separated from the general population. Zones three and four involve services for treatment and rehabilitation. Bower argues that by increasing services in Zones 1 and 2, the need for services in the later zones will be reduced. Basically, his approach is to strengthen those agencies directly involved with prenatal, pregnancy and infant care, as well as traditional educational systems, and to provide services that will allow families

to cope with stressful situations without being separated from their normal environment. Many of the recommendations that Bower made in the early 1960's, such as greater use of day-care centers, community psychological services, extended education for the developmentally disabled and others were implemented throughout the country, and in some ways seem to be very effective.

Roberts (1967) sees primary prevention as removing the noxious agents that produce mental illness, strengthening the population in order to increase its resistance to the disease, and preventing contact between the population and the noxious agents. He suggests various means for reaching these goals, including an increase in basic research concerning the causes of mental illness, greater promotion of mental health, increased identification of populations at risk, and increased services for children. Roberts emphasizes that any changes that are made should be done for the society as a whole, rather than in small isolated groups. As such, prevention would involve the cooperation of many disciplines rather than solely the mental health profession.

Lemkau (1966) has a similar point of view. He argues that since there are many different types of mental illnesses, there should also be many different types of prevention programs. These should include programs in any field (e.g., medical, social, psychological, or educational) that has an impact on reducing mental illness. He states that each various profession should strive towards its own form of prevention, using the latest scientific data that have been accumulated in that area. These should include programs to reduce

pellagra, phenylketonuria (PKU), child abuse, alcoholism, poverty, and other conditions that may lead to mental disorders.

Bloom (1965) has a viewpoint that is almost the opposite of Lemkau. He suggests preventative intervention based loosely on the miasma theory, and cites several similarities between the early miasmatisists and current prevention specialists. For example, not knowing what the exact causes of mental illness are; grouping all disorders into one category (mental illness); the concept that one disorder can develop into a more serious one (neurosis into psychosis) and others.

The miasma theory as it was used a hundred years ago was basically a model for the prevention of physical diseases, which attempted to eliminate all forms of refuse, and to encourage sanitation. While the miasma theory itself was not valid, the movement was quite successful in reducing the most prevalent diseases of the day. In the same manner, Bloom suggests that current prevention services can remove the "psychic sewage" in our environment with an emphasis on social change, such as reducing poverty. Bloom argues that until the causes of mental illness are better understood, the miasma theory of prevention is as viable an alternative as any.

Eisenberg (1962) offers a slightly different approach to prevention and suggests decent housing, job training, unemployment compensation, enriched school programs, and similar services geared to reducing disorders by maintaining adequate education and standards of living.

Smith (1971) proposes that educational programs in the primary schools should train individuals in how to cope with eventual life crises such as divorce, loss of a job, death of family members and similar situations. He suggests identifying such life crises and designing programs to minimize their effects.

Poser is one of the few researchers who recommends a preventative approach based on the principles of learning. For example, populations at risk could be exposed to learning techniques such as flooding, aversive conditioning, or desensitization. In this way, "at risk" populations can be immunized against future stress situations.

Lastly, perhaps it is appropriate to summarize the different approaches to prevention by paraphrasing the definition of Zax and Cowen (1972), that is, everything that is done to improve the condition of the human race can be considered a form of primary prevention.

The last statement introduces a relatively new trend in the area of prevention: namely, that mental illness is no longer viewed as a unitary construct, or as having a single cause. For example, Weissman and Klerman (1978) see mental illness as being caused by two general categories of variables, genetic and psychosocial. The genetic component includes factors such as nutrition, hormones, infections, and disorders in prenatal and developmental stages. The psychosocial factors include abnormal childhood experiences, problems of segregation, social class, migration, urban environments, personality disorders, and life crises. The authors argue that

preventative efforts should work independently to eliminate disorders in each area.

Kessler and Albee (1975) discuss a similar approach and describe four categories of services that may be applicable. The first follows a developmental model and would offer services in genetic and marriage counseling, prenatal care, enriched preschool programs, crisis intervention, and counseling for the aged. The second category is itself divided into two parts: one segment would deal with mental disorders that are caused by organic or nutritional causes, e.g., brain damage due to lead poisoning, syphilis, or PKU. The other aspect of this category would focus on mental disorders that are caused by social conditions, and would concentrate on major social changes. The third scheme would involve independent prevention services for each type of mental disorder, i.e., programs for schizophrenia, drug addiction, mental deficiency, etc. The fourth plan would not attempt to prevent mental illness per se, but would instead concentrate on positive mental health.

In terms of prevention projects currently in operation, the majority of programs across the country are psycho-socially oriented. In this case, many programs (at least conceptionally) follow the four general approaches described above, by Kessler and Albee, but the emphasis is on psychological rather than physiological factors (Lamb and Zusman, 1979). Most of these programs are based on several theoretical beliefs. The first is that all behavior (and thus all behavior disorders) are caused by antecedent events (Kessler and Albee, 1975). The major concept here is that once these antecedent

events are identified, behavior can be predicted and controlled, and mental illnesses can be prevented. The second theoretical belief is that there is a critical period in life when exposure to certain learning conditions has the strongest effects on future behaviors. This period has been identified as infancy and early childhood, and this idea is often called the psychogenic hypothesis. Many professionals conclude from these concepts that in order to reduce or prevent behavioral problems in adulthood, the major focus of prevention services should be in changing the learning environment of children.

Many of the types of prevention programs identified in the last section, especially those that follow the psychogenic model, are currently in operation in various counties of the State of Michigan. The remainder of this study will critically examine these programs in order to arrive at a formulation of the current status of prevention efforts. There are several reasons for this approach. The first is that the programs in operation in Michigan are fairly representative of other primary prevention programs across the country, and thus some generalization may be possible. Secondly, many of the programs have been in operation for several years, which may increase the availability of a sufficient amount of data needed to determine certain trends. The third, and possibly most important reason is that despite the support given to primary prevention efforts by the community mental health movement, and government officials (e.g., President's Commission on Mental Health, 1978), long term evaluations of such programs are lacking (e.g., Lamb and Zusman, 1979; Bloom,

1979). This report is a small step towards such a goal. In this respect, it should be emphasized that the evaluation results presented are by no means conclusive. Most of the programs evaluated in this study are still in operation, and thus continue to collect data. More conclusive evidence concerning the effectiveness of primary prevention efforts awaits the future.

Prevention efforts in Michigan began with some of the early preschool programs such as the Ypsilanti Project (Weikert, 1967; Weikert, 1970). The project was designed to prevent academic failure of socially disadvantaged children, through the provision of an enriched preschool environment. The main concept of such programs is that many of the problems encountered by poverty stricken members of the society may be due to poor academic skills. In this case, the goal of these programs is to break the poverty cycle of disadvantaged families, by increasing the likelihood of success in academic settings. Weikert (1972) mentions that such programs can be effective if properly designed and operated.

One of the first officially sponsored primary prevention programs in Michigan was the Kalamazoo Learning Village (Ulrich, Alessi, and Wolfe, 1971; Ulrich, Louisell, and Wolfe, 1971). Similar to the Ypsilanti project, the Learning Village program was designed to prevent social problems such as crime, unemployment, and drug abuse, by teaching disadvantaged children academic and other skills that are necessary for "success" in the present society. While the educational procedures of the Learning Village have changed over the years, the goals remain the same. An evaluation of children

previously enrolled in the Learning Village program (Cullari, 1976) indicated that such participants scored higher than a matched control group in certain academic areas; however, the prevention effects of the program could not be evaluated.

Prevention services at the state level developed in 1975, with the formation of a separate prevention unit in the Department of Mental Health (Michigan Dept. of Mental Health, 1975). In 1976, a special prevention task force made recommendations concerning the development of specific programs in various counties of Michigan. These recommendations eventually led to the formation of fourteen pilot demonstration projects, some of which are evaluated in this report. In general, the pilot programs were designed to answer the following questions (Spates, 1978):

- 1) Which disorder is to be prevented.
- 2) Will the disorder occur in the target population if no intervention is used.
- 3) Is the intervention effective in reducing or preventing the disorder in the given population.

Categorically, the prevention programs were clustered in four major areas:

- 1) infant mental health
- 2) teenage parent programs
- 3) children of disordered adults
- 4) projects concerning children in the general population

The great majority of the interventions used were designed to impact on infant and childhood behavior patterns, which develop

through interactions with parents (especially with the mother). The general hypothesis behind the infant mental health projects is that poor "attachments" between the mother and infant during the first year of life cause developmental delays or dysfunctions that may result in behavioral disorders at a later age. The projects involving older children were similarly designed to change existing conditions that might result in problems at a later age. The specific goals and procedures of the projects are given in later sections.

In addition to the prevention projects, data concerning the Massie-Campbell AIDS Scale (Massie and Campbell, 1977), will also be presented. This is an instrument used to identify abnormal mother-infant patterns of interaction during the stressful situation of a physical examination. It is assumed that such conditions are indicative of future adaptive disorders. The purpose of obtaining such data was to help the authors of the scale validate the instrument in preparation for use on a large scale basis at a later date. To a lesser extent it was done to obtain an idea of the prevalence of abnormal maternal-infant interactions in various counties of Michigan. A copy of this scale is provided in Appendix A.

It should be noted that the present author was not involved in the development of the initial experimental designs and procedures of the prevention projects to be presented. Rather, the responsibility of the author was limited to data collection and analysis. After preliminary evaluations, a number of recommendations were made that

resulted in some changes in the operation and experimental designs of the programs (see discussion for details).

The following section will review the Massie-Campbell study, followed by a review of ten prevention projects. All program descriptions of the projects contained in this paper are congruent with contracts signed between the Department of Mental Health and local Community Mental Health Service Boards.

THE MASSIE-CAMPBELL AIDS SCALE STUDY

The AIDS scale was administered to a total of 228 subjects in six counties of Michigan between February and August of 1978. The study was a cooperative venture between the Michigan Departments of Mental Health and Public Health.

The operational definitions of the categories observed are described by the authors as follows (see Appendix A):

Holding: the mutually reciprocated posturing of the infant and mother while the infant is supported in the arms of the mother.

Gazing: the eye-to-face contact within a dyad and the maintenance of this contact.

Vocalizing: the making of vocal sounds for the benefit of the partner in the mother-infant dyad. The infant's crying is considered a vocal signal of dismay during stress which alerts the mother to its tension.

Touching (a): the making of skin-to-skin contact initiated by either the mother or the infant.

Touching (b): the withdrawal from skin-to-skin contact initiated by either the mother or the infant.

Affect: the facial expressions signaling emotional states. A bland expression is considered typical of the individual under stress and is appropriate.

Proximity: the state of being near, or beside another. In the context of the AIDS Scale it refers to the infant maintaining either physical or visual contact with the mother, and to the mother maintaining physical contact or being immediately accessible to her infant.

The authors report that normal behaviors will usually be rated 3 or 4. Lower scores indicate a decreased tendency for response and

higher scores are indicative of an overanxious response. A relationship between scores on the AIDS scale and other maladaptive behavior patterns is assumed to exist. The following quote is taken from the scale instructions.

Studies indicate that deviant attachment is associated with subsequent psychomotor developmental delays, pathological intrapsychic management of tension and aggression, and the inability to postpone gratification-- all with their attendant behavioral disturbances.

The actual validity of the scale is still in the process of being established by the original authors and no such data are presented here. Thus, all statements which refer to the presence of abnormal patterns of interaction are based on the assumption that the scale has a reasonable degree of predictive validity.

Results of Scale Administration

Demographic Information

The Massie-Campbell project included a total of 228 dyads from six counties and represented all infants undergoing a pediatric examination at specific public health sites during a six month period of time. Approximately 50% of the children were male (111) and 50% female (112). The average age of children was 5 months; ages ranged from 1 to 18 months. Sixty-two percent of these were White, 31% were Black; 3% percent were Hispanic and 3% were classified as "other." Ninety-four percent of mothers had incomes between 0 and \$10,000 annually; 6% reported incomes in the \$11 - \$20,000 range. Fifty percent of the infants observed were firstborn.

The average age of mothers was 22 years; ages ranged from 14 to 41. Thirty-six percent of mothers were 19 years of age or below; 3% were 35 years old or older. Forty-eight percent of mothers were single; 41% were married; 11% were classified as "other." The professional training of those who administered the scale varied; 15% had a Bachelor of Nursing degree; 35% were pediatric nurse practitioners; 10% were classified as "other"; 39% had a diploma.

Scale Results

In order to analyze the data, the following modifications were made on the scale scores: 1) All ratings of "5" on the Infant's Behavior During Stress Event, and Mother's Response to Infant's Stress were changed to "1." All ratings of "X" (Behavior not observed) were changed to the mean score for that section. Thus, if the mean score of the Mother's Response to Infant's Stress section for a child was 3, the "X" rating was also assigned a rating of 3. The mean ratings for each child thus ranged from 1 to 4, with a mean score of 3 to 4 in the "normal" range, and mean scores under 3 were below the mean.

The mean score for the Infant's Behavior During Stress Event section (for all subjects) was 3.2, (with a standard deviation of .5). Of the 228 subjects, 56 (25%) had mean scores of less than 3 (abnormal range). Mean scores ranged from 1.14 to 4.0.

The mean score for the Mother's Response to Infant Stress section was 3.2 (standard deviation of .55). Fifty-five (24%) had scores of less than 3. Scores ranged from 1.00 to 4.0.

The overall mean score for both sections was 3.2, with scores ranging from 1.42 to 4.0. Fifty-nine (26%) had scores less than 3. Forty subjects (17%) had means less than 3 on both subscores.

In the Growth and Development section 213 subjects had normal ratings, 12 had abnormal ratings and 3 subjects had missing data. Two-hundred-fifteen subjects had normal ratings in the "Social Behavior Appears" section, 7 had abnormal ratings, and 6 had missing data.

One-hundred-ninety-five subjects had no unusual circumstances during the day of testing. Twenty-seven subjects had unusual circumstances, and 5 subjects had missing data. Of the 27 subjects with unusual circumstances, most were reported as having colds. Other frequent answers were "baby was asleep."

Summary of Mean Group vs. Below Mean Group Data

Comparing the group of subjects that had mean ratings of less than 3.0 (abnormal range) with those who scored 3.0 or greater on the Massie-Campbell scale shows the following:

1. The below mean group had a slightly larger percentage of Blacks than the overall group (40% vs. 31%).
2. The below mean group were tested either by a nurse with a diploma, or one with a Bachelor of Nursing much more often than the overall group (80% vs. 54%).
3. A slightly higher percentage of children in the

below mean group were firstborn (57% vs. 50%).

4. A higher percentage of mothers were single in the below mean group as compared to the overall group (62% vs. 48%).
5. Fewer women lived with their partner as compared to the overall group (30% vs. 39%).

Summary of Below Mean Group Data

Total Scale Scores

Fifty-nine subjects had mean scores of less than 3.0 on this scale.

Five subjects (8%) were rated abnormal in the growth and development section, 1 subject (1%) was rated abnormal in social behavior appears section, and 6 subjects (10%) had unusual circumstances on the day of the ratings.

Twenty-seven subjects (48%) were male and 29 subjects (52%) were female, and the average age of the children was 5.1 months.

Thirty-two subjects (56%) were White, 23 (40%) were Black, 1 (2%) was Hispanic, and 1 was classified as "other."

The family income for 50 subjects (98%) was in the \$0 - \$10,000 range, and 1 (2%) was in the \$11,000 - \$20,000 range. (There were 8 missing data.)

Thirty-three subjects (56%) were tested by nurses with a diploma, 14 (24%) of the testers had a Bachelor of Nursing, 2 (3%) were pediatric nurse practitioners, and 10 (17%) were classified as

"other."

Thirty-two children (57%) were firstborn, and 24 (43%) were not. The average age of the mothers was 22.5 years.

Thirty-five mothers (62%) were single, 17 (30%) were married, and 4 (8%) were classified as "other."

Nineteen mothers (38%) lived alone, 15 (30%) lived with partner, and 16 (32%) lived with "other."

Mother's Section Sub-scale Scores

Fifty-five subjects had a mean score of less than 3.0 on this section.

Three (5%) subjects were rated abnormal on the Growth and Development section, 1 subject (1%) was rated abnormal on the Social Behavior Appears section, and 4 subjects (7%) had unusual circumstances on the day of the ratings.

Twenty-six subjects were male (51%), 25 subjects were female (49%), 4 had missing data, and the average age of the children was 4.8 months.

Twenty-eight subjects (52%) were White, 24 (42%) were Black, 1 was Hispanic (3%), and 1 (3%) was classified as "other."

Forty-eight (98%) subjects had family incomes in the \$0 - 10,000 range, and 1 (92%) was in the \$11 - \$20,000 range. (There were 6 missing data.)

Twenty-eight (51%) were tested by nurses with a diploma, 11 (21%) had Bachelor of Nursing degrees, 8 (14%) were pediatric nurse practitioners, and 8 (14%) were classified as "other."

Thirty-two (60%) of the children were firstborn, and 21 (40%) were not. The average age of the mothers was 21.4 years.

Thirty-three (65%) of the mothers were single, 13 (25%) were married, and 5 (10%) were classified as "other." (There were 5 missing data.)

Twenty mothers (43%) lived alone, 13 (28%) lived with partner, and 14 (29%) lived with "other." (There were 8 missing data.)

Twenty-seven (49%) of the subjects who had abnormal scores on this section also had abnormal ratings on the Infant's Behavior During Stress section, and 45 (82%) had a total score on the Massie-Campbell scale of less than 3.0.

Infant's Section Sub-scale Scores

Fifty-six of the 228 subjects in the study had an abnormal (mean below 3.0) in the Infant's Behavior During Stress Event.

Five of these 56 subjects (9%) were rated abnormal on the Growth and Development section, all were rated normal on Social Behavior Appears section, and 7 (13%) had unusual circumstances on the day of the ratings.

The subjects were divided equally between male and female, and their mean age was 5.4 months.

Thirty-three of the infants (61%) were White, 20 (37%) were Black, and 1 was classified as "other." (2 had missing data)

Fifty-four (96%) of the subjects' families had incomes in the \$0 - \$10,000 range and 2 (4%) had incomes in the \$11,000 - \$20,000

range.

Thirty subjects (54%) were tested by nurses with a diploma, 13 (23%) of the testers had a Bachelor of Nursing, 3 (5%) were pediatric nurse practitioners, and the other 10 (18%) were classified as "other."

Twenty-five (47%) children were firstborn, and 28 (53%) children were not, and the average age of the mothers was 21.6 years.

Twenty-eight (54%) of the mothers were single, 19 (36%) were married, and 5 (10%) were classified as "other." Sixteen (36%) mothers lived alone, 14 (32%) lived with partner, and 14 (32%) lived with "other."

Twenty-seven subjects (48%) also had abnormal ratings on Mother's Response to Infant Stress section, and 43 (77%) of these subjects had a total score on the Massie-Campbell scale of less than 3.0.

General Findings

1. About 26% of the total sample group had scores below the mean of 3.0.
2. Abnormal ratings on the Growth and Development section, Social Behavior section, or Unusual Circumstances did not seem to have an adverse effect on scores.
3. There seemed to be a significant difference between White and Black subjects on the Mother's Response to Infant section, uncontrolled for economic influence.

4. Pediatric nurse practitioners as a group seemed to give higher ratings on the Massie-Campbell scale.
5. There was no correlation between scores and the ages of mothers or infants.
6. In some projects, mothers who were single and/or lived alone had lower ratings on the Massie-Campbell scale.

Conclusions

The data just presented were collected in an attempt to determine the extent of mother-infant interaction problems in a population not served by the mental health system. The scale scores indicated that nearly one fourth of the dyads seen in public health settings scored below the mean in interaction patterns. Furthermore, assuming scale validity, it can tentatively be said that these patterns may be indicative of future pathology in the life of the infant.

Other significant information concerning the group of subjects who scored below the mean can be summarized as follows:

1. The largest percentage lived in a rural environment.
2. Age of mother was not a factor influencing "normal" or "abnormal" scores, while those mothers who were single or lived alone tended to score in the abnormal range.
3. The "abnormal" group contained a slightly larger percentage of Blacks than the "normal" group

(uncontrolled for economic factors).

4. Income did not appear to be a significant influence on an abnormal rating.
5. Of the mothers who scored in the abnormal range on "response to infants' stress," most (60%) had only one child.

Based on the above data, a tentative high risk mother-infant population can be described. The highest priority group appears to be made up of dyads living in rural areas who are Black, live alone, and have only one child.

CHILDREN OF DISORDERED ADULTS

Two prevention projects were designed to intervene with children whose parents had become clients of the mental health system. The children served by both projects were viewed as being at risk of developing mental disorders and thereby becoming mental health treatment clients at some time in their lives. The prevention programs were designed to reduce the influence of factors believed to be associated with the development of problems requiring treatment for these children.

The program developers divided the target population into three groups based on the degree of disorder. Service priorities were then established by group with the most seriously disordered being served first. The target groups were described as follows:

1. Children of adult mental health patients admitted to a Regional Psychiatric Hospital or medical center psychiatric units.
2. Children of adult mental health patients admitted to a residential treatment center.
3. Children of adult mental health patients served in outpatient and activity therapy units.

For the sake of clarity each of the two projects will be discussed separately in the section which follows.

Project 1

This project was first funded in November of 1976. The recipients of service were to be selected from caseloads of a nearby regional psychiatric hospital, the community psychiatric unit, the general hospital, aftercare programs, outpatient programs and from a population of children attached to disordered adults not served by the mental health system. The methodology included provisions for one staff person and a half-time secretary.

A summary of the description of the method of service is as follows:

Programming for the parent would be expanded to include the family with the intent of enabling the child to cope with stress. Family therapy or involvement of children as clients might be utilized in some situations. Every effort would be made to provide the children with stable adult role models. Use of recreational programs and of volunteers would be explored. For families with parents experiencing an acute episode, the staff would make provisions to intervene at any hour that separation occurs, to assure attention to immediate needs during the crisis and to make arrangements for ongoing services.

The evaluation design for the project required the collection of assessment data on the child's adjustment in the home and school, school achievement, and self-concept. These measures were taken prior to or during the early stages of intervention, and again at one year after entry into service. These data were to be collected on a (non-equivalent) served and an unserved group. The specific scales used included:

1. The Family Environment Scale (Moos, 1974)
2. The Child Behavior Rating Scale (Cassel, 1962)
3. The Piers-Harris Self-Concept Scale (Piers and Harris, 1969)
4. The Bell Adjustment Inventory (Bell, 1963)
5. A project-developed Vulnerability index
6. School performance as provided by teachers

Outcome Analysis

The project opened its first case in January of 1977, and a total of 104 individuals had received service by June 1979, the end of the project. Approximately 60% of the service recipients were male. Their ages ranged from 1 month to 17 years. The average age was 8 years 9 months. Most of the service recipients fell into the 6-12 age range (44%). The income range for families served was \$12,000 - \$14,999. Ninety-four percent of the children were White, 2% were Black and 4% were American-Indian. Sixty-one percent of the parents of recipients were married and 37% had single parent status (i.e., separated, never married, widowed or divorced). The parents had an average of 12.3 years of education, while the recipients had an average of 3.8 grades completed. Seventy-one percent of the fathers were employed full time as compared to 10% of the mothers. Seventy-four percent of the mothers were homemakers as a principal role. Thirty-nine percent of the project's caseload was referred from a community hospital and 32% were obtained through outreach efforts. As of June, 1979, 45 cases had been closed. Of these, 40%

withdrew from service, while 53% terminated according to plan. The average length of contact for closed cases was 256 days or approximately 36 weeks.

As indicated, the project was intended to alleviate any existing distress and prevent the occurrence of more serious distress in children whose parents required treatment. At the time of initiating this project however, it was not known what type of distress these children were likely to encounter, or the expected time frame within which problems might occur. Given these difficulties the evaluation design was intended to provide a description of the child's adjustment along standardized dimensions; i.e., characteristics representing major areas of functioning for most children. Secondly, the design was intended to permit monitoring change over time in the configuration of adjustment indicators for a served and unserved group. Any observed changes over time would provisionally be attributable to an effect of the intervention.

As indicated earlier in this report, four standardized scales were used. The results will be discussed according to the data gained from each instrument separately.

The Family Environment Scale (Moos, 1974)

The general purpose of this scale is described as follows:

"The Family Environment Scale (FES) assesses the social climates of all types of families. It focuses on the measurement and description of interpersonal relationships among family members, on the directions of personal growth which are emphasized in the family, and on the basic organizational structure of the family"

(FES manual).

The FES contains 10 subscales which provide data relevant to various dimensions of family health.

" . . . three of these subscales assess Relationship dimensions, . . . five assess Personal Growth or Personal Development dimensions, . . . and the other two assess System Maintenance dimensions" (FES Manual).

Eight subscale changes occurred in the service group after intervention. Four of these changes from pre to post were statistically significant. Table 1 presents the average raw subscale scores and standard deviations for the service group and the statistical Z values.

Table 2 presents a similar profile analysis for the control group for pre and post intervention testing. Most pre-post comparisons were very close; that is, very little change was observed. However, one change was large enough to be statistically significant; this change occurred in the control subscale without intervention and was not one of the significant subscales for the service families.

It would appear that there was an effect on the family environment as a result of the intervention. The comparison between pre-intervention score patterns for service and control groups reveals a similar pattern for both. Thus, the differences observed pre vs. post for the service group and not observed for the control group are probably indicative of post-intervention effect. If the groups had differed in the beginning, the equivalence of groups might have been challenged and any post-intervention differences could have

TABLE 1

FAMILY ENVIRONMENT SCALE
Pre vs. Post
Experimental Group Only (N=14)

Statistic	Subscales									
	Cohes	Exp	Conf	Indep	Ach	Int	ACT R	Moral	Org	Cont
Pre x	4.5	4.1	5.3	5.7	6.2	3.1	3.5	4.7	4.9	6.1
Pre S.D.	2.0	1.4	2.5	1.5	1.6	2.2	1.9	1.5	1.7	2.1
Post x	6.3	4.4	4.1	7.1	7.4	2.9	4.9	5.4	7.2	6.6
Post S.D.	1.4	1.2	2.9	0.6	0.8	1.6	2.4	1.1	1.8	1.1
Z Statistic	2.39	.71	1.48	2.55*	2.24*	.58	1.56	1.60	2.62*	.84

TABLE 2

FAMILY ENVIRONMENT SCALE
Pre vs. Post
Control Group Only (N=10)

Statistic	Subscales									
	Cohes	Exp	Conf	Indep	Ach	Int	ACT R	Moral	Org	Cont
Pre x	3.9	2.8	4.9	4.2	6.4	2.5	3.9	6.5	6.3	6.4
Pre S.D.	2.3	1.7	2.6	2.1	1.8	2.8	2.9	2.0	2.0	2.2
Post x	5.6	3.3	5.3	5.3	6.0	3.3	4.1	7.1	6.9	7.9
Post S.D.	2.1	1.9	1.8	2.4	2.4	2.9	2.6	1.9	1.9	1.4
Z Statistic	1.77	1.40	.54	1.15	.42	1.35	.21	1.21	.42	2.17

* Statistically significant at .05 level of confidence

been compromised.

It may be helpful to analyze what the significant changes as a result of intervention mean. The significant differences will be discussed on a subscale-by-subscale basis. The subscales discussed here are those for which statistically significant changes (from pre to post) were observed for the service group but not for the control group.

Cohesion. According to the manual, this subscale concerns:

The extent to which family members are concerned and committed to the family and the degree to which family members are helpful and supportive of each other.

Since a significant increase was observed on this scale, it can be assumed that behaviors which reflect the above attributes increased.

Independence. Again according to the manual, this subscale is indicative of:

The extent to which family members are encouraged to be assertive.

Again a significant increase in these behaviors was observed following intervention.

Achievement Orientation. The authors maintain that this subscale reflects

The extent to which different types of activities are cast into an achievement-oriented or competitive framework.

Scores on this subscale were significantly larger following intervention.

Organization. The final subscale change score that was significant

measures how important order and organization is in the family in terms of structuring family activities, financial planning and explicitness and clarity in regard to family rules and responsibilities. (FES Manual)

Since all scores on the subscales discussed increased and since most subscale scores were in or near the "normal" range of the instrument, it can be concluded that changes were positive.

The Piers-Harris Scale (Piers and Harris, 1969)

The subtitle for this scale is "The Way I Feel About Myself." It is a self-report scale for children and can be completed in approximately 20 minutes. The scale is administered in either a group or individual setting and requires a third-grade reading knowledge. Higher scores are assumed to indicate a more adaptive self-concept, while lower scores may indicate a need for help.

Table 3 shows pre and post intervention scores for the service group only. A general increase in mean scores on all subscales is indicated; however, only three statistically significant subscale score changes (from pre to post) were observed. These differences were noted for "Intellectual and School Status," "Anxiety," and "Happiness." Similar differences were not noted for the control group (see Table 4). Thus, it may be concluded that the changes were related to the intervention.

Although normative data are not provided by subscale, these figures are available for total scores. All mean total scores for

TABLE 3
PIERS HARRIS SCALE
Pre vs. Post
Experimental Group (N=13)

	Total Scores	Subscales					
		Beh	Int	Phy	Anx	Pop	Hap
Pre x	55.3	7.4	11.6	7.9	7.7	8.6	7.0
Pre S.D.	9.8	2.4	2.8	1.8	2.9	3.4	1.6
Post x	61.2	8.1	13.7	8.6	9.3	9.4	8.5
Post S.D.	9.9	1.8	2.9	2.5	2.1	1.8	2.1
*Z Statistic	2.48	.82	1.94	1.01	2.31	.39	2.22

TABLE 4
PIERS HARRIS SCALE
Pre vs. Post
Control Only (N=8)

	Total Scores	Subscales					
		Beh	Int	Phy	Anx	Pop	Hap
Pre x	58.9	8.5	13.4	8.5	7.7	8.4	8.1
Pre S.D.	14.9	1.6	3.3	3.2	3.3	2.9	2.1
Post x	53.3	8.0	11.9	7.1	8.1	8.5	7.1
Post S.D.	10.6	2.3	3.9	2.6	2.2	3.3	1.7
*Z Statistic	1.2	.54	1.18	1.1	0.0	.17	1.08

* Statistically significant at .05 level of confidence

both service and control groups were within the "normal" range. The authors of the instrument, for the most part, allow the subscale labels and items to speak for themselves without attempting to state what each subscale measures. However, they do state

. . . for all cluster scores (subscales), the higher scores on Factor 1 (Behavior) indicate a positive self concept with respect to behavior.

Therefore, it can be concluded that the effects measured by the Piers-Harris and attributed to the intervention were all positive.

Child Behavior Rating Scale (CBRS, Cassel, 1962)

This scale is designed to "assess the personality adjustment of primary grade school children who do not have sufficient reading skill to complete the group type of psychological tests. The ratings are. . . accomplished by teachers or parents" (CBRS Manual).

In the case of the present project ratings were done by teachers. Again, as with the other instruments ratings were done prior to and following intervention for both service and control groups.

Tables 5 and 6 present the mean scores for service and control groups prior to intervention. As can be seen, substantial differences existed between the groups before the study began. Some of these differences were statistically significant. This indicates that other comparisons between groups as far as change scores are concerned may not be valid. Even though statistically significant changes did occur for the service group from pre to post intervention (Table 5) and not for the control group (Table 6), only very cautious

TABLE 5
CHILD BEHAVIOR RATING SCALE
Pre vs. Post
Experimental Group (N=20)

Statistic	Total	Subscales				
		SELF	Home	Soc	Sch	Phy
Pre x	389.9	80.6	87.3	90.8	53.9	35.6
Pre S.D.	74.7	19.7	18.7	19.5	14.1	.9
Post x	433.8	89.5	94.1	97.9	57.1	35.6
Post S.D.	69.7	18.4	25.1	16.7	17.9	1.0
*Z Statistic	2.43	2.39	1.75	2.29	1.26	0.0

TABLE 6
CHILD BEHAVIOR RATING SCALE
Pre vs. Post
Control Group (N=10)

Pre x	465.2	100.7	99.8	108.5	64.2	34.5
Pre S.D.	56.8	11.9	15.6	10.2	8.4	2.5
Post x	467.2	96.1	107.2	106.3	60.6	35.1
Post S.D.	54.9	18.3	7.9	8.7	9.1	2.0
*Z Statistic	.25	.76	1.4	1.02	1.02	.73

* Statistically significant at .05 level of confidence

conclusions regarding these data can be made.

Bell Adjustment Inventory (Bell, 1963)

An insufficient amount of these were received for an adequate comparison.

Summary

Data analyses indicated that improvement occurred in the family environment of service recipients and not for unserved families during the same time period. Similar improvements were noted in self concept measures for served children on indicators of "Intellectual and School Status," "Anxiety," and "Happiness." Again these effects were not observed in the control group. Changes in teacher ratings of the behavior of children receiving service were not deemed to be significant because of a lack of service and control group equivalence prior to intervention.

The experimental design in the project involved a pretest-posttest nonequivalent control group design, which is appropriate for this type of evaluation (e.g., Campbell and Stanley, 1963, p. 47). Experimental procedures were successfully followed by project personnel, however there was an insufficient number of complete data sets in both the experimental and control groups to make any general conclusions concerning the effectiveness of the intervention.

Project 2

This project was first funded in February of 1977. The recipients of service were to be selected from caseloads of a nearby Regional Psychiatric Hospital, the psychiatric units of local hospitals, and out-patient and activity therapy units. The age range for the target group was 6-12 years of age.

The methodology included provision for one full time mental health professional and a 20% time secretary. The methods employed were described as follows:

1. Identification of vulnerable children in consultation with in-patient, residential, activity therapy and outpatient Adult Mental Health staff, utilizing analysis of differential risk factors in an effort to distinguish between those children who are not vulnerable, those children who are vulnerable and those children who require treatment services.
2. Referral of vulnerable children to prevention worker, referral of children needing treatment to appropriate agency.
3. Assessment of child's needs and establishment of an intervention plan.
4. Intervention by any combination of the following:
 - a. Insuring stable care arrangements for children separated from their parents by virtue of the parents' admission to an inpatient unit or the Residential Treatment Center.
 - b. Consultation with the parent, child and other family members to facilitate the family's adjustment to the parent's re-entry into the home.
 - c. Consultation with Outpatient adult therapist to work therapeutically with parent, child or both to enhance the child's adjustment.

- d. Individual consultation with parents to enhance child care skills.
 - e. Consultation and education of parents in parenting.
 - f. Direct counseling with the child.
 - g. Advocacy for child with school personnel.
 - h. Arrangements for involvement of the child in recreational and other activities; use of natural family and neighborhood networks.
- 5. Recruitment and training of home visit volunteers to work with parents and children within the home.
 - 6. Development of liaison relationship with child and family care agencies, other agencies concerned with child care such as Department of Social Services, Protective Services and the Friend of the Court, and community recreational programs and support networks.
 - 7. Establishment of inservice training and development sessions for Adult Mental health professional personnel on child maladjustment identification, assessment, referral, and intervention.

The Evaluation design required that data be collected on the adjustment of children in home and school in terms of self concept. The design involved an alternate sample pre-test post-test arrangement, where one-half of the recipients were tested prior to intervention and the other half were tested following intervention. Differences from pre to post are assumed to be indicative of changes resulting from services provided. The specific scales used included:

- 1. Child Behavior Rating Scale (Cassel, 1962)
- 2. Walker Problem Behavior Checklist (Walker, 1970)
- 3. School Performance Rating Scale (project developed)
- 4. Inferred Self-Concept Scale (McDaniel, 1973)

Outcome Analysis

There was a total of 102 cases opened for the period beginning March, 1977 and ending April, 1979. Forty-two recipients were male and 51 were female (9 were missing). The mean recipient age was 8.6 years and ages ranged from 1 to 16 years. The largest percentage of recipients (71%) was in the 6-12 age group. Incomes ranged from less than \$1,000 to \$25,000. The largest percentage of recipient families (19%) reported income in the \$15,000 to \$25,000 category.

There was an average of 1.8 siblings per recipient and most siblings were of the 6-12 age group (47%). Most recipients (88% were White; 3% were Black; 4% Hispanic; and 5% other. Most of the parents of recipients were either married (44%), separated (24%) or divorced (18%). Three percent had never been married, 2% were widowed and 11% had remarried.

The average education of recipients was 3.5 years and education in years ranged from 0-12. The average education of recipient parents was 11.2 years while educational level ranged from 7-16 years. Most mothers of recipients reported "homemaker" as occupation (73%); 14% of mothers were employed full time. Most of the fathers of recipients were employed full time (54%); 31% were "not looking for work." It should be noted that a large amount of information regarding employment was missing for fathers; data were reported for father on only about half of the cases opened.

All recipients were referred by agency-initiated outreach.

As of April, 1979, thirty-six cases had been closed. Sixty-nine

percent (25) withdrew. Thirty-one percent were terminated according to plan. Only two terminated recipients were referred elsewhere; both were referred to other community mental health boards.

The average length of contact with the agency for closed cases was 28.8 weeks; the range of contact was 11-92 weeks.

The data received to date have been analyzed statistically in order to detect intervention effects. As mentioned previously, a pre-post alternate group designed was used as a framework for assessing the impact of the intervention. Thus, all comparisons are based on scores on the various scales prior to and following intervention.

Grade at Evaluation

The pre-test group mean grade at evaluation was 3.3 while on the average the post-test subjects were evaluated at the 4th grade level.

School Performance Rating Scale (Pre N = 20, Post N = 13)

Group comparisons revealed no statistically significant differences. Pre-group mean = 2.95; post-group mean = 3.3, probability (p) = .386.

Inferred Self Concept Scale (Pre N = 20, Post N = 13)

Again no statistically significant group differences were observed. Pre mean = 112.15, SD = 19.8; Post mean = 110.6; SD = 13.02; t -value = .233, P = .817.

Child Behavior Rating Scale (CBRS) (Pre N = 9, Post N = 6)

The CBRS was administered to 9 subjects prior to intervention and 6 subjects after intervention. No statistically significant differences were evident on any of the subscale comparisons.

<u>Subscale</u>	<u>Mean Pre</u>	<u>SD*</u>	<u>Mean Post</u>	<u>SD*</u>	<u>t-value</u>	<u>P</u>
1. Self	95.5	22.2	89.6	7.6	.737	.48
2. Social	79.6	40.2	95.8	4.7	1.192	.26
3. School	48.5	16.6	51.3	4.3	.479	.64
4. Physical	33.3	3.0	31.8	3.2	.934	.37
5. TOTAL	347.2	137.2	312.3	66.4	.656	.53

*The pre-test group standard deviations were much larger than the post-test group standard deviations.

Walker Behavior Checklist (Pre N = 11, Post N = 7)

No statistically significant differences were observed. Pre mean = 10.27, post mean = 14.28; t-value = .83; P = .419.

Summary

Data analyses indicated that based on the data collected, no significant changes in recipients occurred as a result of intervention. This statement is, of course, limited to measures of the selected scales.

This project used an alternate or separate sample pretest-posttest design. As indicated by Campbell and Stanley (1963, p. 53), this is not a very strong experimental design, and is only used when other procedures are not possible. In terms of the current

project, it was used because of the anticipated large number of subjects, and the limited number of project staff available to carry out experimental procedures. Although the design was carried out successfully by project staff, there was an insufficient number of complete data sets to make any conclusion regarding intervention effects.

TEENAGE PARENT PROJECTS

Two prevention projects were designed to intervene with teenage mothers and their infants. These programs were structured to identify, assess and assist expectant mothers, fathers, and extended families in the successful nurturing, stimulation and protection of their infants.

The project objectives were to avoid the development of behavioral disorders by facilitating parent-infant interaction and by providing support to teenage parents.

The target population for both projects was identified as women 19 and under who were pregnant or had an infant and their extended families, including the father of the infant.

The project rationale is based on the assumption that teenage parents are not able to adequately meet the social-emotional and health needs of their infants and that serious problems with the infant could develop at some future time if an intervention is not carried out.

The specific methodologies differed across the two projects, and each is discussed separately below.

Project 3

This project was first funded in March of 1977. Referrals were to come primarily from the expectant parent program of the area intermediate school district and the obstetric division of the local

hospital. The methodology involved four types of services which are described below:

1. Education: lecture/workshop services to provide mothers with a base of understanding about their infants, their needs and their growth processes. (As in all phases parents were encouraged to attend with their infants.)
2. Emotional Support: groups were formed to provide a forum for parents to explore their feelings, provide each other support, build interpersonal skills and provide a problem solving support network.
3. Parent Aides: a volunteer trained in working with parents and infants was made available to all served mothers. Training was done in part through the participation of the infant mental health specialist of the local Child Guidance Clinic. Recruitment, training, and supervision was done by the parent-aide coordinator of the project. Aides assisted by advocating for the parents, visiting and helping in the home and by providing a stable role model for the parent and extended family.
4. Referral and Service Advocacy: the project assisted the teenage parents in obtaining support and assistance from other community agencies and programs on their behalf and in facilitating parenting of their infant.

The evaluation design required that data be collected prior to and following intervention for a group of service recipients and for a non-equivalent control group. Although the project had originally contracted to provide data on eleven different instruments, some of these were never received, or could not be analyzed for a number of other reasons. Therefore this report will only consider the instruments listed below.

1. Personality Research Form (Jackson, 1974)
2. Moos Family Environment Scale (Moos, 1974)
3. Parenting Skills Assessment. (project developed)

4. Bayley Scales of Infant Development (Bayley, 1968)

Outcome Analysis

A total of 36 cases were opened from February 1977 to March 1979. All were females. The mean age of recipients was 17 years, 5 months. Ages ranged from 13 years, 10 months to 19 years, 11 months. Sixty percent of recipients were between 13 and 17 years of age, while 40% were 18 or 19. Most families (72%) reported income as "public assistance."

Children were most often between 4 and 4.6 months of age at enrollment. Ninety-four percent of recipients were White, and none were Black. Eighty-six percent of recipients had never been married; 14% were married. The mean number of years of education was 10.2 and education ranged from 8-12 years. Fifty-four percent were students, 26% homemakers, 9% full time employed; 9% looking for work and 3% part time employed. Most recipients were self referred (28%) or referred by school (23%). Of four cases closed, 2 withdrew and 2 were terminated for "other" reasons. The average length of contact for those terminated was 13 months.

Personality Research Form Analysis (PRF)

Pre vs. post comparisons for Control and Service groups revealed no significant changes on this measure.

Moos Family Environment Scale Analysis

Pre vs. post intervention comparisons of scores on the Family

Environment Scale indicated that only one subscale comparison was statistically significant. This difference was observed for the Control group on the cohesion subscale. The lack of other differences precludes the development of any conclusions on the basis of these data (see following tables for statistics).

Two pre-post comparisons reached significance at the .05 level on the parent skills instrument. The median rating by observers of parenting skills increased by five points from pre to post indicating a significant positive change in parenting skills. One other significant difference (pre to post) was observed. This was on the maternal appearance rating scale. The median rating decreased from pre to post indicating that a positive change (improvement) in maternal appearance had taken place since entry into the program. No pre - post comparisons reached significance for the control group.

Bayley Scale

Data were collected on an insufficient number of recipients for analysis to be done. Therefore, no results are presented for this instrument.

Summary

Although statistical analyses were performed for the PRF, Family Environment Scale and Parenting Skills, the small number of subjects in both groups precludes any statement as to the effectiveness of the program. There are two major reasons for this limitation:

1. The N's are small which reduces the generality of

TABLE 7

Family Environment Scale

Service Group

N = 12

Statistic	Subscales**									
	C	Ex	Con	Ind	Ac	Ico	Aro	Mre	Org	Ctl
Pre x	54.1	47.3	48.0	64.8	52.0	38.8	46.5	50.8	50.9	47.5
Post x	54.8	48.6	42.4	47.6	49.7	41.5	48	48.9	53.1	46.7
Pre S.D.	9.12	11.2	14.03	18.79	10.23	9.5	10.69	9.51	11.7	15.7
Post S.D.	9.31	14.9	8.65	11.74	9.10	11.4	13.00	8.64	6.5	13.8
Z*	.14	.53	1.53	.10	.97	.90	.36	.56	.56	.09

TABLE 8

Family Environment Scale

Control Group

N = 8

Statistic	Subscales**									
	C	Ex	Con	Ind	Ac	Ico	Aro	Mre	Org	Ctl
Pre x	44.6	37.9	45.0	37.4	52.8	42.8	43.0	52.6	49.5	51.8
Post x	51.9	50.4	37.6	34.5	50.5	44.6	39.3	47.8	56.3	51.3
Pre S.D.	12.8	11.33	13.2	10.40	13.40	11.57	16.03	10.34	10.65	10.25
Post S.D.	9.4	10.35	7.3	15.13	7.70	8.21	13.95	19.94	7.67	9.13
Z*	*2.03	1.69	1.57	.40	.63	.27	1.28	.17	1.82	.08

*A Z of + 1.96 is required for statistical significance at the .05 level of confidence.

Parenting Skills Analysis

The ratings for parenting skills pre and post were compared statistically for the Service group. The data are presented below, on Table 9.

TABLE 9
Parenting Skills Assessment (N=13)

Subjects	Parent Skills Observation		Physical Care		Physical Status		Mother Response		Maternal Behavior		Maternal Appearance	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
1	49	57	9	8	5	5	6	5	17	15	16	11
2	67	67	9	9	5	5	6	5	9	9	9	9
3	53	58	9	9	3	4	6	7	13	14	9	9
4	55	57	10	11	3	3	6	6	13	16	15	13
5	48	59	8	6	4	4	3	4	8	8	8	8
6	45	53	11	11	4	4	3	4	13	12	12	9
7	58	57	11	11	4	6	4	4	13	13	25	17
8	57	62	9	12	5	4	3	4	10	14	12	11
9	46	49	9	9	5	4	5	4	11	11	11	10
10	53	65	9	6	7	3	6	4	17	8	10	--
11	55	56	9	10	5	6	6	6	12	12	10	8
12	55	60	5	5	3	3	3	3	9	10	7	7
13	53	58	9	9	3	4	6	7	13	14	7	7

X	53	58	9	8.9	4.3	4.2	4.8	5.2	12.2	12	11.8	9.9
Median	53	58	9	9	4	4	5.5	5.	13	12	10.5	9
S.D.	5.8	4.7	1.5	2.2	1.2	1.0	1.4	1.4	2.8	2.6	5.1	2.8
Z	2.94 *		.21		.17		1.12		.35		2.37 *	

*Z of + 1.96 required for statistical significance at .05 level of confidence

findings to the service population.

2. Only the subjects with data on some scales were used for the analyses which may have introduced a bias.

Data sheets were received for 36 service subjects; however, only 12 data sets for a portion of the designated instruments could be analyzed. Thus when analyses are done only for subjects with suitable data, a sub-group is formed which does not allow generalization of results either to other subjects (with incomplete data) or to a population of the same type as the service group.

Several of the instruments designated for use were not administered to a sufficient number of subjects for analyses to be done at all. For the instruments on which complete data were reported, no conclusions can be made. Thus, the effectiveness of the intervention can neither be supported nor negated on the basis of data received.

Project 4

This project was first funded in February 1977. The major sources of referral were identified as the schools, a local clinic, and self referral. The contract provided for 3-1/2 staff members (counselor-receptionist, half-time infant mental health worker, one mental health professional, one pediatric nurse practitioner).

The intervention was described as follows. At intake an individual treatment plan was developed with the following options:

1. Prenatal Educational Series: held for one hour weekly, open to all interested mothers, fathers, grandmothers, others. Classes focus on pregnancy

and prenatal care of mother and baby. Includes films and presentations on physical and emotional changes in pregnancy, fetal development, nutrition, labor, delivery, etc. Group size - up to 10.

2. Parenting Group: open to mothers and their infants, and fathers (post delivery). Basic techniques of parenting taught. Small, cluster group format - i.e., each group would consist of mothers and infants the same age (e.g., 0-3 months, 3-6 months, 6-9 months, 9-15 months, 15+ months). Held weekly, 1 to 1-1/2 hours.
3. Group Therapy: open to mothers only (pre and post delivery) to discuss and work on personal life situation "apart" from pregnancy and baby. Held weekly 1 to 1-1/2 hours.
4. Individual Intervention: open to mother-infant pairs or mothers only, as situation dictates. Once a week, 1 to 1-1/2 hours, one-to-one contact with staff either in home or clinic.
5. Grandparents Group: open only to grandparents. Group discussion format covering both emotional and education aspects. Could be held in clinic or rotate to grandparents' homes. If in clinic, held on different day or time than mother's group.

The evaluation design involved the following measures taken in order to determine the effectiveness of the intervention.

1. The Bayley Scales for Infant Development (Bayley, 1968) taken on served and unserved infants.
2. Scores from the Infant Behavior Record of the Bayley Scales for infants.
3. Scores on the Bell Adjustment Inventory (Bell, 1963) for mothers.
4. Physical exam ratings for both members of the dyad.
5. Ratings of the mother and one significant other on the Family Environment Scale (Moos, 1974).
6. School attendance records for teenage mothers.
7. Number of pregnancies by teenage mothers following admission to the program compared to an unserved

group of teenage mothers.

A nonequivalent control group was to be compared with a group of service recipients on a portion of the above measures (measures 1, 2, 4, 6, and 7). The remaining measures were to be assessed only for the service group. A follow-up on both groups during the second year of the project was also planned.

Outcome Analysis

Outcome data sheets were received on which 216 cases were listed. Many different types of data were reported - but none were complete. Additionally, all 216 subjects were listed as experimental subjects. An additional sheet with Bayley Scale scores (both at inappropriate ages) was received, and this is the only known report of control group data.

Summary

This project used a pretest-posttest nonequivalent control group design. Staff had great difficulty in carrying out the experimental procedure of the program, and there were many reasons for this. One was that the project personnel were not familiar with all of the testing instruments and thus had difficulty in the administration and scoring of these protocols. Another was that many service group subjects refused to be tested, and others did not meet pre-arranged testing appointments. A third reason was that it was difficult to contact control group subjects, or have them appear for testing purposes only. Thus very little data was collected. Therefore no

conclusions are possible because of a lack of complete data or data reported in an improper format.

VULNERABLE CHILDREN PROJECT

Project 5

This project was developed to provide prevention services for children who are considered at risk due to: 1) their need for a stable adult model; 2) their attachment to a parent who is mentally ill; or 3) their attachment to parents who are in the process of getting a divorce. The general purpose of the project was to design and implement a rural based model for providing prevention services to vulnerable children, and the overall goal was improvement in the psychological development and adjustment of the target group. The project involved collaboration between itself and the local and intermediate schools, Department of Social Services, Circuit and Friend of the Court and local businesses.

The objectives of this project were as follows:

1. To maintain procedures for recruitment and supervision of a corps of adult volunteer friends;
2. To develop and maintain a mechanism for identifying the needs of children of adult clients and assigning vulnerable children to appropriate services;
3. To develop a systematic process for assessing divorcing families and provide information and an opportunity for discussion in intensive group sessions over an eight week period for both parents and children;
4. To provide documentation of the process utilized to coordinate and integrate objectives 1, 2, and 3.

Services were developed in a way which avoided labeling the child as deviant or at risk.

Children were referred to the project through various sources

and participated only with parental permission. A preliminary screener was used in order to assess the extent of vulnerability, and those children judged to be at risk were referred for services. Assessment of the children took place in the home and involved a review of the child's functioning ability there, in school, and with peers. This was accomplished with various testing instruments, and through discussions with the child, parents and teachers; children clearly identified as severely emotionally disturbed were enrolled as treatment clients of the local community mental health clinic.

Adult volunteers were matched with selected children on the basis of mutual interests and location. Volunteers enrolled for one year and agreed to spend three hours weekly with the children. Activities were left to the arrangements of the volunteer who had a two hour orientation session and attended quarterly meetings. They also submitted monthly progress reports, and plans for the upcoming month. Volunteers had access to mental health center staff at all times.

Other services provided were training the child in problem solving and interpersonal skills, or arranging for tutoring if necessary. Parenting skills were provided for adults, and children whose parents were mental health clients received therapy to facilitate adjustment to the parent's disorder.

All families referred by the Friend of the Court were given group intervention. Groups consisted of at least eight families, and met for a minimum of eight sessions. These sessions were geared to the adjustment of the upcoming divorce for both children and parents.

The evaluation design required that data be collected on the following instruments (Instruments 1-4 were to be administered prior to and following intervention, on a service and nonequivalent control group).

1. Self-concept of service recipients assessed pre- and post-intervention using the Piers-Harris Children's Self-Concept Scale (Piers and Harris, 1969).
2. School achievement of service recipients assessed pre- and post-intervention using the Wide Range Achievement Test (Jastak and Bijou, 1946).
3. School adjustment assessed pre- and post-intervention using the Walker Problem Behavior Checklist (Walker, 1970).
4. Home adjustment assessed pre- and post- intervention using the Peterson-Quay Problem Behavior Checklist (1961).
5. Number of contacts with the Mental Health Center during the year.
6. Consumer satisfaction with project assessed post-intervention using a questionnaire developed for these purposes.
7. Other variables examined include demographic data on the recipients and volunteers; project-setting factors at the beginning and end of the program; the number and description of youth served by the project; cost per youth served; and the general

response of the community to the project.

8. Psychological characteristics of volunteers measured pre- intervention.

Outcome Analysis

The project opened its first case in December of 1976, and 71 cases were analyzed for this report. Of this intake group of 71 subjects, 59% were male, and 41% were female. Age at intake ranged from 7 years, 2 months to 16 years, 9 months. The average age was 11 years, 5 months. The largest percentage of clients (60%) were in the 13 to 17 year range. The gross income of client families ranged from less than 1,000 dollars per year to 49,999 dollars, and the largest percentage of families (49%) reported income in the less than 1,000 dollar category. The mean number of siblings per family was 3.1, and the majority of these were between 6 and 17 years of age (70%). Ninety-four percent of the clients were White, 4% were American-Indian, and 2% were Hispanic. Thirty-one percent of the parents of the clients were married and the others were never married (1%), widowed (4%), separated (6%), divorced (47%), or remarried (10%). The mean grade completed was 5.0 for the recipient, 10.5 for the mother, and 9.5 for the father. The largest percentage of mothers were classified as working full time (30%), and the second largest category was homemaker (25%). Fifty-six percent of the fathers also worked full time, and 15% were disabled. The major sources of referrals were: agency initiated (30%); family or friends (26%); and school (26%). At opening, 46% of the clients were living

with the nuclear family and 35% were living separately.

Of the 71 cases opened, 23 cases (32%) were closed. Of these 23 cases, 9 (39%) withdrew, 13 (57%) were terminated according to plan, and 1 (4%) was classified as "other." None of the clients were referred for other services. The average length of agency contact for those that withdrew was 7.1 months, and 13.5 months for those terminated according to plan.

After pre-testing at intake, 14 clients were placed in the no-treatment group, and 17 were assigned to the treatment group. If a suitable volunteer was not found for a client after a three month period, he or she was retested and these latter scores were used as pre-test data. In terms of demographic data, the treatment and no-treatment group were similar except for the following: 65% of the treatment group was made up of females, while only 14% of the no-treatment group were females; a greater percentage (94%) of the treatment group families were in the less than 1,000 dollar income category as opposed to the no-treatment group (64%). A greater percentage of client fathers were working full time in the no-treatment group (71%), as opposed to the treatment group (38%); 76% of clients in the treatment group were living with the nuclear family, and 50% of the no-treatment group were doing so.

The major dependent variables were the Wide Range Achievement Test (WRAT), the Peterson-Quay Behavior Problem Checklist, the Piers-Harris Children's Self-Concept Scale, and the Walker Problem Behavior Checklist. In addition, the volunteers were given the California Psychological Inventory (Gough, 1975) as a pre-test

measure (no post test measure was taken).

The major analyses in this project involved comparing pre and post test scores. To control for the problem of increased scores due to maturity, percentile scores were used in most comparisons. In these cases, the Wilcoxon Matched Pairs Signed Rank test (a non-parametric test for repeated measures) was used. In other comparisons, a correlated t-test was used.

Scores were compared for the following groups: intake-one year treatment, intake-one year no treatment, and an intake-over 3 months no treatment (after three months, if subjects were not given treatment, they were retested, and the later scores were used as pre-test data). In addition, the treatment group was divided into male and female and over age 12 - under age 12 subgroups, in order to make additional comparisons.

No significant differences were found (at .05 level) for any of the comparisons. Most Z scores on above comparisons were below 1.0 (A Z score of 1.96 indicates a significant difference at the .05 level for a two-tailed test, and the probability of a significant difference increases as the Z score increases). Table 10 shows all comparisons with Z scores of above 1.0.

Summary

Similar to several other projects, a pretest-posttest nonequivalent control group design was used in this program. In addition, some subjects were placed on a waiting list until suitable volunteers could be found for them. This group was tested upon

TABLE 10
Z Scores of Over 1.0 on Non-Parametric Comparisons

<u>Group</u>	<u>Dependent Variable</u>	<u>Z Score</u>
One year treatment	Peterson-Quay (Conduct Problems Subscale)	-1.63
Female - treatment	WRAT (Spelling)	-1.26
Female - treatment	Peterson-Quay (Conduct Problems Subscale)	-1.20
Male - treatment	Piers-Harris	-1.46
Male - treatment	Peterson-Quay (Delinquency Subscale)	-1.07
Male - treatment	Peterson-Quay (Psychotic Subscale)	-1.57
Under 12 treatment	WRAT (Spelling)	-1.08
Under 12 treatment	Piers-Harris Self Concept Scale	-1.26
Under 12 treatment	Walker Problem Behavior Checklist	-1.07
Under 12 treatment	Peterson-Quay (Conduct Problem Subscale)	-1.57
Under 12 treatment	Peterson-Quay (Inadequacy-Immaturity Subscale)	-1.10
Under 12 treatment	Peterson-Quay (Psychotic Subscale)	-1.83

NOTE: None of the above are significant at .05 level.

entrance into the program, and if volunteers were not found after three months, subjects were retested. In this case, the later scores were used as pretest data if treatment was initiated. One of the reasons for this procedure was to control for pre and post test differences that might be due to maturation of subjects. It also allowed for a second control group.

Although none of the comparisons between pre and post test scores for the service group showed any significant differences, the number of subjects involved in this analysis was too small to arrive at any conclusions regarding program effectiveness.

STRESS MANAGEMENT PROJECT

Project 6

This project tested the effects of brief stress management workshops on individuals revealed to have encountered a substantial number of life changes in the recent past. The effects were measured as changes in levels of state and trait anxiety, skill acquisition (stress management skill), and the incidence of reported stress-related problems.

The target population was identified via need assessment and described as low income women identified from mental health caseloads as at high risk for a variety of social-emotional-mental dysfunctions due to chronic stress and isolation in a rural setting. A second target group was identified as prison employees and their families.

The recruitment of recipients was done primarily through the Department of Social Services. The project objectives were described as follows:

1. To reduce the occurrence of psychosomatic illness, family disorganization, and mental-emotional dysfunction on the part of low-income women and prison employees and their families.
2. To recruit into training persons experiencing stress-related difficulties.
3. To provide at least three eight-week workshops for the purpose of stress-management/life skills development for persons recruited.

The evaluation design consisted of a pre-test and a post-test given to each recipient using the following scales:

1. Schedule of Recent Experiences (Project developed)
2. Cornell Index (fear, depression, anxiety subscales; (Cornell University, 1949)
3. The State-Trait Anxiety Inventory (Spielberger, Gorsuch, and Lushene, 1970)
4. The Sixteen Personality Factor Test (Cattell, Ebee, and Tatsudka, 1976; 16 PF)

All instruments were chosen to measure changes in the environment and emotional state of recipients before and after the workshop. A six month followup was also planned to determine the longevity of effects.

Outcome Analysis

Data were reported for ten recipients who completed all workshop sessions (Full term) and for 11 recipients who completed seven or fewer sessions (partial term). The data will be summarized separately for these two groups.

Full Term Group

One hundred percent were female. The mean age was 31 years. The recipients ranged in age from 22 to 59 years. Recipient incomes ranged from \$2,000 annually to \$12,000. The largest percentage of families (40%) reported incomes in the \$2,000 - \$3,000 range. Recipients had an average of 2.8 dependents; the largest proportion of dependents were in the 6-12 category (43%). All recipients in this group were White. The marital status of recipients was

variable: 40% were divorced, 30% were separated,, 20% were married, and one had never been married. The average number of years of education was 11.7; the range was 10-12 years and the mode was 12 years. Most of the recipients in this group were homemakers (40%); 30% were employed part time; 20% were employed full time and one was a student. All recipients were self-referred. Five recipients reported their living arrangement as "separately"; 10% reported "friends"; 10% "nuclear family"; and 10% "other."

Partial Term Group

All recipients were female. The ages ranged from 18 to 58. The average age was 33.3 years. Incomes ranged from less than \$1,000 to \$7,000. The largest category of income reported was \$3,000 - \$4,000 (30%). The average number of dependents per family was 2.1. Dependents were most often in the 6-12 year age range (45%). All but one recipient was White. Forty-five percent were divorced; 27% were "never married"; one recipient was reported in each of the "widowed," "separated," and "remarried" categories. The mean education for this group was 11 years. Educations ranged from 8-12 years; the mode was 12. Thirty-six percent were "looking for work"; 27% reported employment status as "homemaker"; 2 recipients were disabled; one was employed part time; and one was a student. All partial-term recipients were self-referred. Most (63.6%) reported living arrangement as "separately." One each was in the following categories: 1) with nuclear family, 2) with relatives, 3) with friends, and 4) other.

Comparison of Groups

Statistical comparisons of the two groups on face sheet demographic variables revealed that only one difference was statistically significant. When the proportions of group members employed (full and part time) were compared, the full term group had significantly more members employed on some basis ($\chi^2 = 4.295$, $df = 1$, $P = .038$). Although differences in proportion per income category between the groups approached significance, the .05 level was not reached ($\chi^2 = 1.9$, $P = .17$).

Data analysis was done in the following way:

Pre and post test scores were compared for change due to program participation for each group separately. Significant program effects were assumed when the full-term participation group changed significantly from "pre" to "post" and the partial-term group did not. There were such differences on four separate measures. The Wilcoxon Matched Pairs Signed-Rank test was used in all comparisons.

Cornell Total Scores The full-term group mean for pre testing was 20.4 while for post testing the mean score was 13.3; this difference was significant at the .05 level (Wilcoxon $T = 6$, $N = 9$ pairs). The partial-term group did not show a significant mean change on this index.

Cornell Depression Subscale The full-term group differed significantly from pre to post testing on this measure (pre $x = 2.1$, post $x = .89$; $p < .055$). The partial-term group did not differ pre

to post on this index.

State-Trait Anxiety Inventory The full-term group post scores were significantly lower (indicating a reduced level of anxiety) ($x = 39.7$) than the pre scores ($x = 49.7$; Wilcoxon $T = 1$; $N = 7$ pairs; $p < .05$). The partial-term group showed no significant change from pre to post on this measure.

16 PF C Subscale The full-term group post scores were significantly higher on this measure (pre $x = 4.6$, post $x = 6.5$; Wilcoxon $T = 2.0$; Number of pairs = 7; $p < .05$). The partial-term group showed no significant change from pre to post testing on this subscale. These data are summarized in Table 11.

Other No other pre - post comparisons were statistically significant for either group. No post data were reported for the no participation control group.

Summary

All statistically significant changes from pre to post intervention were in the expected positive direction. Although all comparisons were not significant, many of the other changes were also in the positive direction. Importantly, these same differences were not observed for a group of recipients who did not complete the entire series of training sessions. No post-intervention data were reported for a non-intervention control group nor were data reported for a six month follow-up testing.

TABLE 11

Full-term versus Partial-term
Treatment Groups

Index	N = 9 Pairs Full-Term Treatment Group				N = 7 Pairs Partial-Term Treatment Group			
	<u>Pre</u>		<u>Post</u>		<u>Pre</u>		<u>Post</u>	
	X	SD	X	SD	X	SD	X	SD
Cornell (Total)	*20.4	10.8	13.3	10.5	20.5	10.6	18.6	12.3
Cornell (Fear)	3.6	2.6	2.4	2.6	3.62	3.0	3.25	2.7
Cornell (Depression)	* 2.1	1.8	.88	1.5	1.7	1.7	1.8	2.1
Cornell (Anxiety)	2.4	1.59	1.67	1.50	2.28	.95	2.42	1.6
State- Trait	*49.8	14.9	39.8	10.5	48	9.07	46.8	6.06
16 PF								
M (Imaginative)	7.6	1.8	9.1	2.4	7.0	1.7	7.3	3.4
A (Sociable)	8.2	1.7	8.3	2.0	7.6	2.7	6.6	3.7
C (Mature)	* 4.7	2.6	6.5	2.7	6.3	1.03	6	1.41
E (Dominant)	4.8	1.9	5.4	2.8	4.5	1.4	4.8	1.5
H (Adventurous)	5.5	3.6	5.8	2.9	6.5	3.6	6.8	3.5
I (Effeminate)	7.4	2.12	7.3	1.5	6.5	2.9	7.5	1.9
O (Insecure)	6.7	2.2	5.7	3.2	6.5	2.6	7.1	2.3
Q ₃ (Controlled)	6.3	1.5	6.8	2.0	6.5	1.4	7.8	1.5
Q ₄ (Tense)	8.1	3.6	6.2	3.1	6.6	1.8	7.6	2.7

* Statistically significant at .05 level of confidence.

This project originally was to follow a pretest-posttest nonequivalent control group design, however as stated above, no data were received for the control group. In this case, subjects who completed all training sessions were compared to subjects who dropped out of the program before full intervention was complete. While these subjects cannot be considered as a valid control group, the results tentatively indicate that full utilization of the program (in terms of completing all training sessions) may be an important variable. The reasons why control group data were not submitted are unclear, but indications are that difficulties in testing these subjects due to transportation and other reasons were involved.

In general the analyses indicated a decrease in depression, and an increase in adaptive responding in common life situations. However it must be remembered, that a rather small number of subjects were included in the analysis. This small N makes definite conclusions tentative.

A recent evaluation of another component of this program (Redmon and Hallgren, 1980) again showed several significant changes from pre to post intervention on similar scales. However, again the number of subjects involved in the evaluation was small, and no differences were found between the experimental and control group on post test measures. Therefore, no definite conclusions can be made concerning the effects of this program.

INFANT MENTAL HEALTH INTERVENTION

The Department of Mental Health contracted with four community mental health boards to operate prevention projects designed to avoid the development of behavioral disorders, developmental delay of infants, and child abuse and neglect through the modification of infant-parent interactions. Specific goals and procedures of the various programs are given below.

Project 7

This project was funded in January 1977 under a contract to demonstrate the feasibility and effectiveness of identification and early intervention of infants in high-risk situations.

The general procedures involved the following services:

1. Identification of at-risk infants by hospital staff during the first three days of birth through the use of a project developed "screener" instrument.
2. In-hospital intervention for all subjects, including training of basic child rearing skills.
3. Further assessment of "at risk" infants with the Brazelton Behavioral and Neurological Assessment scale (Brazelton, 1973), and provision of further services, including home visits if necessary. Home visits and intervention were to be continued as long as the infant was regarded as being at risk of developing future disorders.
4. Both service and control dyads were to be given the Broussard Neonatal Perception Inventory (1978) when the infant was two days, two weeks, and two months old.
5. Recommendation and provision of other project, volunteer, or community mental health services.

The evaluation design called for the collection of 1) screening information on both a control and service group. Members of these

groups were to be randomly assigned once "high-risk" was determined. 2) The Broussard Neonatal Perception Inventory (1978) would be obtained at 2 days, 2 weeks, and 2 months for members of both groups. On this scale, the mother is asked to compare her child to her perception of an "average" child in order to determine general attitudes concerning the infant. Results of this inventory would be one measure of intervention effects. 3) The administration of the Bayley Scales for Infant Development (Bayley, 1968) when the infant was one year old.

Outcome Analysis

The project opened its first case in January of 1977. A total of 55 service recipients are considered in this report. Subjects were assigned to a control group for evaluation purposes; however, demographic data are available only for the experimental participants. The infants receiving service were comprised of 22 males and 26 females (data are missing for seven subjects). At the time service began the infants ranged in age from 1-60 days of age, indicating that not all children served were newborns. The average intake age of infants served was 6.2 days. The family incomes of the served group ranged from \$0 to approximately \$50,000. Most recipients reported incomes in the "less than \$1,000" category. Eighty percent (80%) of the recipients were White, 16% were Black, 1% was Hispanic and 1% was classified as "other." Forty-three percent of the parents of infants were single, 9% were separated, 7% were divorced, and 32% were married. Parents had an average education

level of 11.1 years; however, most had completed high school. Most of the mothers were homemakers or not looking for work. Only about one-third (33%) of the fathers were employed full time. Agency outreach accounted for 95% of the referral to the caseload, while 4% and 1% respectively were referred from non-psychiatric MD's and other community agencies. Sixty-four percent of subjects lived with the nuclear family, 14% with relatives, and 4% with friends. Of the 21 cases terminated, one withdrew, nine were terminated according to plan, five withdrew, and seven terminated for other reasons. Six of those terminating were referred to the local health department, three to non-psychiatric MD's, and one was not referred.

The original design called for completed data sets on approximately 30 persons for both service and control groups. It further required that the participants be randomly assigned to these groups; however, several problems developed which made data analysis difficult. First, it was discovered that "random assignment" was not achieved. The service group contained several subjects whose screener scores were within the low risk range. It was later determined that nursing staff had made several referrals on the basis of "gut feelings" rather than actual scores.

Secondly, the screening instrument used was changed while the study was in process, and thus any conclusions made concerning this instrument may be invalid. A third problem concerned missing data. Insufficient data was collected on the Broussard Neonatal Perception Inventory and Bayley Scales for Infant Development for any type of comparison.

Summary

In view of the data problems discussed, no conclusions can be made concerning the intervention effects of this project.

Project 8

This project began operation in September, 1976. It was designed to avoid child abuse and neglect and the development of behavioral disorder by modifying parent-infant interaction. The project attempted to:

1. Pilot a public health/mental health team effort within a specified administrative service area.
2. Implement a systematic means for identifying infants at risk.
3. Implement a prevention strategy based on the Fraiberg (1977) model for 60 infants.
4. Serve as a pilot program for eventual statewide implementation.

The intervention consisted of the use of a screening instrument for recording observations on mother-infant interaction and stress factors. It was to be used by staff in hospitals, public health clinics and Early Periodic Screening and Diagnostic Testing (EPSDT) sites, and the following procedures were to be followed:

1. All identified at risk newborn infants were to be referred to public health nurses.
2. At risk infants who lived within the project area were to receive services.
3. At risk infants who lived outside the project area were to receive the usual services available in the community and used as a matched control group.

The intervention model involved nonjudgmental concern for the parents, nurturing the caregiver, dealing with parental problems as

they affect the infant, interpreting the infant's needs and behavior, acting as a role model, leading the mother toward appropriate nurturing behavior, and reinforcing her for active involvement with the infant, providing assistance in obtaining needed services, and training in coping with crises. A home visit by either a member of the interagency team, initiated service.

From the initial home visit and evaluation, a treatment plan would be developed. In most instances, home visits by the project staff member were to continue on a weekly basis as long as need was indicated. Public health nurse visits, with consultation from project staff were to be utilized for a portion of the caseload. Infants were to be assigned to (a) a mental health staff member or (b) to a public health nurse with consultation from mental health staff.

The evaluation design called for a non-equivalent (matched) experimental and control group on which screening data would be collected, maternal infant interaction would be measured, developmental assessments using the Bayley scales would be collected at 10 months and approximately two years, and incidences of abuse and neglect would be monitored.

Outcome Analysis

The project opened its first case in September, 1976. A total of 112 cases are considered in this report. Ninety-four (94) of these were service (experimental) recipients and eighteen (18) were control participants. Table 12 describes the demographic comparisons

TABLE 12
Demographic Comparisons

FACTOR	EXPERIMENTAL (N = 94)	CONTROL (N = 18)
Sex	51% Male	58% Male
Age	X = 5.73 months Range = 1 - 28 months	X = 13.2 months Range = 6 - 18 months
Income (Parents)	Largest category = 4,000-4,999 (42%)	4,000 - 4,999 (39%)
Ethnic Group	76% White 9% Black 6% Hispanic	83% White 0% Black 11% Hispanic
MARITAL STATUS PARENTS:		
	Never Married 33%	61%
	Married 48%	22%
	Widowed 0%	11%
	Divorced 7%	6%
	Separated 11%	0%
Education Parents:		
	X = 11.6	X = 13.4
	Std. Dev. = 1.7	Std. Dev. = 2.5
	Range = 7-16	Range = 9-16
Employment Status - Parents:		
	<u>Mother</u>	
	Full Time 4.5%	17%
	Homemaker 65 %	33%
	Student 5.7%	6%
	Never Worked 8.0%	0%
	<u>Father</u>	
	Full Time 34 %	28%
	Student 2.3%	11%
	Not looking 12.5%	6%
Living Arrangement:		
	Nuclear 83 %	100%
	w/Relatives 6.8%	0%
	Foster Family 2.3%	0%
	Friends 1.1%	0%
	Separately 5.7%	0%
	Other 1.1%	0%

between experimental and control participants of this project.

Of the total cases seen, Bayley Scales were obtained for approximately 30%. Twenty-five Bayleys were provided which were administered at the agreed upon 10 month time period. In comparing the absolute levels of developmental performance for control and experimental subjects, no significant differences were noted. In examining the extent to which controls were more delayed than experimental participants, no significant differences were noted. Most experimental and control participants scored within the normal range. One of the major aspects of this project (as far as evaluation) was the use of the infant screener. Due to a number of problems including staff turnover, lack of cooperation by other agencies (i.e. hospitals) and similar reasons, this could not be done. Thus no significant amount of data was received using this instrument. Due to the lack of a sufficient amount of data, no conclusions regarding intervention effects of this program can be made.

Project 9

The original contract for this project called for the implementation of the same intervention used in Project 8 in a rural setting. This project, however, encountered many problems in carrying out the research design; e.g., it was unable to attain entry into the local hospital(s) for implementing a screening process, and therefore none of the intended group comparisons were possible. During this time the project provided outpatient therapy to referred

clients and held an assortment of educational-related meetings in the community.

A revised contract required the project to carry out an evaluation design which was the same as for Projects 7 and 8. The procedures were described as follows: Comparisons were to be made between the experimental and control groups on (1) the degree to which the screening data accurately predicted developmental delay of the infant at one year of age, and (2) the pre and post levels of child abuse and neglect in the catchment area.

Outcome Analysis

The project served 45 recipients. For various reasons, complete data sets were not available for most participants. Due to the low number of complete data sets received, no conclusions can be made regarding this project.

Project 10

This project was very similar to the other infant mental health projects just described, and has been terminated. It also had serious implementation problems and therefore provided very little data to address its effectiveness. Summary data is provided below.

Outcome Analysis

The project opened its first case in September of 1976. A total of 83 cases were opened. A summary of the data revealed that approximately 50% of the clients were male. The average client age

was 23.4 months and ages ranged from 3 months to 52 months. The largest single percentage of clients was in the 25-52 month age category. Family incomes ranged from less than \$1,000 to \$15,000 - \$25,000, while 25% reported incomes in the \$3,000 - \$4,000 category. Most clients were White (84.4%), while 14.3% were Black. Thirty-eight percent of client parents were married at opening, almost half (49.4%) had never been married and approximately 10% were either separated or divorced. The average education of client parents was 11.2 years and ranged from 8 to 16 years. Two-thirds of client mothers were classified as homemakers; only 5.7% were employed both full time and part time. Approximately one-fourth of the mothers were students at opening. Data were obtained for 44 (53%) of client fathers. Most fathers were employed full time (68.2%); near 23% were not employed at opening. The most often reported source of referral was "self" (23.6%), followed by the Department of Social Services (16.7%), local health department (15.3%), other community agencies (11.1%), school (8.3%) and jail/prison (8.3%). Medical doctors, community hospitals and "other" furnished the remainder of referrals (16.7%). The majority of clients were living with nuclear families (94.4%), while the remainder lived with relatives, separately or in other types of homes.

Termination Data

The only outcome measure in use was the Bayley Scales of Infant Development (Bayley, 1968). Since no control group was used, a comparison of project client scores with the mean of scores on the

test validation sample was done. Eleven scored protocols were received (13% of the clients). Of these 11, 4 had either a mental developmental or a motor developmental index that was more than one standard deviation below the mean.

Summary

No conclusions can be made concerning the intervention effects of this project.

Summary of Infant Mental Health Projects

The evaluation designs for all of the infant mental health programs were similar. Each involved a non-equivalent control and experiment group design in which subjects were initially screened in order to identify high risk individuals and then randomly assigned to each group. At the end of one year, the results of the Bayley Scales of Infant Development given to each group were to be compared in order to assess the validity of the screening instrument, and to determine the effects of the intervention.

As it has been described, all of the projects had great difficulty in appropriately carrying out this design. Problems were encountered in recruiting a sufficient number of subjects, randomly assigning them to experimental and control groups, and testing subjects at appropriate times.

Of the four infant mental health projects described, projects 9 and 10 were eliminated, and projects 7 and 8 were given revised contracts. In addition, two new infant mental health projects were

developed. Due to the many problems encountered in implementation and data collection, no conclusions can be made concerning the effectiveness of these projects. The new and revised projects currently in operation are more successful in carrying out specific evaluation design procedures, and meaningful data may be available in the near future.

GENERAL DISCUSSION

The prevention efforts presented will be discussed in light of their operational and outcome characteristics.

Operation

The operational aspects of the programs were fraught with many problems. The most severe one is the fact that many programs encountered difficulty in providing sufficient amounts of data for meaningful analysis, even after being in operation for an ostensibly extended period of time. Project directors gave many reasons for this, including "insufficient time allowed for start-up operations," "lack of staff," "low number of referrals," "mobility of subjects", and many more. One of the major reasons for this problem was that most of the program managers had professional credentials in treatment, rather than program administration or evaluation. Thus, even though the projects were supposed to be pilot demonstrations, it seemed that many of the staff were more interested in delivering what were assumed to be proven services, rather than in determining whether such services were effective. Data collection was often treated as a low priority of the program, or viewed as a requirement forced upon the project by the "state people," rather than one deemed to be important by project staff. Conversations with project directors indicated an intuitive sense that the programs were

successful, even though objective data were lacking. Unfortunately, it was impossible to determine the effectiveness of the projects using these types of intuitive impressions.

A related problem was that even when data were submitted, they were often in an incorrect form. That is, the agreed upon quasi-experimental design was often not followed. In some occasions, new dependent variables were substituted without informing program analysts, or diagnostic tests were given at inappropriate times. Often post-test scores were reported without pre-tests, and some projects either refused to use control groups because they did not want to withhold treatment to individuals, or placed subjects deemed to need the services most in the experimental groups. Surprisingly, some program managers seemed unaware of the importance of the experimental design, even though they had much input in their formulation.

On other occasions, project staff had difficulty with the administration, scoring, or interpretations of testing instruments. This, plus the fact that virtually no reliability estimates were taken, makes the validity and reliability of much of the data questionable. Similarly, in many cases blind or double blind procedures were inadequate, or not used at all. Thus, it was possible for program staff to know which subjects were in experimental or control groups. This often results in expectancy effects or experimenter bias (Rosenthal and Jacobson, 1968; Breuning, Ferguson and Cullari, 1980).

In a related matter, the services provided by the projects were

often ill-defined. In this case, it is difficult to determine whether the procedures were implemented consistently or correctly across individuals or experimental groups. This not only makes the data difficult to interpret, but even if the project or procedure is found to be effective, it would be almost impossible to replicate the findings, or the procedure in a new setting. Thus, the findings, in terms of being used for replication, are almost useless.

Another problem related to the operation of the projects was that in many cases the programs were initiated with little or no needs assessment surveys being done. This can lead to many problems. One is that the services may not actually be needed in a particular setting. For example, one of the projects attempted to assist teenage mothers in a low income, large metropolitan area. After being in operation for a long period of time it was found that the services were not being used to any great extent by the target population, and that acquiring or maintaining subjects was difficult.

It was later determined that the target population for this group, which was almost all low income, black teenage mothers, did not view having a baby at a young age as being a major problem, i.e., there was no significant social stigma attached to this occurrence. Additionally, if problems did occur, they were almost always taken care of by the immediate family. Since teenage parenting is a relatively common occurrence among this population, they have learned how to effectively treat ensuing problems without outside assistance.

If the target population had been white, middle-class suburban females, the demand for services would probably be much greater.

This points to the necessity of doing a comprehensive needs assessment survey prior to program implementation because in the above example, even though the number of teenage parents was at a level high enough to warrant a program, services were not needed. Similarly, in other projects, the need for services in the target population was too small to make any interpretation of program effects. Again, such findings may not provide useful information for demonstration projects.

Another related problem that perhaps even an adequate needs assessment may not solve is the problem of client drift, and the resulting inability to collect complete data. Many factors contribute to this problem. Typically a program will start off with a large number of referrals (perhaps a few hundred) and screen these for eligible subjects. This often results in a large number of clients being referred elsewhere for services. The second step usually involves dividing the subjects into experimental and control groups (if this design is used) which by definition reduces the clients receiving treatment by one half. After the actual programming begins, it has been found that a large percentage of clients attend the first session and then drop out. As the program continues, other subjects may move away from the catchment area, and/or cannot be located. Others drop out of the program before services are completed (those completing services are given in project summary data as "terminated according to plan"), and still others who complete the services have missing data for one reason or another. Thus, for many projects, the actual number of subjects who

complete services, and for whom all data have been collected is often a small percentage of the initial referral group. Surprisingly, the problem of subject drift was not as severe (for most projects) in the control group. The reasons for this are unclear, but this finding may be useful when future programs and research designs are developed.

Other operational problems related to the projects involved the period of time contracted and conditions for extension of the program. Most of the projects were given contracts or extensions on a one year basis. Many found that the first year was spent in hiring and training staff, finding referral agencies, locating subjects, refining and changing testing instruments, and similar activities. Thus, for all practical purposes actual useful data submitted during the first year of operation was minimal. Secondly, conditions of program extensions were for the most part ambiguous and not directly related to program performance. That is, contract extensions often took place even though very little data were submitted, and with little indication of program effectiveness. This of course makes it even more difficult to ensure that project directors will submit data or follow proper procedures, because there are no consequences for not doing so.

In order to remedy some of the problems mentioned above several changes were attempted. One was that a formal data collection procedure was initiated. This resulted in several advantages. The first was that the project personnel knew exactly which testing instruments were to be used, when they were to be done, and when data

were to be submitted. Additionally, all data could be recorded on a separate form, so that the testing protocols themselves could be filed elsewhere. While this procedure did not ensure that data would be collected correctly or consistently, it did make errors easier to detect, and allowed actions to be taken for incomplete or incorrect data within a reasonable period of time. A complete description of this system is given in Appendix B.

An attempt was also made to increase the consequences for lack of data, or ineffective programs, by directly tying project continuation to demonstrated program effectiveness (under specific contract stipulations). The goal was to increase the likelihood that proper experimental procedures would be followed and that data would be accumulated.

While in theory the above may appear to be the obvious approach to use, in practice it is difficult to accomplish. Some of the pilot prevention programs were modified or eliminated because of ineffectiveness or other reasons, but it was difficult to do this consistently. There are many reasons for this. Probably the most important is that no truly reliable method of evaluating prevention programs has yet been developed. Problems arise when using inadequate research designs, identifying meaningful dependent and independent variables, locating "at risk" populations and so on. Evaluation of prevention programs is difficult because effective programs should show a future lack of specific behaviors. It not only takes many years in order to do this, but in the event that behavioral problems do not occur, it is difficult to conclude with

any certainty what specific variables were involved. In the same sense it is difficult to prove that the disorders would have developed if the intervention had not been used. Thus, in many cases there is no clear cut evidence that a program is effective or not.

Other reasons why such an approach is difficult have to do with some of the current policies of state government. For example, funding for specific programs is often planned months or years in advance. This may mean that decisions regarding some programs have to be made before actual data are collected or analyzed. The dilemma here is obvious. Many programs are approved for continuation before their effectiveness (or lack of effectiveness) is determined. In addition, program continuation is often based on conditions other than results. For example, special interest groups, political pressures from state and local sources, current agency or unit directors' philosophies and similar reasons.

In addition, programs usually have to be balanced across the state geographically, or across ethnic, and socio-economic conditions. Local and regional competition for funds also play an important role. These pressures, in addition to finding locations where programs are actually needed, mean that often the development and continuation of projects involve factors far removed from the services themselves, or their effectiveness (e.g., Mitroff and Bonoma, 1978).

A different way of operating the pilot demonstration programs above might be direct (state) control of projects instead of contracting with outside agencies. Such operation might allow at

least the following advantages: A) greater control in the selection of staff, testing instruments, research designs, and intervention procedures; B) an increase in the probability that intervention procedures are implemented correctly and consistently across individuals and experimental groups; C) an increased ability to modify procedures or testing instruments on a timely basis; D) an increase in emphasis toward evaluation rather than treatment; E) an increase in the validity or reliability of data (through procedures that may not be possible when programs are far removed from each other or the evaluator).

In addition, the number of programs might be reduced, so that the usual small amount of funds set aside for prevention efforts can suffice for proper implementation and operation of programs. Lastly, evaluations should be based on time spans of 5 to 10 years, so that true effects or trends can be found. When programs or procedures are determined to be effective, they can be implemented on a statewide basis.

Evaluation

This section will review some issues related to the evaluation outcomes of the prevention projects presented in this study. Table 13 summarizes the results of the evaluations. As it shows, only two projects had demonstrated effects. In the case of these two programs, the number of subjects with complete data sets was too small to arrive at any conclusions. The same is also true for the other programs. In general, the number of complete data sets

TABLE 13
A Summary of Evaluation Outcomes

<u>Project</u>	<u>Type</u>	<u>Results</u>
1	Children of disordered adults	Significant pre-post changes
2	Children of disordered adults	No significant changes
3	Teenage parent	No significant changes
4	Teenage parent	Insufficient data
5	Vulnerable children	No significant changes
6	Stress management for women	Significant pre-post changes
7	Infant mental health	Insufficient data
8	Infant mental health	Insufficient data
9	Infant mental health	Insufficient data
10	Infant mental health	Insufficient data

available for analysis from any of the projects was too small to make any definite statements concerning the effectiveness or non-effectiveness of the interventions.

As was previously mentioned, even if the prevention programs described in this study were shown to be effective, there is some question as to the practical value of such information. The procedures used are so vague that it would be impossible to describe what variables might be responsible for the success of the program. It would also be difficult to replicate the programs in other settings. In order for such information to be useful for future implementation, it is necessary to precisely define what procedures are used in order to determine what aspects of the program are responsible for effectiveness. The prevention programs considered in this report do not lend themselves easily to such endeavors. They are mostly based on loosely defined therapeutic goals and procedures that are open to individual interpretation and thus may vary in implementation.

In terms of evaluating the prevention programs currently in operation in Michigan, at least three major stumbling blocks were evident: 1) accurately identifying the population "at risk" of developing future disorders; 2) demonstrating that the intervention used was responsible for the disorders not occurring; and 3) demonstrating that the disorders would have occurred if the intervention were not used. Most of the research designs currently used for evaluation purposes are inappropriate for addressing these issues, and until new ones are developed, or the procedures used in

prevention programs are changed, it will be difficult, if not impossible, to make valid conclusions concerning program effects. Bloom summarizes the predicament of the situation in the following way: "In a word, we are generally asked to evaluate the outcome of an undefined program having unspecified objectives on an often vaguely delineated recipient group whose level or variety of pathology is virtually impossible to assess, either before or after their exposure to the program" (Bloom, 1968, p. 119).

The data that have been presented in this study may be lacking in terms of analyzing the effectiveness of the primary prevention programs, but may have important implications for the type of evaluation designs used in future studies. One of the major obstacles encountered in the present study was (project) staff resistance to evaluation efforts. Weiss (1972) reports that this is a common problem and offers several reasons for their cause. One is that clinical staff are often reluctant to spend a great deal of time for evaluation purposes because their main goal is to provide services. Another is that evaluation consequences are often viewed in a negative manner. That is, results may lead to program changes, the elimination of staff or of the entire program. A third is that the evaluator is often an outsider and seen as a threat to the project. All of these reasons are consistent with the present study.

In addition to the above, other problems are encountered when evaluations are done in natural settings. For example, goals of programs are often given in vague and unmeasurable terms by program staff. In this case, the evaluator may define his or her own goals,

which may be measurable, but possibly irrelevant to project staff. Secondly, there may be considerable variability between staff in terms of theoretical orientation, or how specific procedures are carried out (Weiss, 1972). Similarly, staff policies and procedures may be altered as administrative policies, or project directors are changed. Finally, the goals of the evaluator may be different than that of the project director, which may lead to further conflicts.

The problems described above may be related to the types of experimental and evaluation designs used in many program assessments. For this reason, there may be some advantages in seeking novel designs that may be used for primary prevention or similar mental health programs. For example, Campbell (1972) has described four experimental designs that may be applicable for "field" studies, or settings when full experimental control is difficult or impossible. Of these four, the interrupted times series and regression discontinuity designs seem especially applicable to prevention programs.

The interrupted time series design is useful when a total population receives treatment, and pre-treatment data are the only base for comparative purposes. For example, a prevention program that treats an entire population may use the prevalence of mental health disorders both before and after treatment as a dependent variable.

The regression discontinuity design is useful for primary prevention programs that treat only individuals identified as being "at risk" of developing future disorders. This design eliminates the

need of a control group, and also takes into consideration predicted results that might occur without an intervention. Such a design, if used successfully might help reduce one of the major problems of evaluating primary prevention programs, i.e., demonstrating that a particular disorder would have occurred if the intervention were not used. It also eliminates the problem of withholding intervention to a group of subjects in need of treatment.

In addition to Campbell, Kelly (1971) describes three experimental designs well suited for primary prevention programs. Each of these designs includes the observation of "naturally" occurring events of a community in order to determine intervention effects. They also involve the consideration of many environmental conditions. In this respect, they are similar to the "ecological" approach to prevention which is described in the last section of this discussion. In general, Kelly recommends procedures and evaluation designs that take into consideration the "total" community or environment.

Turning to evaluation designs, Stufflebeam (1974) has described three general criterion that all evaluation designs should meet. These are that the findings should be internally and externally valid, i.e., that the results are true and generalizable; that the findings are useful to some audience, and that the findings are "worth more" than the cost of obtaining them.

In general, the results of the evaluations described in this study, and others done on primary prevention programs described in the literature do not seem to meet these goals. There are many

reasons for this, and some have already been described in this report. One area that hasn't been discussed is that the evaluations described herein are meant to be used by administrators or government officials, and as such may not benefit program directors or staff. In these cases, it should not be surprising that project staff do not cooperate fully with evaluation procedures. The following section briefly describes two evaluation designs that may improve this condition.

The first design is called the responsive evaluation approach and is described by Stake (1975). While this design was meant to be used primarily in educational programs, it may also be valuable for evaluating primary prevention projects. Stake (1975, p. 28) reports that a responsive evaluation design is particularly useful for programs in which staff need help in monitoring procedures, or those that cannot fully predict possible problems that may be encountered. It is also useful for identifying the specific strengths and weaknesses of programs, and describing their methods. All of these factors are important considerations in the evaluation of typical primary prevention projects.

The major differences between traditional evaluation efforts and a responsive approach is that the later concentrates more on direct observations of the program, preparing informal reports, and attempting to identify the needs of the client. Similarly, less time is spent on formal reports, preparing evaluative instruments, and processing formal data. All of these were major components of the evaluation discussed in the present report. In brief, a

responsive evaluation model takes a more holistic approach to evaluations, by emphasizing a greater number of program components, many of which are less objective than traditional designs.

An evaluation design that is similar to the responsive model is called naturalistic inquiry, and is described by Guba (1978). In general, naturalistic inquiry can be defined as an attempt to investigate phenomenon as they naturally occur in the environment. Guba (1978) describes fourteen ways that naturalistic inquiry differs from conventional evaluation. Among these is that the purpose of naturalistic inquiry is to discover and study various phenomenon, rather than to artificially manipulate variables in order to test a certain hypothesis. Another is that naturalistic inquiry takes an expansionist or molar stance rather than a reductionist or molecular one. In other words, naturalistic inquiry attempts to understand an environment as a whole, rather than separate individual units. A third major difference is that in traditional evaluations, treatment is seen as stable and invariant. In this case, attempts are made to enforce this condition. In naturalistic inquiry, there is no treatment per se, and the dependent variables are viewed as being due to many continuously changing factors.

Naturalistic inquiry may be an appropriate model for primary prevention because at this time the exact causes of most mental illnesses are not known, and effective treatment is lacking. A molar approach to the field might help identify various factors that may be responsible for the development of disorders. At a later date perhaps naturalistic inquiry can be used in conjunction with

traditional experimental designs in order to pinpoint specific variables responsible for mental illness, or mental health.

The previous section attempted to briefly describe various designs that may be used in place of traditional approaches. Obviously, it was not an exhaustive effort, and other models may be appropriate as well. Of course, the type of experimental or evaluation design used in any specific project depends on factors such as the type of program, the goal of the evaluation, and the type of audience that receives the results. The implication of the last section is that in terms of primary prevention, traditional experimental and evaluation designs have not been very successful, and that efforts should be placed on identifying more appropriate or novel evaluation models.

Along the same lines, another major problem associated with prevention services is defining the type of mental disorder that is the target of the intervention. Generally speaking, there are two categories of mental illnesses. Lamb and Zusman (1979) label these psychoses and neuroses. The term "mental illness" is usually associated with disorders such as schizophrenia, paranoia or others that frequently require institutionalization. It is often assumed that primary prevention programs will have an impact on these abnormalities. However, in terms of actual prevalence rates, the incidence of these major types of mental illnesses have remained constant, despite prevention efforts, or effects of other mental health programs (Lamb and Zusman, 1979). Perhaps this should not be surprising because recent evidence supports the notion that major

mental illnesses may be due to organic or genetic factors (e.g., Weissman and Klerman, 1978). Since most prevention programs are psychosocially oriented, they would not have an impact on disorders that are caused by physiological factors. It should be noted here that this is a typical response to primary prevention made by professionals who follow a "medical model" orientation. That is, it is assumed that if physiological factors are involved, psychosocial intervention is not needed. However, even if mental health problems are largely due to physiological causes, environmental factors may still influence the type and severity of behavioral disorders. In addition, the notion of a physiological or genetic course of mental illness is often used as a reason for not attempting social or psychological programs (i.e., as in the use of preschool programs to prevent later academic failure). Since the courses of mental illness or other major social problems are as yet undetermined, it seems premature to eliminate certain programs without conclusive experimental support for doing so. In any event, for this and other reasons, the field of primary prevention seems to be moving towards an emphasis on neuroses, or problems in living, rather than on major mental disorders.

Bloom (1979) describes this as an attempt to move from the consideration of predisposing factors of mental illness to those of precipitating conditions. This approach concentrates upon more conspicuous factors that might be responsible for behavioral disorders, such as divorce, loss of a job, a death in the family, and others. Programs of this type are generally labeled "crisis

intervention" or "stress management." Such programs are becoming increasingly popular for reasons other than the one cited in the last section. One is that past prevention programs generally have not been able to show favorable results. Another is that recent research has indicated that infant experiences may not be as important (in terms of future development) as once proposed (Kolberg, LaCrosse, and Ricks, 1972). For example, after a review of the literature, Kagan (1976) has come to the following conclusions: "The data offer no firm support for the popular belief that certain events during the first year can produce irreversible consequences in either human or infrahuman infants" (p. 121). A third reason is that these programs may be more in line with what mental health professionals are trained to do; that is, deal with specific problems. While such programs may offer many advantages, there is some question as to whether they should be considered primary prevention or treatment.

In a related matter, it should be noted that two pilot demonstration programs not presented in this report showed some degree of effectiveness. One of these involved finding jobs for unemployed persons, and was based on the "Job-Finding Club" described by Azrin, Fbres, and Kaplan (1975). The other involved working with predelinquent youth. While these projects were successful in a number of ways, it was determined that their effects would not reduce the likelihood of future mental disorders, or the number of potential users of mental health services. In other words, they were not deemed to be primary prevention programs, and therefore their contracts were not renewed.

Perhaps the argument can be made that some of the other projects reviewed in this study should also not be considered primary prevention programs. There are several reasons for this. As Bloom (1979) suggests, primary prevention efforts should avert specific conditions before they develop. In many of the programs described in this report, conditions that might lead to future mental health problems, such as poor parenting skills, early pregnancies, and others, were already present in the target population. Bower (1965) maintains that services provided for populations identified as being at risk of developing future disorders should be considered secondary prevention or treatment. Primary prevention, in this case, should deal with the conditions that lead to placing the target population at risk. Secondly, the types of prevention programs described in this report are designed to impact on individuals rather than environmental conditions or populations. In this respect, it is not clear that untreated members of the population will not develop future disorders. In addition, since environmental conditions may not change, the service group may again become susceptible to mental disorders at some time in the future. Thirdly, the screening instruments used in most prevention programs are usually designed for specific disorders, and as such would not be predictive of all mental problems that may develop. In this case, even after treatment, the target population may still develop certain disorders. For all of these reasons, the prevention programs presented in this report, as well as others described in the literature, may be functionally equivalent to treatment programs.

Due to all the problems associated with definition, evaluation, and implementation, many researchers in the field are calling for new models of primary prevention (e.g., Lamb and Zusman, 1979; Bloom, 1979). The next section briefly describes a theoretical model that may be appropriate.

An Ecological Approach to Primary Prevention

An ecological approach to prevention is a model based on Bateson's systems theory (1972; 1979). Conceptionally, it has the following characteristics:

1) The emphasis is on total systems or populations rather than individuals. There are several reasons for this. One is that characteristics and behaviors of total populations may be more describable and predictable than those of individuals (e.g., Bateson, 1979, p. 44). This may make program goals and objectives easier to define and evaluate. Secondly, it eliminates the problems associated with screener instruments and the need to identify "at risk" populations. Changes would be directed toward environmental conditions affecting the total population or system, and, as such would be more permanent than ones typically used in traditional primary prevention programs. This approach is consistent with the public health model, from which most primary prevention concepts developed (e.g., Bloom, 1979).

2) An ecological model assumes that behavior and behavior disorders have multiple determinants. In general, large classes of behavior and their causes are considered.

3) An ecological approach assumes that mental disorders are a result of a system imbalance. This system may be an individual, a family, a culture, or other organizations. The goal of this approach is to reinstate and maintain a balance that results in optimal

conditions for humans and other organisms, plus the general environment.

4) An ecological approach emphasizes an open-ended and continuously evolving process. New systematic changes are based on both previous results, and current conditions. As such, this approach requires constant feedback concerning the effects of previous changes.

Operation of such a model on a state-wide basis might be done in the following way. As a first step, the state should be divided into a number of catchment or service areas. These may be pre-existing counties, or multiple-county regions, such as is the case in Michigan. This would make data analysis more manageable, and would also allow for regional differences in population make-up, economic conditions, etc.

Initially, services for each region may be developed through the following method. Each region would first be evaluated in order to determine existing services and their effects. Such services may include medical, educational, welfare, or others that have an impact on psychological functioning. The dependent variables might be prevalence levels of mental retardation, or mental illness, and other measures reflecting the mental health characteristics of the population. Secondly, the services that were found to be most successful would be initiated in areas that show a demonstrated need for them. For example, if a specific catchment area was found to have a low incidence of child abuse, an attempt would be made to determine what factors might be responsible for this; e.g.,

counseling services or parent-to-parent programs. If possible, these services would then be initiated in catchment areas with high levels of child abuse. In this case, services would vary across catchment areas, depending on the need of each sub-system. Services might also vary depending on current conditions. For example, during a recession, job training or placement programs may be emphasized, and then eliminated as the job market improves.

In terms of evaluation, each catchment area may be considered as an "individual," and used as its own control. In this case, some of the individual research designs such as "AB" or multiple baseline (e.g., Bailey, 1977) may be applicable. In addition, some of the evolution design described in the previous section, such as the responsive approach, or naturalistic inquiry may be especially suitable to an ecological model.

Each region may perhaps decide upon an "acceptable" level of mental disorders, and use this as a criterion in initiating or eliminating various programs, perhaps similar to how the federal government deals with unemployment. Such levels may vary depending on current conditions and specific regional differences. In this case, the term "prevention" would actually mean a reduction to, or a maintenance of, a low level of mental disorders. For a number of reasons, it may be unrealistic or undesirable to strive towards a "zero" level of mental illness (e.g., Watts, 1965).

Optimally, an ecological model of prevention would require the services of many different professionals, such as educators, mental health specialists, doctors, lawyers, public health workers, and

possibly government legislators. It may also be advantageous for this organization to be an independent agency rather than a part of a larger system, such as a Mental Health Department. One advantage of this might be to reduce certain biases. For example, in the long run such a prevention agency should reduce the need for mental health services and mental health workers. Traditional civil service organizations, especially those that involve labor organizations or unions may not be willing to do this. Similarly, the agency should be designed so that it can be disbanded once its goals are met. In other words, the eventual goal is a balanced social-environmental system that is self-regulating and capable of functioning independently.

In terms of operation, it would be necessary for this type of prevention agency to have some control of programming in each catchment area, or have enough funds to initiate specific services where needed. Since an interdisciplinary approach is involved, perhaps each separate department (e.g., mental health, education) could contribute to the budget of the agency. A different method might be for the agency to be concerned solely with evaluation and needs assessment and make specific recommendations to county or state governments. However, in order to be effective some type of programmatic control should be available.

Finally, the agency should also be concerned with factors that may not have obvious causal links with mental illness, but may improve general or aesthetic conditions of the living environment. Such considerations may include the availability of parks and

recreation areas, zoning ordinances of towns and cities, pollution and litter control, and any other factors that "improve the general condition of mankind" (Zax and Cowen, 1972).

One of the major underlying concepts of an ecological model as described by Bateson (1972, Part 6) is that organisms and their environments are constantly interacting and affecting each other. In this case, conditions in the environment affect the condition of the organisms and vice versa. In terms of mental illness, the notion is that an imbalanced and polluted environment will directly or indirectly lead to many social problems. These may be due to the effects of pollution, overpopulation, shortage of food, or the collapse of the social structures that might occur when a runaway industrial system breaks down (due either to overpopulation, a lack of natural resources, or other factors). American Indians have long held this same view, and have attempted to live in harmony with nature or the environment. For example, Rolling Thunder warns against the mistreatment of the earth: "The earth is a living organism, the body of a higher individual who has a will and wants to be well, who is at times less healthy or more healthy, physically and mentally . . . Too many people don't consider that when they harm the earth they harm themselves" (Boyd, 1974, p. 51). An ecological approach maintains that many of the social problems of a culture can be prevented by maintaining a "balance of nature."

What this "balance" should entail is open to interpretation; however, it probably would require a reduction, or at least a stabilization of population and industrial growth, and the use of

natural resources. Schumacher (1973) for example, describes a social system based on small, balanced economic units. Such a system, if successful, would reduce pollution, overcrowding, poverty, and other problems faced by many members of our society. Based on previous studies (e.g., Leighton, 1959; Dunham, 1968; Dubos, 1968) there is some evidence suggesting that such an approach might reduce or prevent many mental health problems.

Another researcher who has been active in promoting a "balance of nature" is Ulrich (e.g., 1975; 1979). After initiating one of the first primary prevention programs in Michigan (The Kalamazoo Learning Village), Ulrich turned towards alternate life styles that would reduce the overuse of natural resources and the pollution of the environment. At a time when other researchers were actively promoting the use of experimental methods of behavior control in order to "solve the problems of the world," Ulrich (e.g., 1974) cautioned against being overly optimistic of the results of their attempts. Methods that are found to be successful in well controlled laboratory settings may not produce similar results in highly complex social environments. In this case, Ulrich in a sense attempted to make himself and others part of an "in vivo" experiment at Lake Village community (e.g., 1975). The difficulties involved in successfully maintaining any degree of behavioral control, even in a small population, were well confronted in this setting (e.g., Ulrich, 1979). The implications for primary prevention are that while such efforts should certainly be encouraged, perhaps researchers should be more realistic in terms of expected results.

Whatever method is used for accomplishing the goal of prevention, one fact is clear. If a dramatic decrease of mental illness or problems in living is to occur, massive social and economic changes need to take place (e.g., Kessler and Albee, 1975; Lamb and Zusman, 1978; Bloom, 1979).

The use of prevention tactics with any promise of effectiveness would by definition mean some loss or at least a perceived loss of freedom (e.g., Skinner, 1971) by individuals. Genetic counseling or issuing permits to have children may be an extreme example of this, but even traditional programs used on a large scale basis might mean some loss of individual choice. When considering the public outcry against the fluoridation programs to reduce cavities, which in comparison is well supported by research, it seems clear that any type of widespread attempt at major social changes will be met by intense resistance.

Whether the field of primary prevention can or will achieve its goals is not certain. It seems clear, however, that some of the old methods and goals of this area may no longer be valid. In order to escape the "swamp" surrounding primary prevention (e.g., Kessler and Albee, 1975), it may be necessary to step back and critically examine what future directions are possible in light of previous results, and current economic and social conditions. Forging ahead blindly will only lead us deeper into the swamp.

APPENDIX A

AIDS SCALE

Research Form

THE MASSIE-CAMPBELL SCALE OF MOTHER-INFANT ATTACHMENT INDICATORS DURING STRESS
For Use During the Pediatric Examination and Other Stressful Childcare Situations

<u>Infant's Behavior During Stress Event</u>						
	(1)	(2)	(3)	(4)	(5)	X
<u>GAZING</u>	1 Always looks away from mother's face.	2 Rarely searches out mother's face. Fleeting looks at mother's face.	3 Occasionally looks at mother's face.	4 Frequently long & short gazing at mother's face.	5 Rivets gaze on mother's face for long periods.	6 Behavior not observed.
<u>VOCALIZING</u>	1 Quiet. 2 Never vocalizing.	2 Rarely vocalizing or whispering.	3 Occasionally vocalizing or mild crying.	4 Frequently vocalizing or intense crying.	5 Uncontrollable, intense crying much of time.	6 Behavior not observed.
<u>TOUCHING</u> (a)	1 Never touches or reaches toward mother.	2 Rarely touches mother.	3 Occasionally touches mother.	4 Frequently reaches toward & touches mother.	5 When close, always touching mother.	6 Behavior not observed.
(b)	1 Always pulls away from mother's touch.	2 Frequently pulls away from her touch.	3 Occasionally pulls away from her touch.	4 Rarely pulls away from her touch.	5 Never pulls away from her touch.	6 Behavior not observed.
<u>HOLDING</u>	1 Violently resists holding; always arches away from mother.	2 Does not relax in mother's arms. Frequently pulls away.	3 Rests in mother's arms and against her shoulder. Occasionally pulls away.	4 Body molds to mother's. Rarely pulls away.	5 Actively turns & arches body toward mother's. Clings strongly. Never pulls away.	6 Behavior not observed.
<u>AFFECT</u>	1 Always intensely anguished and fearful.	2 Frequently irritable & fearful.	3 Largely unclear, constricted or bland expressions.	4 Frequently content & smiling.	5 Always full smile & content.	6 Behavior not observed.
<u>PROXIMITY</u>	1 Never follows mother bodily or with eyes; goes to far corner or out of room.	2 Rarely follows mother bodily or with eyes; often at far corner of room from mother.	3 Intermittently follows mother bodily or with eyes.	4 Frequently follows mother bodily or with eyes.	5 Always follows mother bodily or with eyes.	6 Behavior not observed.

Mother's Response to Infant's Stress						
	(1)	(2)	(3)	(4)	(5)	X
<u>GAZING</u>	1 Always looks away from child's face.	2 Rarely looks at child's face. Fleeting looks at child's face.	3 Occasionally looks at child's face.	4 Frequently long & short gazing at child's face.	5 Rivets gaze on child's face for long periods.	6 Behavior not observed.
<u>VOCALIZING</u>	1 Quiet. 2 Never vocalizing.	2 Rare words, cooing or murmuring.	3 Occasionally vocalizing to child.	4 Frequently speaks, murmurs, coos.	5 Intense vocalizations throughout exam.	6 Behavior not observed.
<u>TOUCHING</u> (a)	1 Never touches or reaches toward child.	2 Rarely touches child.	3 Occasionally touches child.	4 Frequently reaches toward & touches child.	5 When close, always touching child.	6 Behavior not observed.
(b)	1 Always pulls away from his touch.	2 Frequently pulls away from his touch.	3 Occasionally pulls away from his touch.	4 Rarely pulls away from his touch.	5 Never pulls away from his touch.	6 Behavior not observed.
<u>HOLDING</u>	1 Pushes upset child away, or holds away from body.	2 Holds child stiffly & awkwardly. Not relaxed.	3 Supports child relaxedly against her chest or shoulder briefly.	4 Body molds to child & maintains contact until child quiets.	5 Body inclines toward child, followed by prolonged holding with molding.	6 Behavior not observed.
<u>AFFECT</u>	1 Always intensely anguished & fearful.	2 Frequently irritable & fearful.	3 Largely unclear, constricted or bland expressions.	4 Frequently content & smiling.	5 Always full smile & content.	6 Behavior not observed.
<u>PROXIMITY</u>	1 Leaves examining room.	2 Frequently out of reach of child; or at far corner of room from child.	3 Intermittently standing or seated within arm's reach of child.	4 Frequently holding or touching child.	5 Always holding or touching child.	6 Behavior not observed.

Growth and development: 1 normal 2 abnormal Explain: _____
 15 16

Social behavior appears: 1 normal 2 abnormal Describe: _____
 16 17

Unusual circumstances today: 1 No 2 Yes Describe: _____
 17 18

Infant Sex: 1 Boy 2 Girl Birthdate: month day year Infant's Name: _____
 18 19 20 21 22 23 24

Ethnic Group: 1 Cau. 2 Black 3 Asian 4 Hispanic 5 Other Economic Group: 1 \$0-10,000 2 \$11-20,000 3 \$21-30,000 4 \$31,000+
 25 26 27 28 29

Observation Date: month day year ID or Chart Number: 33 34 35 36 37 38 Observer: _____
 29 30 31 32



APPENDIX B

Data Collection System

Forms

A set of Data Summary Forms (DSF) was designed for each project. Each set of forms was tailored to the evaluation design (e.g., control and experimental groups, pre- and post-tests, etc.). Each DSF contained column numbers for each digit of data and punch card numbers to allow direct keypunching. See Figure 1 for a sample form. In each case a due date for return of information to the central office was included on the DSF. The name of the responsible project staff member was also included.

The DSF allows coding of the data in a manner acceptable for computer entry. Thus, transcription and secondary processing steps are eliminated. Although the data are reviewed for accuracy by central office staff, no other processing is necessary.

System Procedures

Data are recorded and submitted quarterly by project staff. A set of DSFs is sent to each project by the end of the third month of each quarter. A due date (the 15th of the following month) is included on the DSF. These steps serve as a prompt for the project staff and perhaps increase the probability that the data will be sent in according to schedule.

If the forms are not returned by the end of thirty days

following the due date, a reminder letter or phone call is used to prompt project staff. Once the DSF is received in the central office, the forms are reviewed for incomplete or erroneous information. If correct, the data are sent for computer processing. If problems with the data are discovered, a phone call is made to project staff and if necessary, the forms are returned for corrections. An additional 30 days are allowed for corrections.

Given that the data reported are acceptable, a status report is generated for each project and the cycle begins again. In the case that no data are received from a project, a report describing the problem is circulated.

Personnel

One staff member from each project is given responsibility for placing the data on the DSF and sending information to the central office. A central office staff member receives and reviews the data for errors. Once reviewed, data are sent to data processing or returned to the project for correction.

A central office staff person is also given the responsibility of sending DSFs to the project according to a predetermined timeline. This staff member monitors correspondence with the project surrounding data collection and reporting.

Utility of the System

Several advantages are obvious from the system description. First, the data arrive from the projects in a form suitable for

processing. This eliminates a long and tedious transcription task from the process. Furthermore, transcription is done by project staff who are most familiar with the data and the tasks are distributed across projects. Otherwise all transcription would have to be done at a single point. This would require at least one additional staff position.

Second, since all recipients of services must be listed on the DSF (crosschecks with cases opened and closed ensures this) one can determine the proportion of missing data rather quickly. In this way procedural or logistical problems with the evaluation can be detected immediately. Otherwise, only test scores or protocols are sent in non-standard form leaving a good deal of process review to guess work.

Third, the data are grouped in a form ready for analysis. Groups of subjects are clearly identified and coded that way. All data for each recipient are clearly associated with a unique identifier for that recipient and can be entered into the computer that way. Thus, analyses can be performed relatively quickly as compared to the time formerly taken to transform the information to a condition suitable for statistical treatment.

Fourth, one project staff member is in charge of the data collection. This has proven invaluable when problems with the data arise. The responsible party can be contacted for information or assistance in a short time.

FIGURE 1

Sample Data Collection Form

FIGURE 1

Sample Data Collection Form

For DMH only Period beginning_____ and ending_____ Completed by_____

Date Total number of cases opened during period_____ Due date_____

C_____ I_____ Number of cases now open_____

Feedback_____

Recipient #	Teest Date	Control = 1		Pre = 1		Testing Instrument 1			Testing Instrument 2		
		Experiment = 2		Post = 2		Subscales 1	2	Total Score	Subscales 1	2	Total Score
Column #											
1-6	7-12	13		14		15-16	17-18	19-21	22-23	24-25	26-28
0 0 0 0 0 1	0 1 0 1 8 1	1		1		0 5	0 4	1 0 0	0 1	0 1	1 0 5
- - - - -	- - - - -	-		-		- -	- -	- - -	- -	- -	- - -

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