INDIVIDUAL AND FAMILY CHOICES FOR CHILD SURVIVAL AND DEVELOPMENT: A Framework for Research in Sub-Saharan Africa

by

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EXECUTIVE SUMMARY

In recent attempts to foster both survival and development of children in Africa, substantial resources have been invested in developing technologies and interventions to improve child nutrition and health, and in identifying effective mechanisms to deliver these interventions where they are needed most. Nevertheless, achieving the goal to improve child welfare depends not just on assuring supply, but also on addressing issues of demand.

Central to the analysis of demand for child survival and development services and technologies is the fact that it is adults who make and implement decisions regarding children. While many in the family contribute to these decisions, most would agree that nearly universally, women are the principal caretakers of young children. Thus, while the beneficiaries of the child survival and development revolution are children, the agents of the revolution are women. Recognition of this fact has led to the present development of a conceptual framework to explain demand that is broader than a purely medical model to include social influences on child survival and development, yet it is more specifically focused than a purely economic model to include determinants of individual women's choices.

In addition to shifting the focus of inquiry from the issues concerning the beneficiary to issues concerning the implementor of child survival and development strategies, the present model also distinguishes between the factors influencing the trial of a new childrearing strategy (initiation), and those influencing the sustained use of the strategy over time (maintenance). The model suggests that contextual variables at the community, household and individual levels affect women's ability and motivation to choose to initiate a new childrearing practice or utilize a service. The anticipated costs and benefits of utilizing the service or practice also affect initiation. The model further suggests that the consequences to initiation, largely those derived from the characteristics of the services and practices themselves, will have a significant impact on whether women choose to adopt the new service or practice into their childrearing strategy.

Thus, the present conceptual framework to understand demand for child survival and development services and practices requires an examination of factors specific to the African context affecting women's ability and motivation to initiate and to adopt new behaviors. Important community level factors are seasonal fluctuations in food supply and work demands, in that during peak agricultural period when rural women spend most daylight hours laboring in the fields, their time allocation to other responsibilities of home maintenance, food preparation and childcare are strongly affected.

Another factor is the nature and income generating potential of women's work in Africa. Women's concentration in food crop production, their involvement in largely informal sector employment and their relative lack of access to formal support schemes (eg., credit and agricultural extension) affect their ability to provide and care for their children. The informal social support resources available to women in helping them meet their multiple responsibilities are largely those provided by their network of female kin, both in and out of the household. These include sharing of food
and labor, fostering out and taking in of their own and relatives' children, and relying heavily on children to assist in many home and market production tasks.

The changing structure of African households—where more and more women becoming heads of household due to male migration or unemployment, widowhood, polygamy, or abandonment—and its effect on women's choices in childrearing are central to the contextual variables described in this report. The evidence shows that while female-headed households in rural Africa tend to be poorer than male- or jointly-headed households because of limitations to women's access to essential household labor and productive resources, these women's choices in childrearing, perhaps due to women's increased decisionmaking power within the household. In addition, the clear separation of responsibilities along gender lines—including those of nonpooling of resources between husband and wife—clearly affects women's childrearing decisions and practices.

The economic value of women's time affects their decisions to distribute time between home production (including childcare), market production, and leisure. As it becomes increasingly necessary for women, especially heads of household, to generate income, and as they earn more money, the opportunity cost to allocate time to home production increases, but the household's capacity to purchase goods and services also increases. Thus, a woman's ability and motivation to use new childrearing strategies will be greatly affected by how much of her time is best spent at home with the child or best spent earning income to provide for the child. Empirical evidence, however, has not yet clearly demonstrated the optimal time-income balance for poor women to produce well-nourished and healthy children.

On the individual level, factors examined in this report are the clear positive impact women's formal education has on their childrearing capacity. Their personal social learning history is also important, that is, the extent to which women have learned through repeated experiences that their own behavior can be effective in bringing about desired outcomes for themselves and their children—in health and in other areas.

These factors form the context in Africa in which women make decisions concerning their children, and thus affect their ability and motivation to initiate and maintain the use of child survival and development services and practices. A woman's ability, as measured by the time, money and skills she has available, is largely shaped by these contextual variables and plays an important role in initiation. Her motivation is largely a function of her assessment of the potential costs and benefits to initiating use of a practice or service and her perception of the efficacy of her own behavior in producing desired outcomes in her child. The characteristics of services offered and practices promoted play an important role in a woman's motivation to use them and include the time, money and skills they require, their perceived quality, and the nature of their outcomes (agreeableness, observability and importance).

While initiation expresses the idea of deciding to try a new service or practice, maintenance expresses the idea of repeating an appropriate strategy every time the relevant situation arises in the future. Contextual
variables have a constant influence on a woman's ability to repeat a newly learned strategy, but the consequences of the actual experience—especially if they are clearly positive or clearly negative—will be critical to her maintaining the strategy over time.

In joining the general functional aspects of the model with the specific issues affecting women's childrearing decisions in rural Africa, we produce a broad view of the factors influencing women's demand for child survival and development services and practices. While the specific nature of the factors will vary locally, the functional component of the model should prove to be a useful tool in a variety of settings. The proposed research would attempt to test the utility of the model as a means of analyzing the components of demand and as a means of generating strategies to increase women's sustained demand for child survival and development services and technologies necessary to improve child welfare in Africa.
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A. Introduction

Over the last decade recognition has been growing that the global economic growth process has failed to improve child welfare significantly in the Third World (Berg, 1981). This awareness, combined with several technological breakthroughs such as oral rehydration therapy and improved vaccines, has led national governments and international agencies to concentrate their efforts on making a few simple but potentially effective child health and nutrition technologies widely available. The particularly critical condition of millions of children in African countries has prompted AID, other donor agencies, and national governments in Africa to concentrate child survival efforts on that continent. Initially, the approach was known as the "child survival revolution," aimed specifically at reducing child mortality and focused on promoting the four GOBI technologies: growth monitoring, oral rehydration therapy, breastfeeding and immunizations.

While the infant mortality situation in Africa is still critical, it is also clear that more and more children are surviving infancy. Thus, concern for issues beyond sheer survival are receiving attention. Despite no standardized definition in the literature of what is meant by child development, most would agree that those issues would encompass the socialization, cognitive and emotional growth of a child. The recent trend to speak about a "child survival and development revolution" reflects this broader view. First, it recognizes that important child development as well as child survival benefits can be realized from technologies such as breastfeeding and growth monitoring; second, it shows that a need exists to move beyond child survival to include interventions primarily aimed at improving the physical and mental development of children, such as improved nutrition and early childhood education (McGuire and Austin, 1986).

In recent attempts to foster both survival and development of children in Africa, substantial resources have been invested in developing technologies and interventions to improve child nutrition and health, and in identifying effective mechanisms to deliver these interventions. Nevertheless, achievement of the goal to improve child welfare depends not just on assuring supply, but also on addressing problems of demand. While a
few projects have achieved high utilization rates, for the most part, the coverage of such potentially powerful technologies as immunization and growth monitoring remains disappointingly low (Akin et al., 1985; Gopolan and Chatterjee, 1985). The sustained use of such home based practices as oral rehydration therapy and enriched weaning foods seems even more difficult to achieve. The purpose of the present inquiry and proposed research is to develop a model to explore factors influencing the demand for these services and practices at the family level. The question of their effectiveness in reducing mortality and morbidity falls outside the scope of this project.

In view of current proposals to invest vast resources in technologically oriented health and nutrition strategies, attention needs to be paid to the social and economic constraints that may limit people's use of technologies, as well as the social and economic opportunities that may encourage people to use these services more effectively. Mosley and Chen (1984) call for such a focus in their recent paper proposing an integrated social science and medical framework for child survival research. Achieving significant results from child survival and development interventions depends then, not only on supply factors but also on parents' acceptance and continued use of new technologies and new behaviors in relation to their children. Thus, sustained impact depends not only on the institutionalization of services, but also on the institutionalization of new practices in millions of individuals and families.

The present report grew from the realization that both survival and development issues are critical. Nevertheless, a note of caution is necessary when setting child survival and development priorities for policy, projects, and research. While the aim of keeping a child alive and healthy is a nearly universally acceptable goal, other aspects of child survival and especially issues surrounding child development vary sharply from one culture to another, from class to class, and from family to family. It must be recognized, therefore, that what are appropriate strategies and goals for children of one country are not necessarily those appropriate for children in another. This recognition leads to an important assumption underlying the focus and development of the model presented in this paper. We assume that parental demand for new services takes place within the context of alternative
strategies and services already available in the community. A newly introduced technology or service must therefore be viewed as one more alternative from which parents may choose, rather than as the best and only answer to a child rearing problem. It follows, then, that because our approach to child rearing focuses on factors influencing parental choices and behavior, ensuing hypotheses and policy recommendations are intended to emphasize ways of enhancing parental capacity to raise their children as they see best, rather than of promoting specific strategies or technologies. This approach is intended to minimize, but cannot eliminate, Western based assumptions about what is best for child development in Africa.

From an initial emphasis on parental decision making and child rearing practices, we narrowed our focus in this paper to women, recognizing that women are the primary caretakers of children, and are therefore mainly responsible for implementing child survival and development activities. Our focus on women is not intended to minimize the role of fathers and other family members in child rearing, but rather to limit the field of analysis for the present, assuming that later versions of the model can explore more fully the roles of other household members.

This report responds to the interest of AID and other development agencies to encourage families to invest in child development by exploring what factors affect women's acceptance and continued use of newly introduced child survival and development services and practices. Despite widespread recognition of women's central role as child caretakers, little effort has been made to understand the relationship between conditions affecting women's effectiveness in this role and their demand for child welfare measures. In addition, research and project evaluations to date have also generally failed to make the important distinction between factors that influence a woman's or family's choice to try a new childrearing strategy once, and factors that influence the sustained, effective use of this strategy over time. These gaps in knowledge hamper the design of effective policy and interventions concerning children.

This report was prepared as the first step of a three phase project. The goal of the initial phase is to generate researchable questions
and hypotheses from a conceptual model based on relevant literature. The second phase will include the design and implementation of research to test the hypotheses in sub-Saharan Africa. Last, from the field test findings, the third phase will refine the model, identify further research, and suggest policy and program implications.

The research proposed should yield reliable information for policies and programs designed to improve the ability of low income women and families in sub-Saharan Africa to make informed choices regarding child welfare. This information would be particularly useful in situations where choices available to families are changing due to the widespread or massive introduction of a particular service. Policy and program interventions designed to influence women's behavioral choices would complement health, nutritional and educational strategies designed to spread technological innovations to promote child survival and development.

The remaining sections of the paper are organized as follows: Section B presents the conceptual model after briefly reviewing studies from different disciplines that were useful in building the model. Section C elaborates the African context with special emphasis on some of the community, household and individual factors affecting women's choices to utilize certain child rearing practices and services. Section D presents questions and hypotheses derived from the model and the literature reviewed, and proposes a general research methodology.
B. Conceptual Framework

The first step in the investigation was to develop a model that would be useful in studying individual and family choices for child survival and development. There was a need to go beyond the medical model's particular focus on risk factors and child disease characteristics, and broaden the inquiry to include determinants of parental choice and decisionmaking regarding the health and development of children in the Third World. The fact that it is adults who make and implement decisions regarding children means that factors influencing their childrearing behavior are critical to the ultimate achievement of child survival and development goals. Studies of decisionmaking have the option of either using the household or the individual as the unit of analysis. Because of women's primary role in childcare and the difficulties of using the household construct in Africa (Oppong, 1982; Rogers, 1983), we opted for the latter and centered the inquiry on the factors affecting women's choices to adopt child survival and development strategies.

The model was constructed to synthesize the empirical evidence on women's childcare patterns, to identify some of the main variables that affect women's choices, and to derive general predictions regarding the relationship between these variables. This section presents the model; the following section grounds the model in the context of sub-Saharan Africa.

To build the model we used ICRW's work on women's economic participation and poverty in the Third World, and on the interaction between women's economic and maternal responsibilities (Buvinic, Lycette and McGreevey, 1983; Leslie, 1985; Leslie, Lycette and Buvinic, 1986); we also drew heavily from the social science literature that has studied behavior causality in general and decisionmaking processes and outcomes in particular. Before describing the model, this section briefly reviews some of the empirically based concepts and variables from the social science literature that were particularly helpful in guiding our thinking. They fall into three broad lines of inquiry: theory and research that looks at (1) economic determinants of women's and household choices regarding childrearing; (2) psychological and social variables that affect women's decisionmaking and maternal behavior; and (3) adaptive strategies of economic producers and parents (mothers) to short and long-term economic and demographic stresses.
1. **Economic Determinants of Women's and Households' Choices**

Economic models of individual and household decisionmaking provide a solid foundation to understand some of the outcomes of women's choices regarding childcare strategies, such as fertility behavior, child nutritional status and child schooling (Rosenzweig, 1986). First and foremost, these models have tested the simple but powerful notion that women are rational and behave according to economic principles. The model is based on the premise that cost-benefit calculations play a central role in explaining women's choices regarding child survival and development. Secondly, household economic models offer the key insights that time is a basic resource of households which has economic value, and that this value affects household decisions as to how to allocate work among its members.

The economic value of women's time affects their decisions to distribute time between home production (including childcare), market production and leisure thus affecting their choices about childcare strategies with differing time demands. This economic value of women's time affects as well the time allocation of other members within the household. Women's increased participation in the market economy has price and income effects that are important in predicting women's childcare strategies. As female wage rates increase, women's cost to allocate time to home production increases (price effect) but, on the other hand, the household can purchase additional goods holding constant the time women spend in market work (income effect). The decision to spend more time at home with the child or to spend more time earning income to provide for the child has significant implications for childrearing strategies and child welfare outcomes, and has been the subject of extensive research (see for instance, Popkin, 1983; and the review by Leslie, 1985).

Based on the above research, we assume that changes in the opportunity costs of a woman's time affects her and other household members' allocation of time and her choices regarding childcare. One of the main notions underlying this approach is that the time required for a woman to implement child survival and development strategies has a cost associated with it, and that the cost will vary with the economic value of her time. It is
important to distinguish, however, the absolute amount of time required to implement a child related measure from the opportunity cost to a woman's time.

A third contribution of household models is the economic determinants of intrahousehold allocation of work and consumption. Households tend to maximize resources and, therefore, an increase in the opportunity cost of women's time, for instance, induces the family to reallocate resources within and across household activities, and use other family members to substitute for women's time in household activities. The concept of substitution is especially important to predict when girls or other female members of the family substitute for mothers' time in childcare.

Our model, however, was also enriched by theoretical and empirical arguments that criticize the neoclassical versions of household models. One of the problems with the empirical evidence from household models that measure time/income tradeoffs of women's work decisions in terms of child welfare is poor definition and measurement of women's market activities and wages (Leslie, 1985). To a large extent this is due to the underestimation of women's production both in the subsistence and market economy. In part from the failure to have more sensitive measures of women's market work, research has phrased choices in terms of either/or, work or no work, whereas women's work should be conceptualized as a continuum of unpaid through paid work, and women's work and maternal roles should be defined as interactive and complementary rather than incompatible (Myers and Indriso, 1987). Following this view, we assume that, in making choices, women do not weigh work against mothering but consider alternative ways of structuring their time to accommodate both.

The second departure from neoclassical models used to build the framework states that household resources are not pooled and reallocated equally to individuals. The intrahousehold allocation of production and consumption varies with the power over resources that individuals have or can command and, therefore, with the age and sex of individuals within the household. Conflicts emerge over allocation of household resources, and decisionmaking is the result of bargaining between individuals with
differential power (Sen, 1984; Folbre, 1984; Jones, 1987). In addition, households do not function equitably because in a large number of households men and women traditionally have separate responsibilities for household expenditures, so resources do not get pooled and reallocated.

Valuable concepts derived from this literature are how changes in women's wages, or the opportunity cost of women's time, and their control over income affect their power to decide on the allocation of household resources and what impact this has on consumption and child welfare (see for instance, Dey, 1983; Von Braun et al, 1986). To draw the model we used recent analyses of how the dynamics of the household, that is, the time availability of household members, the allocation and transfer of tasks, the household's access to resources for production and consumption, and changes in household control of income, affect the intrahousehold allocation of responsibilities and resources (Rogers, 1983). Lastly, the model also incorporates evidence on changes in household structure and their potential effects on household dynamics.

2. **Social Learning Determinants of Women's Decisionmaking and Maternal Behavior**

In making decisions about childcare, women (and men) are guided by economic and social motivations. Psychological approaches and social learning theories have offered useful analyses to predict how maternal behavior influences and interacts with child nutritional status and, more generally, to explain individual adoption of health care strategies and modern health services.

The model draws, first, on research on the psychosocial correlates of infant nutritional status. Particularly helpful was the comprehensive treatment by Zeitlin and colleagues (1985) of the characteristics of mothers that mediate child nutritional status. We built into the framework their notion that mothers' ability and motivation are critical variables in explaining the nutritional status of children, and that "successful" mothers have a history of healthy experiences psychologically and are active and
assertive when compared to the passivity or helplessness of mothers of malnourished children. We also benefitted from their analysis of the mother-child interaction and of children's impact on mothers' childcare and work choices.

Zeitlin et al (1984) and Carloni (1984) explore how the child's nutritional status affects mother's childcare strategies as well as her work status. Myers and colleagues in a series of recent papers identify the complementarity of women's and children's needs and show how the availability and quality of childcare options influences mothers' work decisions rather than the reverse. They also usefully point out that mothers are not the sole caretakers, and that analysis should focus on the role of non-maternal caretakers in childhood care and development (Myers and Indriso, 1987). The model considers the possibility that the primary caretaker may not be the mother and that the response of the child affects a woman's decisions to adopt particular strategies.

Closely related to the above analysis, we also relied on psychological theories of decision making under uncertainty that explain health seeking behavior. These theories state that people's history of reinforcement defines internal versus external locus of control beliefs which guide choices under uncertainty (Rotter, 1966). In the area of health, these beliefs develop specifically from prior experiences with sickness. If people are successful in preventing or overcoming sickness as a result of their health habits, they learn that health is controllable, that is, they develop internal versus external locus of control beliefs. People who learn that their health status is contingent on their own choices are more likely to develop positive health habits and to transmit these habits to the next generation (Lau, 1982).

On the other hand, people develop external locus of control beliefs when they learn over time that reinforcement is not dependent on their own behavior but on external or chance factors. Mothers, for instance, who have often been sick and have not been successful in arresting sickness are likely to feel that health cannot be controlled, and may generalize these beliefs to their children's health. Therefore, in predicting people's use of health
services, psychological models state that people's assessment of the likelihood that their behavior will result in a positive health outcome will guide their decisionmaking. This subjective probability is determined by their reinforcement history.

A recent review of cross-cultural research on locus of control beliefs states that locus of control beliefs shows both specificity (people can have different locus of control beliefs in different areas of behavior), and a measure of cross-cultural generality. It also concludes that groups having little access to power or material resources have more external locus of control beliefs than higher socioeconomic status groups and that women, overall, have more external locus of control beliefs than men (Hui, 1982).

The individual history of reinforcement leading to internal or external locus of control attitudes translates into two general behavioral dimensions that are relevant to women's choice behavior. The first is the behavioral dimension of learned helplessness (Seligman, 1975). When individuals learn over time that outcomes of their actions are not contingent on their efforts, they become helpless and passive. The second behavioral dimension is risk preferences and risk taking behavior. People's choices under conditions of uncertainty are a function of both the value of the outcome and the subjective probability of success. People who have learned over time that their actions lead to successful outcomes will be more likely to prefer and make behavioral choices that carry certain risks.

The model assumes that the decision to adopt new childcare practices or use new child related services requires individuals who believe that health can be controlled and who are willing to assume certain risks. Therefore, women's social learning history and risk preferences are important factors in their decisions regarding childrearing strategies.

Lastly, concepts from psychological learning theories were helpful in understanding women's choice to maintain traditional or to incorporate new childcare strategies into their childrearing practices. We used Green et al's (1980) application of these concepts to explain health behavior change. They
classify factors affecting behavior into three functional categories: predisposing, enabling and reinforcing.

Predisposing factors are those that provide the rationale or motivation for a health behavior such as attitudes, expectations of outcomes, and values. Enabling factors are those which allow motivation to be realized, such as a person's skills, resources and knowledge. Both sets of factors are antecedent to a behavior and play a large role in determining initiation of a new behavior. It is, however, the reinforcing factors occurring subsequent to a behavior that provide continuing reward, incentive or punishment and contribute to a behavior's persistence or extinction. Reinforcing factors are social rewards and punishments as well as physical and material costs and benefits, and include both tangible and imagined outcomes. Any behavior, whether it be one targeted for change, initiation or extinction, is a result of the collective contributions of these three functional categories of factors.

Green and colleagues arrange these factors in sequence. First is the motivation to act, usually triggered by some actual or perceived event—in our case, the illness of a child or the scheduling of an immunization—then the utilization of resources to enable action. Once the behavior has been performed, it produces a reaction from someone else, resulting in reinforcement and strengthening, or punishment and discouragement of the behavior. These outcomes as well as enabling factors, then, affect the motivation to repeat the behavior over time. Following this thinking, we also assume that the physical, material and/or social costs and benefits from trying out a new child survival and development strategy will affect a woman's decision to maintain the strategy over time.

3. **Adaptive Strategies of Individuals to Short and Long-Term Economic and Demographic Stresses**

A significant proportion of mothers' childcaring strategies conform to rules governing the interaction between parents and children that have been accepted or internalized by society. Le Vine (1974, 1983) has analyzed how
customary patterns of childcare reflect society's efforts to adapt to environmental pressures of the recent social past by fostering parenting practices that will produce children with adaptive abilities and attitudes. The contingencies of the environment are encoded into adaptive childrearing practices through, for example, religious and moral codes (i.e., what is seen as good parenting), to the point that parents most often are not aware of the initial environmental adaptiveness of the strategy. He distinguishes three universal goals of parents towards their offspring: to achieve their physical survival and health; to develop their behavioral capacity for economic self-reliance; and to develop their behavioral capacity for maximizing cultural values.

Priorities for achieving these goals vary according to whether the goals are seriously threatened by environmental stresses faced by the society. Thus, one can identify a major influence on parental childrearing choices by examining the kinds of stresses the environment imposes on that society. For example, in areas with high infant mortality, the overriding concern of the society is the physical survival and health of its members. Cultural mores and childrearing customs will reflect this concern without parents being consciously aware of the survival function of their practices. As environmental pressures change (e.g. as infant mortality rates decline or as urbanization expands), the cultural values expressed in childrearing practices will also change, although not simultaneously. The adaptive nature of prevailing childrearing practices helps to explain why certain modern child development services and practices appeal to parents and others do not.

Individual decisionmaking also responds to short-term economic and demographic stresses. The seasonal fluctuation of food scarcity, high agricultural work demands, high exposure to infectious diseases, loss of body weight, high neonatal mortality, malnutrition, sickness, and indebtedness tend to occur together, usually during the planting and pre-harvest period. The culmination of these stresses often forces families to make hard decisions about the allocation of time, food and other resources. The model incorporates information from research on how poor women or members of poor households respond to seasonal deprivation or stress. Women's work and time allocation as well as their breastfeeding and childcare strategies are
affected by seasonal deprivation (Chambers, 1983). Similarly, women's and other household members' decisions to adopt agricultural practices and technologies that have higher pay-offs but carry risks are usually postponed in periods of seasonal stress. Seasonality affects women's assessments of the probabilities of obtaining successful outcomes and would, therefore, affect women's adoption of child survival and development strategies (Jiggins, 1980).

4. **A Model of Women's Demand for New Child Survival and Development Practices and Services**

a. Focus of the inquiry. The model rests on the following assumptions:

(1) When considering the issue of child survival and development, the target population is children, and program efforts are done on their behalf. Yet because children themselves have virtually no control over their own health status, the agent of implementation of child oriented strategies must be those individuals who exercise the most control over the child's wellbeing. Although principal caretakers may vary from culture to culture, it seems safe to say, especially when a child is very young, that the mother or another female caretaker has the greatest degree of control over the child's health and development. We have, therefore, chosen to focus on women and the factors influencing their demand for child survival and development services and technologies.

(2) We acknowledge however, that childrearing strategies are often the result of collective decisionmaking and practices within the family. The model therefore considers the participation of fathers and other family members as one of the factors influencing a woman's childrearing practices. Fathers and other family members can affect positively or negatively a woman's ability and motivation to adopt particular child rearing practices. The model incorporates their influence both as contextual variables and as a source of consequences to the woman's experience of using a new service or practice.
(3) Since decisionmaking is a process difficult to measure, the focus of the inquiry (or the dependent variable) is women's choice behaviors regarding child survival and development, which are the observable results of women's decisionmaking processes. We use the terms choice and decision interchangeably in the text.

(4) Because the dependent variable is the result of choice among alternatives, the framework will not be useful to study the childcare strategies of women who live in extremely impoverished environments and have no access to resources or alternatives to make choices such as those living temporarily in refugee camps. The majority of poor women in the Third World however, do have some alternatives to choose from in fulfilling their productive and childcare roles despite their economically marginal positions.

(5) Women's childrearing strategies include the adoption of new practices and the utilization of modern services and technologies as well as the continuation of functional traditional childrearing practices. While recognizing the importance of encouraging the continuation of current adaptive practices, the present use of the model is to explain choices made to initiate and repeat newly introduced child survival and development strategies. This present usage however, does not assume that new necessarily means better. Indeed, the focus of the model on factors influencing choices among alternatives implies that a new strategy is to be considered as an alternative to existing strategies.

b. The model. Our model attempts to explain the factors that influence women's choices (1) to initiate new childrearing practices or utilize new child based services or technologies, and (2) to repeat, maintain or adopt these choices over time. It investigates factors that determine women's choices to initiate utilization of childrearing practices and services; it also identifies how the consequences of these initial decisions influence women's choice to adopt or incorporate these behaviors as part of their childrearing strategies.

The model suggests that, in addition to the factors determining the initiation of new childrearing strategies, the experience of trying out the
practice or using the service determines whether these behaviors are sustained over time. If the experience of using the practice conforms to women's expectations, the factors determining initiation and continuation will be the same. In many circumstances, however, the experience of trying out a new practice or using a new service may produce unanticipated positive or negative consequences which will affect women's decision to repeat the new practice or continue to use the new service. In this latter case, maintenance will be a function both of the factors acting as antecedents to and those acting as consequences of the initial choice.

Figure 1 presents the model and shows the factors explaining women's decision to initiate a childrearing practice or use a child related service at one point in time \((T_1)\), and those explaining their decision to maintain or adopt a practice or service at a second or later point \((T_2)\). We measure women's behavior \((B)\) as evidence of their choice at \(T_1\) and \(T_2\).

The model proposes that women's choice to initiate a practice or use a service is a function of their ability and motivation at the first point in time; that is:

\[ B_1 = f(a_1, m_1) \]

where \(B_1\) is the behavior at \(T_1\); \(a_1\) represents a woman's ability at \(T_1\); and \(m_1\) represents a woman's motivation at \(T_1\).

The choice to maintain the practice or continue to use the service after women have tried it out once (or several times) is a function of their ability and motivation at \(T_2\); that is:

\[ B_2 = f(a_2, m_2) . \]
Factors Explaining Women's Adoption of Child Survival and Development Strategies

FIGURE 1

Contextual Variables:
- Community
- Household
- Individual

Characteristics of service or practice

Choice to initiate practice or use of service
- Motivation 1
- Ability 1

Experience w/service or practice

Choice to maintain practice or use of service
- Motivation 2
- Ability 2

T₁ -> T₂
In addition, \( B_z \), the behavior at \( T_z \), is a function of ability at \( T_z \) that remains unchanged from \( T_1 \) and motivation at \( T_z \) which is a function of both motivation at \( T_1 \) and the experience \((e)\) of having tried out a practice or used service; that is:

\[
a_L = a_z ; \quad m_L = f(m_z, e)
\]

Referring to Figure 1 on the previous page, women's motivation at \( T_1 \) is a function in part, of their expectations regarding the characteristics of the service or practice, and is therefore indicated in the figure by a dotted line. Women's motivation at \( T_z \) is a function of their expectation and their actual experience with the practice or service, and this is indicated by a solid line.

If women's experience meets their expectation as to the outcomes or immediate consequences of their choice, then women's motivation at \( T_z \) remains unchanged from \( T_1 \). If women have been able and motivated to initiate a new practice or start using a new service, they will continue to do so if experience meets their expectations or if experience demonstrates some positive results. Any discrepancy, however, that women perceive between their expectations regarding the outcomes or immediate consequences of their choice and their actual experience will change or affect their motivation to maintain their decision to use the practice or service over time. Discrepancies or unanticipated consequences can be positive and enhance women's motivation or they can be negative and discourage women from adopting new child survival and development strategies especially when currently used traditional practices produce predictable results.

The above predictions assume that the factors affecting ability remain constant at \( T_1 \) and \( T_z \). It is possible, nevertheless, that contextual factors, such as family structure, seasonal stresses or the woman's health, may change between \( T_1 \) and \( T_z \) thus altering the woman's ability.
c. **Factors explaining initiation.** Individual, household and community level variables provide the context in which women make decisions and affect their ability and motivation to initiate a new childrearing practice or to use a new child related service. These include the community factors of seasonal stresses of food supply, work demands and social support strategies available to women; household structure and intrahousehold dynamics; and individual factors such as the nature and type of women's work, their level of formal education, and their social learning history.

We have identified three important components of ability as the time, money and skills a woman has available to carry out childrearing strategies. Her ability is shaped in large part by the contextual factors outlined above. Her choice to initiate a new behavior, however, not only depends on ability but also on motivation. Rational and social factors affect a woman's motivation, that is, affect the way she processes information or assigns values to different alternatives before making a choice. On the rational side, a woman's motivation to try something new depends on the expected returns from the action. These returns vary with expected short and long-term, direct and opportunity costs and benefits relative to those incurred by currently used practices. The social side of motivation includes women's perception of the efficacy of her behavior (in producing desired outcomes) and her risk-taking preferences.

A woman's motivation is determined both by contextual variables and the characteristics of the practices, services and/or technologies. They affect a woman's perception of the direct and opportunity costs entailed, as well as expected short and long term benefits accrued to herself, her child and the family. Services can vary according to the ability they require; their cash and time costs to the user; the structure, quality and form of delivery; and the nature of the outcomes in terms of their importance, observability, and positive/negative quality. Practices vary according to the behavioral requirements needed to carry them out, that is, the complexity, familiarity, compatibility, and agreeableness of the action; and the nature of the outcomes (importance, observability, immediacy, positive/negative). Because these characteristics act abstractly on motivation to initiate through expectations, we have indicated this relationship with a dotted line in the figure.
Another important component of motivation is what we call the social aspects of motivation: the attitudes and behavioral styles relevant to choice behavior that are shaped by a woman's past successes and failures in coping with her environment in general, and in coping with her health and raising her children in particular. The interaction of the factors described above acting on motivation and ability largely determine whether a woman will choose to try a new service or practice.

d. Factors explaining maintenance. While initiation expresses the idea of deciding to try a new practice or service for the first time, maintenance is the decision to repeat or adopt an appropriate childrearing behavior every time the relevant situation arises in the future. The right hand side of Figure 1 shows the mechanism proposed to explain why women adopt or repeat learned child survival and development strategies. The main difference between this and the factors affecting women's decision to initiate is that motivation is now a function of experiencing rather than expecting short-term consequences or outcomes of the choice. Women's motivation to adopt a child survival and development strategy will change if they perceive a discrepancy between expected and actual outcomes.

The characteristics of the practice or service as well as the functional nature of the experience determine the outcome or short-term consequence. Discrepancies between women's expected and actual outcomes are likely to center around the costs of the practice or service. It is likely that women underestimate (or are misinformed about) time and money costs of practices and services. In addition, it is likely that women will often fail to anticipate that their decision affects their ability to do other things. Other unanticipated consequences include the quality of attention if it is a service, or the complexity of a task if it is a practice, and both how the child responds to the action and how the father and other family members react to the mother's choice to use the service or practice.

Functional characteristics of the experience are whether outcomes are immediate or delayed, concrete or abstract, and whether they are perceived as important, positive or negative. Immediate, positive, important
and observable consequences are the most powerful in maintaining a newly learned behavior. Abstract and delayed consequences have relatively less influence initially, and become more important only as a behavior is repeated over a long period of time.

Health behaviors can be classified as either remedial or preventive. Remedial health behaviors are those which are triggered by real or perceived illness and usually produce reasonably clear positive or negative changes in a person's condition. If effective, many remedial health behaviors are relatively easy for people to maintain, e.g., using a bandage on a wound or medicine to suppress a cough. Preventive health behaviors, on the other hand, have as their primary outcome the non-occurrence of disease or death in an otherwise healthy person, so the major outcome is both abstract and delayed. In the immediate, preventive practices produce few if any observable, positive results, all the while costing the individual time, money and effort. When engaging in prevention then, it is difficult for a person to see any relationship between his/her efforts and the long term positive outcomes.

In terms of program planning, the analysis of maintenance shifts emphasis from altering antecedents of target behaviors to identifying and intervening on their consequences.

C. A Review of Factors Influencing Women's Ability and Motivation to Adopt Child Survival and Development Strategies in the African Context

The model presented in the previous section suggests in general that a woman's decision to adopt a new strategy regarding child survival and development is a function of both her ability—the time, money and skills she has and can use—and her motivation—her personal appraisal of the value and outcomes of her decision. A woman's ability and motivation to adopt new child survival and development strategies are influenced by variables that operate at the individual, household and community levels. Her motivation is also influenced by characteristics of the child survival and development technologies themselves such as their price, location and quality. This
section identifies and reviews the evidence available on these variables
first, in order to understand the context in which a woman makes choices
regarding the health and development of her children; second, to examine the
effects of these variables on the effectiveness of a woman's childrearing
strategies as revealed through measures of child schooling and child health
and nutritional status; and third to explore how these variables affect
a woman's ability and motivation directly and, therefore, influence her
choices to adopt new child survival and development strategies.

At the level of the individual woman, variables we have chosen to examine
are the nature and extent of her work, her social learning history and her
years of formal schooling; at the level of the household, the position of
women in the structure of the household and the allocation within the family
of work, financial and childrearing responsibilities; and at the level of the
community, women's social support networks and the seasonal fluctuation of
resources, work demands and illnesses. These variables were chosen because
they appeared to be particularly relevant to African women's physical,
economic and psychological capacity to ensure the well being of their
children. This report therefore does not intend an exhaustive treatment of
all possibly relevant variables on childrearing such as population density,
kinship patterns, disease incidence, specific crop patterns, and specific
health problems of women as well as of children. While not treated in this
present report, we recognize important regional and local differences on these
variables and therefore would consider them in detail when applying the model
to a specific locality in the research phase of this project. In addition,
this review of the empirical work focuses on findings from sub-Saharan Africa
and uses data from other regions only to complement the African studies.


The centrality of women's work to family survival and agricultural
production in sub-Saharan Africa is well known and documented. For the
purpose of this review, the relevant empirical questions more difficult to
answer are the changes in women's work patterns as the result of recent
demographic and economic pressures, and the relationship between women's work,
intrahousehold allocation of work and consumption, and child health and nutritional status. Below we examine first, recent data on the changing nature of women's work and its implication for women's available time and money to utilize child survival and development services. Second, we examine the existing evidence on the effects of women's income generation activities on their time and money and on child nutritional status, to explore how women's income and the opportunity costs of women's time affect their childrearing choices.

a. Women's Work in sub-Saharan Africa. Calculations based on official figures suggest that just under half of the rural labor force (including agricultural producers and wage laborers) in Africa is female (Dixon, 1983). Impressive as these figures are in comparison with those for other regions, the statistics still grossly underestimate women's work in food and cash crop production (Guyer, 1986). It is estimated that 80 percent of food production in the region is in the hands of women, and that about half of the household food budget is contributed by women (Savané, 1985). In addition, women predominate in food processing and undertake marketing of agricultural surplus and off farm income generating activities.

Women's involvement in Africa's agricultural system in general, and in food production in particular, is the result of a number of factors. Relative equality in the distribution of landholdings and predominance of smallholder agriculture, both traditional features of land distribution patterns in Africa, promote the demand for women farm workers (Dixon, 1983); this demand is further increased by the low technology, labor intensive features of most farm and household tasks in rural Africa. Lastly, the supply of female farm labor is strengthened by the traditional separation of functions within African families that assign to mothers the freedom and responsibility to provide for and socialize children, especially when they are small. Agricultural work enables women to fulfill their central role as mothers by providing the main source of food for family consumption. Fathers are usually in charge of paying for school fees and overseeing children's religious and political education (Guyer, 1986).
Cultural and religious rules governing behavior have tended to reflect or respond to the importance of women's agricultural work. For instance, except for some rural areas and among some wealthy urban families, Islamic women in sub-Saharan Africa are free to circulate unveiled and to conduct their own business in the fields and markets. In those few rural areas where they are kept in seclusion, women do little work in the fields during their reproductive years, but are still economically active, using their children as intermediaries in trading with the outside world (Longhurst, 1982; Schildkrout, 1982).

Until recently, women were able to fulfill this duty as family food providers by growing food crops for subsistence. However, an emerging trend in African agriculture is women farmers' increased need for cash and for complementary on and off farm market work to supplement food production. With increasing land and population pressures and declining per capita food production, poor rural households, in particular those that have little access to fertile land and to agricultural labor, are increasingly dependent on additional income to meet household food needs (Savane, 1985; Mascarenhas, 1983; Gozo and Aboagye, 1985). The average African woman farmer can no longer afford to grow food for subsistence only.

Women hire themselves out as casual laborers in tea and coffee plantations (Vaughan and Chipande, 1986); market food surplus or grow cash crops along with food crops; and/or engage in informal sector activities to provide critical added income to household budgets. For instance, along the coastline in Ghana and Kenya, many women combine agricultural work with fish processing and selling to generate additional income (Gordon, 1986; Pala Okeyo, 1979). Two-thirds of the full time farmers in Malawi are women; in their sample of Malawian women farmers, Hirschman and Vaughan (1983) found that 91 percent earned some cash income through trading and paid field work over the year to supplement yields from their own fields. Emerging social differentiation in access to land in the agricultural sector and shifting patterns of male labor migration to less profitable destination points (from international to rural-rural migration) are likely adding to women's need to enter the market economy.
A closely related change in gender roles in African agriculture, suggested in the recent literature, is the breakdown of the traditional sexual division of labor in farm production. Africa has complex and very localized production systems that vary with ecological conditions and the nature and mix of crops. These systems specific to a region will be closely examined when identifying the factors influencing women's childrearing decisions. Savané (1985), for instance, describes two agricultural economies, cereal and tuber based, that define different traditional roles for the sexes in agricultural production. In the labor intensive cereal based farming systems, women and men grow crops for both home consumption and sale and, when men migrate, women take over farm production. The dualistic production system for tubers instead relegates women to growing food crops while men grow cash crops. However, Savane notes that the need for added household income has recently moved women into cash crop production in tubers as well.

Similar changes in the traditional division of labor by sex in agriculture have been reported by Barnes (1983) for Kenya, and by Dey (1983) for a number of countries that have introduced irrigated rice systems. Irrigation, for instance, has increased the demand for female paid and unpaid work in rice farming, thus increasing the time women spend working in rice fields. However, increases in women's labor inputs have frequently translated into decreased control over income from rice production since men have generally controlled access to and returns from irrigated fields (Dey, 1983).

Relevant research questions from this increased participation in the market economy and the changes in the gender division of work are the effects on a woman's home production and childcare responsibilities, her food production tasks, her and her husband's control over the returns from agricultural production, and the effects of these changes on family food availability and children's welfare.

In terms of this project, recent evidence suggests, first, the need to be aware of the specificity of women's and men's work in different farming systems and of the increasing cash needs and changing work responsibilities of women in African farms. Second, it suggests that their incorporation into the market economy provides African women farmers with
money needed to adopt new child survival and development strategies, but at the same time increases the opportunity costs of women's time, probably decreasing the absolute time they have available to pursue new behaviors. However, the shift to market work by women engaged in particular types of subsistence agriculture may instead relieve some of their work burdens and increase the absolute time they have available to pursue new practices and services.

The empirical question in terms of the model presented here is how the time-money tradeoffs of women who join the market economy influence their ability and, therefore, their decisions to try out new child survival and development strategies. In order to formulate specific hypotheses, the sections below examine, first, the empirical evidence on the effects of women's market work on child nutritional status and, second, the project evidence on the effects of women's market work on their self-confidence.

b. The effects of women's market work on women's childcare time and on child nutritional status. The effect of women's work patterns on their children's welfare has been an issue of considerable interest in recent years. The main assumptions have been (1) that increasing labor force participation would cause women to spend less time on childcare resulting in a negative effect on child welfare and/or (2) that increasing market work would raise household income, and in particular would increase the cash available to women, thus producing a positive effect on child welfare.

In general, studies have found that an increase in the amount of time women spend working does not necessarily decrease the amount of time they spend on childcare, but rather decreases their leisure time (Birdsall and McGreevey, 1983; Marchione and Helsing, 1984). A recent review of over 40 studies that looked directly at the relationship between women's market work and infant feeding practices or child nutritional status lead to no easy generalizations about the direct effect of women's work on child nutrition (Leslie, 1985). As far as infant feeding practices are concerned, the studies reviewed by Leslie found almost no differences in initiation or duration of breastfeeding between women who do market work and those who do not; the main difference is that the "working" mothers tend to begin mixed feeding at an
earlier age. The studies concerning the relationship between women's market work and child nutritional status found evidence of both positive and negative effects, in part because both type of occupation and age of child have confounding effects. The few studies that disaggregated by age of child, for example, tend to suggest a negative effect of maternal market work (particularly work away from home) on child nutritional status during the first year, and a positive effect after that.

Unfortunately, relatively few studies on the relationship between women's market work and infant feeding practices or child nutritional status have been done in Africa. Two studies from Nigeria, one from Kenya and one from Tanzania, examined the relationship between women's work and infant feeding practices in urban settings. None of these studies found mother's work status to be a major determinant of infant feeding practices. To the extent that a relationship was found between women's work and infant feeding choices, what appeared to be most important in determining duration of breastfeeding was not whether or not a woman was in the labor force, but what kind of work she did, in particular whether she worked in the formal or informal sector, with women in the formal sector tending to stop breastfeeding sooner.

In a study of Yoruba women in Ibadan, Nigeria, Di Domenico and Asuni (1979) found that 39 percent of women in the formal sector compared with only 26 percent of women in the informal sector had stopped breastfeeding before six months. Bamisaye and Oyediran (1983) found that duration of breastfeeding was inversely related to salary level in a study of female employees of a large health clinic in Lagos. And in a study in Nairobi, Winikoff et al (1986) found a higher initiation of breastfeeding, but a shorter duration among women with maternity leave compared to those without. The most striking findings came from a cross-national study of determinants of infant feeding practices in Dar es Salaam, Tanzania, Colombo, Sri Lanka, and Sao Paulo, Brazil (Marchione and Helsing 1984). In Dar es Salaam they found no significant difference in initiation or duration of breastfeeding between formally employed and houseworking mothers, whereas women working in the informal sector breastfed significantly longer than women in either of the other two groups.
As far as infant feeding practices in Africa are concerned, we can tentatively conclude that women's labor force participation or market work is not a major factor in determining these practices. A majority of urban women and virtually all rural women initiate breastfeeding. To the extent that earlier introduction of breast milk substitutes and shorter duration of breastfeeding in urban parts of Africa have increased, this trend cannot be attributed simply to women going out to work. A very small number of women (particularly mothers of young children) are employed in the formal sector, and it is only higher paid, formal sector jobs that show any significant relationship to reduced duration of breastfeeding.

Only one of the studies of the relationship between women's work and child nutrition reviewed by Leslie (1985) was from Africa, but it is particularly relevant to the issues of concern in this paper because it was carried out in a rural setting unlike many of the studies reviewed above. Tripp (1981) looked at economic determinants of nutritional status in a sample of 196 children aged 4 months to 5 years living in northern Ghana. All of the households were subsistence farm households but about a third of the mothers and fathers also worked as traders. Tripp found that both father's and mother's trading activities were positively related to the nutritional status of their children, and that, of all the variables tested, the trading activity of the mother was the one most significantly associated with better child nutrition. Tripp hypothesized that trading activity, particularly their own trading activity, gave women cash to spend on improving the quality of their children's diets.

The hypotheses that emerge from these admittedly quite limited number of studies of women's work and child nutrition in Africa are: (1) that women's market work does not significantly reduce maternal childcare time, particularly time spent breastfeeding, except perhaps among the very small number of urban women with preschool age children who are employed in the formal sector, and (2) that a positive effect of women's market work on child nutrition can be expected when women engage in productive work that provides them with sufficient cash to spend.
c. The effects of market work on women's motivation to innovate.

The women in development literature has stressed the positive effects of women's generation and control of income on their self-confidence. This proposed relationship between income generation efforts and self-confidence has emerged from recent project experience but has yet to be empirically tested. To explore more systematically the validity of this hypothesis, we reviewed available evaluations of income generating projects for poor women in the Third World. Table 1 in the appendix summarizes 21 project evaluations (five of them in Africa) and quotes the evaluators' assessment of the effects of income generation on women's self-confidence. Seventeen evaluations mentioned project effects on participants' sense of self and, with the exception of a project that failed, all others mentioned positive effects of income generation on women's sense of control over the environment, assertiveness, confidence or security in themselves.

The terms used by the evaluators translate readily into increases in women's internal locus of control beliefs and preferences for taking risks. If these effects of women's market work on their motivation are reliable, the question that is relevant to this report is whether these effects generalize beyond the economic sphere to increase women's sense of control over their childrearing strategies. Increases in women's income would then have the double effect of both increasing their ability as well as their motivation to innovate in the area of child survival and development.

2. The Relationship Between Women's Education and Child Survival and Development Strategies

The evidence is fairly conclusive that mother's education is strongly related to positive child development outcomes, such as childcare, child nutrition, and child health. Mother's education is more important than father's education in reducing child mortality (Cochrane, Leslie and O'Hara, 1982) and the jump from primary to secondary schooling for women is twice as important as that from illiterate to primary schooling (Caldwell and McDonald, 1982).
The questions of interest here are what variables mediate this relationship and, more specifically, how mother's education affects her ability and motivation to try out new child survival and development strategies. The section briefly reviews recent trends in women's schooling in sub-Saharan Africa, summarizes related evidence on the relationship between maternal education and child health, and explores the effects of women's education on ability and motivation variables.

a. Women's access to education in sub-Saharan Africa. A majority of the countries in the region made impressive achievements in terms of educational opportunities in the last two decades. Primary school enrollments grew dramatically for boys and girls, but girls were still not able to "catch up" with boys in primary education (Chamie, 1983). Sex inequalities in educational opportunities have continued in the eighties, along with an overall deterioration in the capacity of educational systems to satisfy increasing demand for schooling and, therefore, in the quality of education. Girls also drop out of school more often than boys. Data from 1980 show that before the last grade of primary school, the dropout rate for girls was equal to or lower than that for boys in only 6 of 28 countries covered (UNESCO, 1984).

Women's participation in the educational system is likely to be stagnating at present as a result of increased school fees, declining public expenditures in education, declining per capita income, and women's need to work for wages. Girls probably substitute for mothers who work for wages in home production and childcare activities. One can, therefore, expect that women trying out new child survival and development strategies will vary in their formal educational background within the lower ends of the educational range. Younger women will have more formal education than older women. One can further anticipate that some of the women in charge of childcare tasks are sisters or other female relatives rather than mothers. The next section examines how variations in women's education affect child development outcomes.

b. The relationship between maternal education and child health. The positive effects of parents', and especially mothers' education on child
nutritional levels and infant survival rates can be mediated by a number of variables ranging from biological variables such as mothers' better health producing healthier children; to economic variables, in particular parents' higher income; and to cognitive variables, such as mothers' better health knowledge or changed maternal attitudes leading to better childcare.

First, some evidence shows that educated women are healthier, and thus have healthier infants. In a study in Zaria in northern Nigeria, Harrison (1979) found that educated women start childbearing at the safest time, receive antenatal care, and report early for treatment when things go wrong. Virtually all educated women received antenatal care, whereas only 65 percent of the illiterate did. Harrison also found that the factors commonly associated with low fetal birthweight were early teenage pregnancy, illiteracy, short maternal height, socioeconomic hardship, and non-acceptance of antenatal care. In Bangladesh, (Chowdhury, 1982) evidence indicates that because of their greater height and better fitness, educated mothers bear heavier infants with a greater chance of survival. Ware (1984) speculates that educated women receive better nutrition at home because they do not have taboos about consumption of protein during pregnancy, seek antenatal care more frequently, do less heavy manual labor, or are simply healthier than uneducated women.

Second, educated parents have higher income with which to purchase health for their children. An analysis of the evidence suggests, however, that income differences cannot explain all of the effect of education or perhaps even as much as half. Controlling for urban-rural differences did not eliminate the effects of education (Cochrane, Leslie, and O'Hara, 1982). Hobcraft, McDonald, and Rutstein (1984b) using data from World Fertility Surveys (WFS) in 28 countries, support the importance of parental education when controlling for father's education, mother's work status, husband's occupation and urban-rural residence. (An exception was found in an analysis of sub-Saharan data which stressed the importance of the father's education because of the low levels of female education in certain regions.) Researchers need to disaggregate income by sex and explore effects of mothers' education and income on child health. Supporting the effect of education independent of income, other cross-national studies have shown that literacy
and other measures of education are more closely related to life expectancy at birth than per capita income or the number of doctors per capita (Psacharopoulos and Woodhall, 1985).

Ware (1984), however, emphasizes that it is difficult to separate the effects of income and education on childcare, since intra-household decisions about resource distribution (e.g., food) are probably different when enough resources are available than when difficult choices have to be made about who will have access to very limited resources. She also suggests that food allocation among children may depend less on the education of the mother than on the prospective education of the children, meaning that investment in a child who is expected to go to school may be greater than in a child who is expected to work.

Third, a major theory regarding the strong inverse relationship between maternal education and child mortality states that education affects women's knowledge about and/or attitudes toward child health. In examining the impact of education on maternal behavior, Cochrane (1979) emphasizes the actual level of knowledge gained from schooling. She argues that the mortality rate is the product of two factors: the level of knowledge about ways to combat diseases and the means available for implementing that knowledge. Education helps to determine both the level of knowledge and the way through which it can be transmitted and utilized. Ware (1984) stresses the relationship between the educational level of mothers and their preference for Western-style medical services. She hypothesizes that this link is a result of educated women no longer following traditional beliefs and remedies of their mothers-in-law and instead taking their children to modern health services.

There appears to be an important interaction between the provision of education and health services. Using Nigerian village data, Caldwell and Caldwell (1985) suggest that the equivalent gain in life expectancy at birth was 20 percent when the sole intervention was easy access to adequate health facilities for illiterate mothers; 33 percent when it was education (as measured by mother's schooling) without health facilities; and
87 percent when it was both; this combined improvement is not merely additive nor multiplicative but greater than either (Caldwell, 1986, p. 204).

Caldwell (1979; 1986) offers three explanations how attitude change could mediate the relationship between mother's education and child health. First, educated mothers break with tradition and become less fatalistic about illness. They adopt more readily new alternatives in childcare and health treatments available in modern society. Second, educated mothers are better able to manipulate modern the world (e.g., knowing where facilities are, and gaining the attention of doctors and nurses). The third explanation is that an educated woman in the home changes the traditional balance of family relationships and can maximize equitable resource distribution in the home. LeVine (1980) similarly proposes that schooling's effects on maternal behavior might be mediated by the following cognitive changes: (1) increases in women assertiveness and self-regard, (2) growth in women's cognitive skill or their ability to see how health care can affect child welfare, and (3) new information on how to interact with children based on their experience with teachers' behavior and rewards.

c. Effects of schooling on women's ability and motivation to adopt child survival and development strategies. The regularity and strength of the relationship between maternal education and child health indicate that schooling is a powerful antecedent to mothers' adoption of new child related strategies. In terms of the model, we suggest that education affects both women's ability and motivational variables. In terms of ability, we suggest that schooling increases principally women's knowledge about childrearing strategies and perhaps their ability to maximize time allocation. Education should have less of an influence on increasing the money women have available since the evidence shows a generally weak relationship between women's education and their income earning capacity at both lower and upper ends of the educational scale.

In terms of motivation, we suggest that schooling changes women's beliefs about the efficacy of their own behavior to bring about a desired outcome, which leads to a sense of control over their environment. By teaching girls (and boys) that success depends on efforts, schooling is likely
to help girls overcome a history of learning that lead to external locus of control beliefs, low-self regard, and, therefore, helplessness and risk avoidance behavior. Thus, schooling may encourage women to adopt new childrearing strategies by increasing their sense of internal control and their risk taking preferences.

3. Women's Social Learning Experiences in Health

Personal past learning experience will play an important part in explaining women's motivation to adopt new child survival and development strategies. As discussed in Section B2, an individual's experiences of her own behavior producing positive results shape an internal locus of control in an individual. Locus of control is often used to predict how active or passive a person is in seeking solutions to problems, health problems as well as others. From the literature on women in Africa, for example, one is struck by the generally active role women take in providing for the needs of their families. The number and variety of farming strategies to diminish seasonal stresses of food supply and of income generating schemes to supplement household resources used by individual women throughout a lifetime make an impressive picture of continual, ingenious efforts to utilize limited skills and resources to meet family needs. There are individuals who, in the face of uncontrollable environmental events (rain and drought, insect pests, food price variability), do all they can do to exercise some control over outcomes.

Lau (1982) hypothesizes that past experiences of success in controlling health and disease would shape a health locus of control, which would predict how actively a woman seeks medical care for illness and engages in appropriate health (preventive) behaviors. Unfortunately, infectious diseases and malnutrition are so pervasive in many regions of sub-Saharan Africa that most women's past experience is characterized by a high prevalence of illness and chronic malnutrition in themselves and in others. If we hypothesize that this situation has taught many women that certain diseases are not controllable and must simply be tolerated, we would expect that an internalized attitude of powerlessness over aspects of their own health and that of their children would be common.
Women's utilization of curative health strategies for children however, is more complex than just their degree of internal locus of control for two reasons: One, is the nature of most health and childcare behaviors themselves, in that it is often difficult to see the link between engaging in those behaviors and the resulting good health and development of a child. Health related strategies can be characterized as remedial, where behaviors are triggered by an observable condition of illness or discomfort and the outcome is the reduction or elimination of symptoms; or as preventive, where there is rarely a clear triggering event and the outcome is the (invisible) non-occurrence of a disease. In cases where a woman's behavior leads quickly to an observable reduction in symptoms, the link between her efforts and the outcome is relatively easy to observe, as in giving fluids to a severely dehydrated child. Unfortunately, most of the strategies for improved health and nutrition currently being promoted are preventive in nature. When positive outcomes to these strategies are either delayed in time or must be taken on faith (i.e. the avoidance of morbidity or mortality), it is hard for the mother to attribute them directly to her efforts. To make matters even more unfavorable to seeing cause and effect, due to the high incidence of disease, a mother may successfully immunize her child against one disease only to see him die later from another (Guthrie et al., 1982).

The second important influence on utilization of child survival and development services and practices is that medical services offered by country governments and Western donors must be seen as alternatives to the local system of services and practices already in use. Individual behaviors related to health are supported by the existing health system, and people will evaluate new services and ideas relative to what they currently have available. Studies looking at utilization of modern versus traditional services show that people use a mixture of strategies and services according to their assessment of certain characteristics of the services such as availability, time and cost requirements, and the reputation of the service or practitioner. The perceived causes and severity of the disease, level of satisfaction from previous usage, and the user's current time and resource constraints are also taken into consideration (Maclean, 1979; Hirschmann and
Thus, their utilization is in part affected by the alternatives available.

Two important differences between Western and traditional based services emerge from the literature which play a role in the choices people make about which to use. One is in the scope or focus of treatment, and the other is in the resulting relationship between patient and practitioner. A Western trained practitioner is often seen as focusing primarily on the biological basis of a patient's complaints, where as the traditional healer usually takes a more holistic approach, treating spiritual as well as physical needs (Maclean, 1979). The relationship between practitioner and patient tends to be more impersonal with the Western approach, both because of the nature of the practitioner's enquiries and the fact that he or she is most likely not from the immediate locality. A traditional healer, on the other hand, learns much more about the patient in the course of treatment, and being from the same village, usually has complex social relations with the patient which could affect outcomes or payment. Therefore, characteristics which often enter into a decision to use one or the other type of service depend on whether treating spiritual matters is considered necessary or desireable in that particular situation, and to what extent social relations are seen as enhancing or interfering with a positive and less expensive outcome (Maclean, 1979).

Thus, from a social learning perspective, a woman's motivation to utilize new child survival and development services and practices is a complex interaction of her past experiences in controlling disease or in maintaining healthy conditions for herself and others, the nature of the required behavior itself (whether curative or preventive), and in her personal assessment of the effectiveness of the alternatives before her—usually some combination of Western-based, traditional healer, or home treatment.
4. **Changing Structures and Dynamics in Rural African Households**

The reality of families and households in Africa is very different from the constructs of families and households that have been used previously in development theory. Researchers now agree that the use of ideal constructs has hampered understanding of family behaviors and that, especially in Africa, the household is not a useful unit of analysis (Oppong, 1983; Rogers, 1983). In studies of decisionmaking, the individual is the main alternative unit to the household, but the study of individual choice must take into account the nature of other institutions in the individual's environment and the way these institutions impinge upon individual decisionmaking (Guyer, 1986). Understanding the family system in which a woman lives and the patterns of obligation and attachments it entails are crucial in the analysis of her childrearing decisions.

This section explores two aspects of this family system: how the characteristics related to the structure (headship) and dynamics of households affect women's ability and motivation to choose child survival and development strategies. Emphasis is placed on the changing nature of families and households. This analysis is preceded by a brief review of the limitations of the concept of the household in sub-Saharan Africa.

a. **The changing nature of African households.** The membership and boundaries of households are difficult to define in Africa. Changes in household membership and fluidity in the boundaries of what constitutes a household are in part the result of the existence of polygamous unions. In such households the husband usually resides in more than one household, often rotating households on a regular basis. Co-wives maintain separate households, but might live in the same or different compounds or villages (McCormack, 1982). The fluidity of these arrangements is also the product of high seasonal mobility of male labor that leads to variations in household composition; high marital instability; and the prevalence of kinship or tribe over conjugal ties which blurs the definition of the domestic unit and encourages support networks that cross-cut conjugal relationships (Guyer, 1980; Youssef and Hetler, 1983; Moock, 1986). Matrilineal versus patrilineal
descent lines define allegiances to kin and family networks. These descent lines also have a significant influence on household structure.

In terms of household function and dynamics, in Africa, both the boundaries of the household as the minimum unit of production and/or consumption can vary as well as the intrahousehold allocation of production and consumption. The unit of production can be the household or the compound (a group of households sharing common land). The unit of consumption, when there is extensive exchange of foods between households, can be the village rather than the household or the compound (Jiggins, 1980). Variation in the distribution of work and welfare gains within households is reinforced by the fact that, traditionally, household members have independent plots to farm, derive independent income, and have separate budget management responsibilities (Moock, 1936). Despite the autonomy of producers within households and their tendency not to pool household budgets, rural Africa has been guided by what is called "the economy of affection" which promotes networks of support and cooperation within and across smallholder households (Hyden, 1986). These networks, defined by tribal, kinship or conjugal ties, affect the function and balance of power within households.

The complexity of domestic units, households, and families in sub-Saharan Africa is compounded by recent demographic and economic changes that further affect the structure and dynamics of these changing institutions. The economic contraction that most African economies have experienced recently, combined with population growth and deterioration of agricultural lands, has increased social differences in access to land, the dependency of smallholder households with little access to fertile land on outside sources of income, and seasonal labor migration. These macro level changes have also eroded traditional security systems that fostered allegiances within and between domestic units (Green, 1986; Gozo and Abogaye, 1986; Savane, 1985).

Economic downturns seem to be undermining social support networks in the matrilineal belt in Central Africa (Schoepf, 1983), as well in southern African countries as a result of rural-urban male labor migration (Jiggins, 1980). Polygamy is disappearing in Botswana and with it, an associated weakening of men's responsibilities to women (Kossoudji and
Mueller, 1983). In Nigeria and Senegal, polygamy was strengthened with economic prosperity in the seventies (Newman, 1984), but it is likely disappearing with economic contraction in the eighties. As a result of the weakening of traditional support systems, the increased mobility of labor, and the decrease in the formation of polygamous households, the economic recession seems to have contributed to the formation of poor smallholder or almost landless households headed by women in rural Africa.

b. Family structures and women headed-households in sub-Saharan Africa. Especially in African societies with matrilineal systems of descent, women headed households or compounds have traditionally been common. Many of them are headed by widows who inherit access to land and other productive resources. These women headed households are not the poorest. The separate management of a domestic unit by a co-wife is another basis for the traditional formation of women headed households (Clark, 1984).

The important phenomenon in the last decade, and the one that is relevant to this study, is the increase in the number of impoverished households headed by women in rural sub-Saharan Africa. Indications are that these families form the new rural poor in Africa. Characteristics of these households and the origin of their poverty, as revealed by recent evidence, are relevant for the model proposed in this report. The poverty of these households makes them a priority target group for health and development interventions. But the particular constraints of households headed by women are likely to affect the time and money women have available to demand new child development services as well as their motivation to do so. Recent household survey and case study data in the region yield evidence on the level of poverty of women headed households. These data also suggest, however, a more complex picture of how household headship affects women’s ability and motivation variables.

Estimates of women headed households in Kenya vary from 22 to 40 percent in rural areas and from 60 to 80 percent in the poor urban Mathary valley in Nairobi (Clark, 1984). Traditionally, more women headed households are present among the Kikuyu who have a weaker patrilineal structure than either the Luo or the Luhyia in Kenya (Clark, 1984). More recently, however,
a significant proportion of women headed households in rural areas are married women with migrant absent spouses. These households have fewer resident members but a higher dependency ratio (or fewer other adult workers in the household); have smaller landholdings; receive little regular off-farm income; and have greater poverty and lower annual incomes than men headed households (Barnes, 1983; Clark, 1984). Households headed by unmarried women with children seem to be worse off. Clark states that these households have a greater than average need for childcare and smaller than normal kinship networks.

In an earlier study, Staudt (1978) found that 40 percent of the farms in two areas of western Kenya were female-managed farms, that is, farms where the man was absent and women both worked on the farm and were the de facto household heads. In comparing women managed with jointly managed farms (that is, farms with a man present in the house), Staudt found that women farm managers had significant less access to services particularly the more valuable ones such as training and credit, despite the fact that these women demonstrated innovative farm behavior; these farms also had greater labor constraints than jointly-managed farms. Discrimination in access to resources by sex rather than initial differences in productivity between the sexes affected the productivity and earnings of female-managed farms.

A study of five villages in the Iringa region in Tanzania found that women headed households and poor women cultivated less land and had less maize in store than women from average households. They took up casual labor in tea plantations to feed their families (Mascarenhas, 1983). Women were also the heads of the poorest households in a study in the coastal area of Sierra Leone (MacCormack, 1982).

In the matrilineal society in Zomba, Malawi, women who head households are not a new phenomenon, but with rising population and land pressures, these households now need cash income to achieve food sufficiency. The 1977 census shows that in Zomba, 34 percent of the households were headed by women and an additional 12.6 percent were headed by absent men who were fully employed off the farm in the tobacco estates. Women headed households have less land and less cash than male headed households and higher labor
constraints; while male headed households tend to hire outside labor, women headed households use children and female relatives in periods of peak labor demands (Hirshman and Baughan, 1983).

In Botswana, the largest proportion of women headed households is in the rural areas; they are also poorer than men headed households (Brown, 1983). Kossoudji and Muller (1983) showed that 36 percent of the households in a rural income distribution survey were female headed with no man present. These households were smaller; had a higher child dependency burden and therefore less availability of labor; and had income that was less than half that of male headed households. This was the case even when transfer payments were added to total income. The low incomes of women headed households were not due to a lack of education of the head, her higher preference for leisure, or her greater inefficiency at work. Women headed households were poorer because their economic opportunities were limited and they could not acquire productive assets. Another survey in southeast Botswana covering over 75 percent of the rural population, found as many as 30 percent of the rural households headed by women. There was also a sharp disparity of income and a higher level of absolute poverty among female headed households. Seventy percent of these households owned no cattle as compared with 33 percent of male headed households; nearly half of female household heads did not plow at all, having inadequate resources and less equipment than men (Kerven, 1979).

Kumar (1985) compares the productivity of joint headed, with female headed and polygamous households in a year long household survey using samples from three villages in the eastern province of Zambia. Women headed households grow both food and cash crops but have the lowest level of fertilizer use and use only handtools for farming. They show the lowest level of per capita area planted and total annual household income while the highest level in both counts is for polygamous households. Given that inputs of labor and fertilizer have a positive impact on agricultural production, it is not surprising that Kumar finds that the household food supply lasts the least in women headed households. The study also finds out that transfer income is not much higher for women headed than for male headed households. This replicates the Botswana findings and contradicts the common assumption that female headed households in rural areas obtain a substantial portion of their income and
resources from interhousehold transfers. An interesting case study of formal and informal networks in a parish in the Eastern province in Zambia suggests that cash transfers to households, the most common form of informal assistance, generally increases as household income rises. The value and incidence of cash transfers to households was the lowest for dependent households, the majority of which were headed by women. As household income increased, the more likely was that the household had and would continue to have informal and formal assistance (Cowle, 1979).

The evidence, therefore, shows that households headed by women in rural Africa tend to be poorer than men headed households because of differences in women's access to household labor and productive resources (including land, cattle, equipment, capital and technical assistance) rather than because of differences in human capital variables, such as age and education, or differences in leisure preferences or productivity between the sexes.

c. Effects of household headship on child survival and development. The evidence reviewed above suggests that women who head smallholder farm households either because they are single, widowed or have absent spouses, will have substantially less time, money and support networks than women who are residents in male-headed or joint-headed households. One would conclude therefore that women heading households would have less ability to innovate in matters of child development. It is also likely that children in women headed households will be more undernourished than children in households headed by men, which should further constrain women's adoption of child development strategies. The recent evidence, however, casts doubts on the straightforward implications of poverty affecting the ability and motivation of women who head households.

The Botswana survey found that girls in women headed households received more education than girls in male headed households; the same was true for boys (Kossoudji and Mueller, 1983). Using the same data set, Chernichowsky and Smith (1979) found that this effect persisted even after allowance was made for differences in income, number of school age children, and location. Among the explanations that Kossoudji and Mueller give to these
findings is that women have some education and when they are the
decision-makers, children get more education. Similarly, Kumar (1985) in
Zambia finds, along with a seasonal effect, a significantly higher level of
child nutrition at any given income level in women headed households compared
to joint-headed and polygamous households. These data suggest that, despite
time and income constraints, women headed households might adopt new child
development strategies more readily than women in other households.

A possible explanation for these findings is that the structure
of female headed households positively affects women's motivational variables
by changing women's perception of control over events and/or their risk
preferences. It is quite obvious also that in women headed households women
have more opportunities to make decisions and fewer intrahousehold conflict
situations (between men and women) over the use of household resources. Women
who head households, therefore, may be more likely than women in male headed
households to take risks and innovate in matters of child development.

Two additional studies suggest that women headed households
have a tendency to take risks and try out different strategies. In sub-
Saharan Africa, women who head households appear to have the widest or more
flexible pattern of adaptive responses in periods of seasonal stress (Jiggins,
1986). An in-depth study on the effects of absentee male migrants on the
left-behind women in Kerala, India, reveals that, in the absence of their
spouses, otherwise passive and traditional women for the first time demanded
and started using modern services (Gulati, 1986).

If the fact of being a de facto head of household decreases
women’s time and money available and, therefore, their ability to innovate but
increases their motivation to do so, it is possible that beyond certain
minimum ability levels, motivation weighs more heavily than ability in
influencing these behaviors. In this case, women heads of household would be
more likely than other women to innovate in childcare services.

d. Family dynamics and the economic autonomy of household members.
In general, even when living under the same roof as her husband, a married
woman in much of sub-Saharan Africa has economic and social independence as
well as strong emotional and functional ties with her own relatives (Guyer, 1980). Husbands and wives tend to have clearly defined, separate and complementary household/family responsibilities (Frank, 1985). While the husband is responsible for the overall material well being of the household and the farm, the wife (or wives) is responsible for the well being of her own children—both the food and material needs as well as other developmental needs—the daily management of the household, and food production in her own fields. For example, in the Sahel, men provide grain, meat and fish for the family, while women provide the vegetables (from their own plots) and milk (from their own animals). Generally, the husband is responsible for providing the house and sharing of children's school and health costs. The wife produces some and prepares all the food, is responsible for the health of the family, childcare, housework, gathering of food and fuel, and participation in social obligations of feasts, gift giving, and so on (Cloud, 1977). Similar patterns have been documented for example, in the Sudan (Fruzzetti, 1985), in Ghana (Jordon, 1986), in Cameroon (Bryson, 1979) and in Malawi (Hirschmann and Vaughan, 1983).

Upon marriage, many women move to their husband's village and live among his relatives. Whether the union is long or short lived, the wife continues to receive most of her material, financial, and emotional support from her own female relatives. Thus, while several women with children may live in the same compound (polygamous households or the wife and female relatives of several brothers), they maintain separate households, and share work and material resources with co-wives varies according to personal relations and the number of women in the compound. Sometimes there is a communal kitchen, some delegation of housework or child-minding, but in general, the overall structure is one of separate and sometimes competing households (Cloud, 1977; Pala Okeyo, 1979).

In sub-Saharan Africa, there is little pooling of a couple's or household residents' income in the Western sense. The explicitness of separate male and female income streams within households is well documented (Bruce and Dwyer, forthcoming). A married woman generally has the right to her own property and her own income, and does not count on her husband to help meet the financial responsibilities of motherhood (Frank, 1985).
When analyzing available income and its allocation within the household, within the framework of the different options for income generation and separate lines of responsibility for men and women, it is important to capture as well the interdependence of members within and between households. Although they seem to have primary responsibility for the material, emotional and physical wellbeing of their children, women meet these responsibilities—accompanied by appropriate decisionmaking and choices—through an interdependence with male and female household members and kin. So, despite their autonomy in production, women and other household members have to cooperate to survive.

Two critical questions are what are the effects of changes in the division of agricultural tasks along gender lines on the independence of male and female income streams within households, and what is the resilience of the "economy of affection" and social supports in periods of economic need. The follow up question is how these changing patterns affect child development decisions.

5. Social Support Networks

Women use a variety of strategies to maximize the amount of food and income they have access to in order to provide for their family. As stated above, a woman usually relies most heavily on her own kin and in turn, fulfills those family obligations more readily than those from her husband's family even though she may be living among them. Mother, sisters, aunts, nieces and grandmothers form a network of mutual aid (Frank, 1985). Family support can be in the form of pooled labor, shared meals, money transfers, and so on.

One important aspect of the family network in sub-Saharan Africa is child fostering. It is a common practice for women to send their children to live in households of their own relatives, and in turn, to take in siblings' offspring at various times. This has several practical and social implications. In cases where families are too large and the mother cannot
meet the needs of all her children, she can send a child to a relative who is infertile, or who has grown or too few children. By the same token, if a woman needs extra help with her farming, trading or housekeeping activities, she will often seek children from her own kinship group to live in her household. Child fostering then, is an important strategy for adjusting to times of family prosperity and adversity.

By investing in her nieces and nephews in this way, a woman is assured for life of loyal children who are not under the jurisdiction of her husband. For in many regions (especially where a bride price is paid), a man has claim over his children in case of divorce, thus potentially depriving a woman of a major source of emotional and material support throughout her life. This close alliance with the children of one's own brothers and sisters is also reflected in many regional languages where the terms niece and nephew do not exist; these children are called son and daughters, and aunts and uncles are called mother and father. This has implications for the extent of a woman's childrearing responsibilities in her family on the one hand, and the extent of her immediate social support network on the other.

The children under a woman's roof are her charges when they are infants, but begin to serve as her emissaries and helpers as they grow older. Children help both fathers and mothers in the fields, help mothers engage in trade (Karanja, n.d.), fetch fuel and water, care for younger siblings, tend small animals, and run errands, especially for women in seclusion (Longhurst, 1982). Nigerian market women stated that only their own children could be trusted to mind the business if the women were away from the market for any length of time (Karanja, n.d.).

Traditionally, rural women in Africa formed social groups outside the family to serve a variety of purposes, from celebrating rites of passage (such as circumcision and marriage,) to revolving credit associations (Yoon, 1983). As the need for cash grows and accessibility of land and credit remains difficult, more and more village women are joining together to engage collectively in food production and marketing (Stamp, 1986). Many of these groups are initiated by the women themselves, although some are organized from the outside by local governments or international development agencies.
Generally, the most successful are those which the women initiate themselves (Stamp, 1986; Yoon, 1983).

Typically, when women form a group to focus on a specific project and it is successful, they expand their activities to address collectively other problems of concern to them. For example, they might start with operating collective vegetable plots and marketing produce, and expand to build and staff a maternity and health center, build a road from the village to the highway, repair the village thresher, and reforest the land around the village (in Senegal, Yoon 1983). In Cameroon, informal gatherings of women around the corn mill evolved into classes in cooking, childcare, soap making, etc. The women constructed a meeting hall out of mud bricks and bamboo, and began addressing long standing village problems. They secured a loan and developed several agricultural schemes which enabled them to repay the loan and sponsor other local projects. The group grew to a membership of 5000 women (Wipper, 1984).

Successful groups, then, produce multiple benefits to women. Common outcomes are: increased income, help with agricultural work and marketing, access to credit (and other resources heretofore unattainable to individual women) and increased services available to women at the village level. These are important ways in which women with limited resources use social support networks to increase their capability to provide for their family, especially to channel resources to their children. Equally important outcomes are the intangible aspects of participation itself in a successful group. As discussed earlier, women seeing that their efforts in the group produce positive results might generalize this more enterprising approach to other problems facing them, such as assuring the health and development of their children.

6. **Seasonal Variations in Work, Health and Child Related Strategies**

The annual cycle of rainy and dry periods in the region has strong implications for the time allocated to work and leisure, availability of food, level of sanitation maintained, and disease incidence. The childrearing decisions a woman makes and their immediate consequences are, therefore,
mediated by these seasonally imposed conditions. Seasonal variations can affect women's ability and motivation to try out new practices and services.

While particular cycles will vary with specific farming systems, broadly speaking, in regions of Africa where there is one wet season annually, farmers usually plant just before the rains start and harvest at the end of the season. This results in an annual cycle with periods characterized by intense labor (usually the rainy season), food availability (the early part of the dry season), and food shortages (end the dry season until harvest time). Since women have less agricultural surplus and receive lower incomes than men, they are frequently harder hit by seasonal fluctuations in food supplies (Fruzzetti, 1985).

Women's strategies to cope with seasonality are different from men's because of their primary responsibility to provide food for their families; their lack of access to formal sector supports (credit, cooperatives, education); their household labor constraints; and the necessity to remain close to home in order to fulfill their domestic responsibilities. Men very often migrate to cities to find paid employment until they are again needed in the fields (Hirschmann and Vaughan, 1983; Jiggins, 1986).

a. Seasonal effects on women's time demands and priorities. During the peak agricultural season when most of the daylight hours are spent in the fields, women are hard pressed in terms of time to fulfill their other responsibilities of food processing and preparation, childcare, and household maintenance. Time allocation studies show that women sometimes change their housekeeping and childrearing styles to accommodate extra time needed in the fields. They may prepare only one hot meal a day or substitute less labor-intensive foods in the diet (Jiggins, 1986). Cooking less reduces time needed for gathering fuel and fetching water, and older children in the family very often take over these duties (Pala Okeyo, 1979). However, time allocation studies also show that, despite these substitution strategies, the time women spend in child and home maintenance duties does not vary significantly during peak agricultural seasons; rather, nearly all of women's unstructured or leisure time is consumed, as is some of their resting time. It is highly likely, therefore, that the opportunity costs of women's time will increase.
significantly in this season affecting women's ability to adopt new child related strategies and influencing their assessment of the costs and benefits attached to these strategies.

Women have also developed varied strategies to minimize the hardships caused by seasonal fluctuations in food availability. They often maintain quick yielding vegetable plots near their homes to provide food before the harvest as well as to add variety and vitamins to the staple diet. Sometimes women decide to sell these vegetables and use the income to buy family necessities (Jiggins, 1986). The need to work on these plots and to engage in trading in times of food shortage also decreases the chances that women will innovate in matters related to child development.

A study of primary health seeking behavior in Ghana showed how the costs and benefits of clinic attendance as perceived by mothers varied seasonally. During the hunger season, where the opportunity costs of women's time was high, the availability of food at the clinic was needed to motivate mothers to go (Gordon, 1986).

Seasonal stresses of food availability and work intensity are also accompanied by seasonal fluctuations in morbidity. Although many diseases are endemic (e.g., malaria) or appear in unpredictable epidemics (e.g., measles), in general, incidence of infectious disease, especially diarrhea tends to be highest during the rainy season (Chambers, 1982; Whitehead, 1979). One probable contributor to the increase in morbidity is that women cook less often during this time, so food tends to sit in the family pot for longer periods before being consumed, thus increasing the likelihood of contamination. During the rainy season, Whitehead (1979) found that over half the food sampled in a rural Gambian village was contaminated when kept as little as one to two hours after preparation and up to 96 percent was contaminated when kept for eight hours. In addition, there may be less time or water for cleaning utensils and bathing, all which raise the likelihood of contamination and contribute to the spread of infectious disease.
Because of the difficulties of combining extensive field work with breastfeeding, many children are taken off the breast during the peak agricultural season. The possible premature introduction of supplemental foods or the complete severance of breastfeeding can contribute to malnutrition and more frequent illness in children. Not only is time for breastfeeding compromised, but the a woman's capacity to produce adequate amounts and quality of breastmilk may be limited due to her own health problems. For example, in rural Gambia, women who consumed about 1700 calories of energy throughout the year, decreased their intake to 1200 calories in the middle of the rainy season when they were busiest in the fields. These women were also lactating. The WHO/FAO estimated daily requirements for lactating women is about 2,750 calories, which does not take into account extra energy requirements for field work (Whitehead, 1979). Other research reports adults losing five to seven percent of their body weight during the planting (wet) season (Longhurst and Payne, 1981). It is not surprising then, that women often curtail breastfeeding when they are depleted by heavy field work, illness, and inadequate food intake and rest.

Seasonal fluctuations in work demands and food availability in general, and other phenomena that converge at the rainy season in particular, affect women's capacity to provide, and may reorder women's priorities for the survival and development of their children. Clearly, women's choices about child development will be influenced by the resources they have (time and money) and the perceived urgency of a problem. In periods of seasonal stress, it is likely both that women's available time is severely curtailed and that priority is given to survival rather than child development strategies. Indeed, preventive health measures and other child development strategies which produce no immediate positive consequences to the mother or child or involve high time costs, may be given low priority during certain times of the year regardless of the mothers' stated belief in the value of the practice.

b. Seasonal effects on women's risk preferences. Risk preferences of members of poor households vary with seasonal uncertainty. Both risk preferences and probability assessments are likely to become more conservative after a run of bad years (Jiggins, 1986). The effects of seasonality on risk preferences suggest that seasonal uncertainty or stress will affect women's
risk preferences or their calculations of the costs of risk, and will reduce the likelihood that women will choose to innovate.

One of the strategies of households faced with seasonal stress is to share resources and risks among household members on both the gains and costs of outcomes that are not wholly predictable (Chambers, 1983; Jiggins, 1985). According to Guyer (1986), throughout sub-Saharan Africa women within poor households have fewer rights or are less able than men to pass the costs of risk-taking to other household members. An interesting question is how household structure or, more particularly, women headship, affects risk preferences. Reviewing the evidence, Jiggins was struck by the resilience of female headed households networks to seasonal stress and calamity in sub-Saharan Africa. She cites the organizational and economic flexibility of female headed household networks in moments of seasonal stress and mentions that, instead of victims, these households may be survivors. It may be that, aside from riskier preferences, the spread of risk is distributed more equally in female headed households since there are fewer differences (relative to male-headed households) in the power of household members, therefore, enhancing women's willingness to take risks and try out new child survival and development strategies.

7. **Effect of Characteristics of Services and Practices on Demand**

So far, the focus in this section has been on how a range of community, household, and individual characteristics may influence the motivation and ability of low income women, particularly rural African women, to adopt new child survival and development strategies. However, motivation and ability of women (and their families) are not the only determinants of demand. The characteristics of the particular service or practice will also have an important effect on whether or not a woman chooses to adopt a new child survival and development strategy. Below, we review what is known about the effect on demand of characteristics of services such as price, location and quality. Unfortunately, most of the information available is based on studies concerned with demand for curative or acute services rather than for the more preventive child survival and development technologies that are our
focus of interest in this project. In addition, most of the studies evaluated services in isolation of the alternative services available in the community. Many of the inconsistencies found in the literature on the effects of characteristics of services on demand might be explained by the interaction of competing costs and benefits accrued from utilization of traditional services and practices.

Before adopting a new child-rearing strategy, a woman will probably have certain expectations about its cost and quality, as well as what skills will be required on her part in order to use it effectively. These considerations will play a role in influencing her initial decision to try a service or practice. However, her first experience using the service or practice will give her a much more clearly developed sense of these characteristics. If the cost is higher, the quality poorer, or the skills required different from what she expected, and/or the immediate outcomes appear negligible, a woman is likely to be discouraged from further use of the service or practice. This may be a particularly important determinant of demand for child survival and development technologies since most of them are seen as discretionary, to the extent that they are more preventive than curative in nature.

The effects of price, location, and quality of care on utilization of child survival and development services, as well as the effect of the consequences of an initial experience on women's subsequent behavior, are particularly well illustrated in the following description of reasons for the poor utilization of MCH services in Nyamwigura village in Kenya.

The Rosana dispensary has special hours reserved for MCH services. However, few women make use of the opportunity to have regular health controls for themselves and their children. This particularly applies to pregnant women who are being urged to visit the dispensary regularly. Many husbands, however, are reluctant to grant money to such controls since they regard them as not necessary. According to their view, pregnant women are not sick and need not visit a dispensary where sick people are treated. The pregnant women who manage to attend regular controls are advised to deliver at the government hospital in Tarime. But in Nyamwigura village many women are reluctant to listen to this advice due to previous experience. Those who decide to deliver in the government
hospital usually have to walk the 12 kilometers to get there. Since they are accepted at the maternity ward only when labour pains have started, they leave Nyamwigura when the latter are heavy in order not to risk being sent home again. There are several cases where women failed to reach the hospital in time and had to deliver by the side of the road, assisted by other women who happened to notice their situation. Others who reached the hospital in time, for unknown reasons were left unattended for hours and eventually gave birth without any assistance from the hospital personnel (Tobisson, 1980, 101).

a. The price of services and practices

The costs that a woman faces when choosing whether or not to adopt a new child survival and development strategy include both a cash price and a time cost. Private costs are rarely explicitly included in cost analyses of projects, but they can be substantial, and are certainly the costs of most interest to potential consumers. Implicit in the design of most child survival and development projects is the assumption that money is a scarcer resource than time for the target families, since the services are frequently subsidized, but little effort is made to increase the time during which the services are made available or to reduce the waiting time required. However, the relative value of time and money to a family (or to a woman within that family) will vary considerably, both between families, and within families according to such factors as stage in the life cycle and season. A clear understanding of the resources and constraints of target families is necessary to decide whether demand is likely to be more effectively increased by reducing time costs or cash price, or whether neither is a major deterrent to use.

Cash price: The cash price of utilizing a particular service or practice includes not only any fees charged for the service, but also money that may need to be spent on transportation and on any drugs or special ingredients required (such as for the home preparation of enriched weaning foods). The effect of such costs on utilization has not been well-studied, particularly for the kinds of preventive health and nutrition services and practices that are the major focus of the child survival and development revolution. (See Akin et al. 1985, for an excellent review of what is known
about the effect of price—both cash and time costs—on demand for primary health care services).

Studies of the effect of fees on utilization of hospitals or of other acute services provide conflicting information. A study of hospital utilization in Tanzania, for example, found that government hospitals where no fee was charged treated three times the number of outpatients and twice the number of inpatients as private mission hospitals, which had the same number of beds and size of staff but did charge a fee (van Etten, 1972, cited in Akin, et al 1985). Heller (1982) reports similar findings from Malaysia for choice among alternative sources of outpatient services, although not for inpatient services. A reluctance to continue paying fees to community health workers has also been found in many, but not all, communities where primary health care projects have been started. (See Parlato and Favin, 1982 for a general discussion of this issue, Morrow, 1983 for the experience in Ghana, and Klouda, 1983 for the experience in Tanzania.) Other evidence also suggests that families may be less willing to pay for preventive than curative services, such as in the Tanzanian antenatal clinic use example referred to at the beginning of this subsection (Tobisson, 1980).

However, a study from Zaire found that utilization of services provided by mission health clinics actually increased when a fee was charged. The interpretation was that people felt that only if they were being charged a fee were they receiving something of value. (Office of International Health, 1975). A study of the demand for primary health care services in the Bicol region of the Philippines also found that price did not deter private doctor visits, even though they were 20 times more expensive than public clinics (Akin et al, 1986). Again, this was interpreted as an indication of preference for perceived higher quality services. However, it is also possible that some of the inconsistency in the impact of cash price on demand could be explained by the relative difference between cash price of the new service versus the cash price currently being paid for traditional services.

Even when families do not directly pay a fee for service, use of health and nutrition technologies frequently involves other cash outlays. A study of utilization of a district hospital in Uganda, for example, found
that 75 percent of total outpatient cash outlays were for transportation (King, 1966, cited in Akin, et al 1985). A study of a measles vaccination campaign in Cameroon combined the cost of bus transportation and the time spent by the mother bringing the child to the immunization site, and found that these private costs exceeded the per vaccination cost incurred by the government (Makinen, 1979, cited in Haaga, 1986).

As far as curative health services are concerned, the major cash outlays by families are usually for drugs. While drugs are not as central to the more preventive child survival and development strategies on which we are focusing in this project, some of the technologies do require the purchase of certain drugs or ingredients. Because such purchases will need to be made not just occasionally but regularly over a period of several years (e.g., malaria chemoprophylaxis; sugar and salt for ORT; oil, legumes and vegetables to enrich weaning foods) they may add up to a significant expenditure.

**Time costs:** Akin et al (1985) report that distance has been the most studied deterrent to health service use, and that distance is usually considered to be a proxy for transport time. While Akin et al do find that most studies report distance to be a deterrent to use of health services (although interestingly no effect of distance is found in their own data from the Philippines), they caution that it is not always a reliable indicator of transport time since a service that is farther away but on a good road may be reached more quickly than one that is closer but can only be reached by walking over rough terrain.

Aside from looking at the effect of distance, some studies have directly looked at the effect of time costs on utilization of health services. Fifty percent of a sample of working women in Ibadan, Nigeria, for example, gave time constraints as a reason for not taking their children to be immunized (Adekunle, 1978, cited in Akin et al, 1985). Similarly, Haaga (1986) reports that in a study from the Danfa district of Ghana, the major reasons that women did not attend an immunization clinic were their unawareness of the need for immunizations, and their difficulty taking time off work. A study of reasons for low use of antenatal services in Machakos
District in Kenya found that excessively long waiting time was the reason most frequently given by women (Lackey, 1981). And finally, an analysis of reasons for the poor use of rural mission clinic in Haiti highlighted time factors, including both the nonconformity of clinic hours to customary marketing and travel patterns, and the unexpectedly high value of mother's time in the local economy (Wiese, 1974 cited in Akin et al, 1985).

One of the more interesting findings that has emerged out of the few studies that have specifically focused on time costs as a determinant of use of health services is that transport time and waiting time do not always have similar effects on demand. In both the Malaysia study mentioned above (Heller, 1982) and in the Philippines (Akin et al, 1985) there was some indication of a preference against time spent on transportation but for time spent waiting. Explanations offered for the unexpected positive effect of waiting time were that patients enjoyed the opportunities offered for socializing as they waited, or that they took the longer waiting time as an indication that they were receiving higher quality service.

b. Location of services. As discussed above, the negative effect of distance on utilization of health and nutrition services has been quite extensively documented. However, distance is not the only aspect of location that may influence use. Whether or not a service is located on a road may be even more important. A study from Mexico, for example, found that construction of a dirt road from the village to the main highland dramatically increased village utilization of health services in the city, which was then an easy one hour bus ride away (Young, 1981 cited in Akin et al, 1985). Even when bus service or bush taxis are unavailable or too expensive, accessibility by road may have a positive effect on use by reducing walking time, and making walking easier.

Location of services may also have an important effect on expectations about quality of care, or on how comfortable people feel using the service. In the Mexican study cited above, for example, provision of health posts in the village was relatively unsuccessful in increasing utilization of services because villagers perceived the care as being low quality.
A special case in location of services is the provision of services by mobile teams or by home visits. Mobile teams have been used to provide a number of child survival and development services, particularly immunizations and growth monitoring. Such outreach efforts have been found to have a positive effect on utilization. In the study of utilization of immunization services in Ibadan cited earlier, one mother reported that she was able to get her child vaccinated against smallpox because the vaccinator came to the market, but she was unable to get other vaccinations because she could not leave her work to go to the hospital or a health center (Adekunle, 1978 cited in Akin et al, 1985). The importance of taking services to the mothers is also emphasized in an evaluation of four successful growth monitoring projects in India, which concluded that growth monitoring must be home based rather than clinic or health post based to achieve adequate participation, given the other preoccupations of mothers of young children (Bhan and Gosh, 1986).

Not only can outreach increase utilization, there is some evidence, at least for mobile immunizations teams, that the same services can be provided at no higher and perhaps lower costs. A comparison of the use of mobile units versus fixed clinics to provide measles vaccinations in the Ivory Coast found the cost per fully immunized child to be significantly lower for the mobile units (Shepherd, Sanoh, and Coffi, 1982). Since the costs only included direct expenditures by the Ministry of Health, presumably if the opportunity cost of mothers' time and transportation to the fixed clinics had been included, the difference would have been even greater. Similar findings of lower cost per fully immunized child for mobile clinics were also reported from Brazil and Ghana (Creese, 1985). A contrary finding is reported from Zaire, where mobile health teams were apparently being phased out in the mid-1970s due to their expense, but no direct cost comparisons of mobile versus fixed services were provided (Office of International Health, 1975).

c. Quality and appropriateness of services and practices. It is increasingly recognized that the modern (or Western) health and nutrition services being established in rural areas of the Third World are not so much filling a void, as they are offering an alternative to the curative and
preventive health care already being provided by traditional practitioners and family members. It is also clear that the potential users of these new health and nutrition services do not automatically adopt them in preference to their traditional health care practices. In fact, studies of the choice between modern and traditional care have rather consistently shown that most people continue to use both, rather than exclusively choosing one or the other (Akin et al, 1985). Although a few studies have found economic factors such as hours of service availability or type of payment accepted to be a significant determinant of choice between modern and traditional health care, most have found quality or appropriateness of care to be the most important determinant. (See Maclean, 1971; van Luijk, 1984; Voorhoeve, Kass and van Ginneken, 1984; as well as Colson, 1971; O'Connor, 1980; and Mwabu, 1982 cited in Akin et al, 1985). In terms of understanding factors that influence motivation to use new child survival and development strategies, it is interesting to note that sometimes traditional healers are valued not because they produce a cure but because they provide an understandable explanation for an illness in terms of local beliefs (Cosminsky, 1977 and Heggenhougen, 1980 cited in Akin et al, 1985).

Additional evidence also suggests that perceived poor quality or inappropriateness of services and practices can be a deterrent to use. Several evaluations of primary health care projects have shown that the credibility of community health workers was low due to their youth, inadequate knowledge, and/or lack of drugs, and that they were therefore not valued sources of health care (Parlato and Favin, 1982). Heller (1982) interprets the preference for physician rather than paramedic care in his study of demand for health services in Malaysia as a quality effect. A similar interpretation is given by Akin et al (1985) to their finding of a preference for private physicians in the case of serious illness in the Bicol region of the Philippines.

In addition to efficacy and appropriateness of care, another aspect of quality that is sometimes found to be an important determinant of use of services is the attitude of health personnel. Bhan and Ghosh (1986), in their evaluation of four successful growth monitoring projects in India, concluded that a key ingredient of success was a respectful, encouraging
attitude on the part of growth monitoring workers towards mothers. In the study cited earlier of the use of antenatal services in the Machakos district of Kenya, the second most frequently mentioned reason for not going to antenatal clinics (after excessively long waiting time) was the unfriendly reception of the nurses (Lackey, 1981).

The gender of the health worker who provides the service or teaches a new childcare practice may also be an important factor. Female health workers are generally found to be more successful in reaching women, particularly in Africa, either for reasons of modesty or because men are not thought to be knowledgeable in certain subjects, such as child feeding. (See Naisho, 1981, on Sudan, and Parlato and Favin, 1982 for several examples.)

d. Characteristics of specific child survival and development technologies. The above discussion, focusing on the effect of price, location, and quality of health services on demand for such services has suggested that all three are frequently found to have an effect. But one must be careful not to presume ahead of time either the direction of the effect or the relative importance of the three factors. For example, in some cases higher fees or longer waiting time are a deterrent to use of services, but in other cases they are seen as an indicator of higher quality and thus have a positive effect on demand. Waiting time may also be valued positively or negatively depending on how long it is, and what opportunities it offers for socializing. Sometimes quality of service may be judged more in terms of efficacy and sometimes in terms of the pleasantness of the human interaction with those providing the services.

When turning to a consideration of specific child survival and development technologies, we see that the evidence reviewed above is primarily relevant to understanding sustained demand for technologies such as immunization and growth monitoring, which are services offered periodically in a central location (they can also be home based but this is rarely the case). Many of the child survival and development technologies, however, are essentially practices carried out in the home such as breastfeeding, preparation of enriched weaning foods, use of oral rehydration therapy, and early childhood stimulation. Essentially no research to date has examined the cash costs, time costs or perceived quality of these child survival and development practices, and what effect these characteristics have on demand.
D. Research

The previous section has reviewed a series of factors that affect women's ability and motivation to initiate and adopt child survival and development strategies. In the context of this literature review, the model presented earlier suggests a number of questions and hypotheses that need to be addressed, as well as a design for research that can, in a relatively short time, yield policy relevant findings.

1. Questions and Hypotheses

Some questions that seem fundamental to understanding women's demand for child survival and development services and practices are the following:

1. Do women have more or less time available to implement new childrearing strategies when they shift from subsistence to market production?

2. What are the time and cash costs and skill requirements of specific child survival and development strategies?

3. What is the relationship between available time and available cash in affecting women's decision to adopt child survival and development strategies?

4. What are the unanticipated costs or benefits that women report from using specific child survival and development practices and services?

5. Are some factors of greater importance in determining women's initiation of child survival and development strategies, and other factors of greater importance in determining maintenance?

6. What are the common features of women who continue using a new practice or service as compared to those who "drop out"?
7. What are the effects of adopting one child survival and development strategy on women's ability and motivation to adopt other childrearing strategies?

Specific hypotheses that emerge from the model and the review of women's situation in Africa that seem both feasible and important to test include the following:

1. Increases in women's access to cash and/or skills will increase their ability and motivation to adopt child survival and development strategies. Because an increase in women's available time will affect their ability but not their motivation, women with little time but with more money or knowledge are more likely to try out a new childrearing strategy than women with more time but little money or knowledge.

2. Women who earn an income are more likely than women who do not to adopt child survival and development strategies, both because of the costs associated with new strategies, and because income earning increases women's sense of self confidence and willingness to take risks.

3. Increases in women's access to cash will have a more positive effect on utilization of child welfare strategies than increases in men's access to cash because women have the primary responsibility for providing food and health care for their children.

4. Women who are heads of households and can, therefore, make decisions unilaterally and spread costs of risks more equally among household members, will be more likely to use new child development practices and services than women in male headed households or in polygamous ones. (However, women who are heads of the smallest farm households, and therefore have the most time constraints and are the poorest, will be less likely than other women to adopt new child survival and development strategies.)

5. Contextual factors will be more important in explaining women's initiation of practices and use of services, while characteristics of the services and practices will be more important in explaining maintenance.
6. The experience of using a child survival and development strategy that has positive short-term consequences for a woman and/or her child will be repeated more frequently than an experience that has neutral or negative short-term consequences. Therefore, regardless of the characteristics of the woman, if the initiation of a new practice or the utilization of the new service or technology has a positive outcome, the behavior will be more likely to be maintained.

7. Conversely, if a woman incurs high time and/or money costs in performing a new behavior with no clear short-term benefits, she will be less likely to sustain her choice.

8. Campaigns to promote child survival and development technologies that focus messages on shaping expectations of immediately observable consequences, will achieve higher long-term participation rates than campaigns that focus primarily on skill building or information about long-term, abstract benefits.

9. Use of mobile teams rather than fixed clinics to provide vaccinations will significantly increase coverage. Also, when private costs (such as transportation and the opportunity cost of women's time) are included, the cost per fully vaccinated child will be lower for mobile teams than for fixed clinics.

10. Home based growth monitoring rather than village or clinic based growth monitoring will significantly increase coverage and reduce malnutrition (through better follow-up of growth faltering children). Also, when private costs (such as transportation and the opportunity cost of women's time) are included, the cost per regularly weighed child will be lower for home based than for village or clinic based growth monitoring.
2. Methodology

The purpose of the proposed research is to test the usefulness of the model in identifying which factors act as determinants of women's childrearing choices as measured by women's initiation of and sustained demand for the child survival and development services and practices being promoted. The model suggests a two phase research design: first, a cross-sectional study to identify the contextual and service/practice related variables influencing women who use/do not use a new child survival and development service or practice (called target service or practice); and second, a prospective study to determine whether women not previously using the target service or practice will adopt it if the outcomes from initiation are altered (contextual variables remaining constant).

To carry out such research, we would identify an ongoing child survival and development program that has achieved a reasonable degree of participation among the women in the area. For the first part of the study, a house to house survey in the project's catchment area, would identify those using/not using the services, resulting in three categories of women: regular users, women who tried the service/practice but did not continue (dropouts), and those who never tried. We would also classify women according to their use of traditional (alternative) services and practices existing in the community.

Based on the hypotheses generated from the model, differences among users, dropouts, and non users in terms of contextual variables (at community, household and individual levels) and in terms of motivation and ability variables would be measured. In addition, characteristics of the target services offered and practices promoted as well as characteristics of related traditional services and practices would be examined—to identify the direct and indirect costs to women, as well as other social and child related consequences of the behaviors required for utilization of services and practices.
This first phase of the research would produce the following kinds of findings:

1. A profile of users, dropouts and non users of the locally available child survival and development services/practices.
2. A profile of users, dropouts and non users of other related services and practices already available in the region.
3. An inventory of the costs and benefits to the women, their children and families of the target service/practice. These would include the direct and opportunity costs to women and their families (e.g. money, time, skills required, social approval), observable changes in the child's health and/or behavior, and other immediate consequences to using the service or practice.
4. A similar inventory of the cost and benefits to utilization of traditional (alternative) services and practices.
5. A list of suggested changes in the target service or alterations in the promotion of a practice which are hypothesized to increase positive and/or decrease negative short term consequences to utilization.

The second phase of the research would be prospective in nature. Changes in the target service/practice would be made based on recommendations from phase I. Both users and non users in the area would be encouraged to try the altered service/practice. Then participation rates would be followed for several months to determine whether changing the consequences of initiation has a measurable effect on long term adoption of a new service/practice.

Examples of results from the second phase of research include:

1. An evaluation of an improved child survival and development service/practice by measuring changes in participation rates.
2. Detailed information on aspects of service delivery and/or promotion of a practice which lead to better adoption rates among women.
3. Information about what contextual variables, in that locality (e.g., seasonality, household structure, women's education) seem to
override service/practice characteristics and consequences in fostering long term adoption.

4. An empirically tested model on the determinants of choice behavior which could be used in other settings.

More than one village (or locale) in a region might be involved in the study to serve as a control. In addition, in order to collect more detailed data on the mode of behavioral adoption within a household, a subsample of women would be followed with direct observation techniques during the prospective phase of the study.

3. Policy Relevance

By empirically testing the model in the field, we can develop a useful tool for predicting which factors are most important in determining participation in a child survival and development program in a variety of settings. Even though particular factors will vary from setting to setting, the model provides a framework for local and national planners to identify those factors that can be manipulated in order to improve utilization rates.

The general policy relevance of the proposed approach is that we have shifted the focus in planning child survival and development interventions from the child to the woman--the implementor of childrearing practices. Our goal is to devise ways to enhance women's ability to care for their children, thus still in keeping with child survival and development revolution goals. Our approach then, suggests to policy makers that in order to achieve these goals, they need to know as much about factors influencing the choice behavior of women (implementors) and the requirements of and consequences to participation in these programs, as about the children themselves (beneficiaries).
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Caldwell, John C. and Pat Caldwell. 1985. "Education and Literacy as Factors in Health." In Good Health at Low Cost: Proceedings of a Conference held at the Bellagio Conference Center, Bellagio, Italy, April 29-May 2. Edited by


TABLE 1
Evaluation of Women's Income Generation Projects

<table>
<thead>
<tr>
<th>Project Title and Author</th>
<th>Source of Information</th>
<th>Country</th>
<th>Duration</th>
<th>Project Goal</th>
<th>Type of Intervention</th>
<th>Beneficiaries</th>
<th>Project Results</th>
<th>Effects on Women Self - Confidence</th>
<th>Source of Information</th>
<th>Generate Income for Women</th>
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</thead>
<tbody>
<tr>
<td>Market Women's SEEDS/1980 Cooperatives: giving women credit (Judith Bruce)</td>
<td>Nicaragua</td>
<td>1972-1979</td>
<td>Established market women's cooperatives to help women to get credit it</td>
<td>FUNDE provided technical and financial assistance</td>
<td>1972-210</td>
<td>Women describe their new roles, P. 10</td>
<td>Yes</td>
<td></td>
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<tr>
<td>Village Women SEEDS/1980 Organize: The Mraru Bus Service (Jill Kneerim)</td>
<td>Kenya (Mraru)</td>
<td>1970-1979</td>
<td>Create a public Transport Service to solve their transportation problem</td>
<td>With government assistance the women raised money, bought a bus and started a public Transport Service</td>
<td>1970-started with 47 women the number grew to 195 by 1979</td>
<td>The Mraru Bus Service started in 1975</td>
<td>...commitment of the women of P. 16 the Taita Hills is stronger now than ever. They are confident they can find solutions to the problems they face...</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Markala Cooperative: A New Approach to Traditional Economic Roles (Susan Caugham &amp; Mariam Thiam)</td>
<td>Mali (Markala)</td>
<td>1975-1981</td>
<td>Established a cooperative based on the production and sale of dyed cloth and laundry soap to earn a regular salary and to learn marketable skills</td>
<td>Technical financial and marketing assistance</td>
<td>1975-20</td>
<td>Establish ment of a successful now skillful cloth-dyers and soap makers with a place of employment and a monthly salary.</td>
<td>P. 14</td>
<td>Yes</td>
<td></td>
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<tr>
<td>The Working Women's Forum: Organizing for Credit and Change (Marty Chen)</td>
<td>SEEDS/1983 (no. 6)</td>
<td>India (Madras)</td>
<td>1978-</td>
<td>Access to credit for productive purposes. Broad Goals: -Create an association -Identify needs -Improve skills -Support for social services.</td>
<td>Access to funds to neighborhood loan groups registered with the working women's Forum</td>
<td>1978-started with 30 women the number grew to more than 7,000</td>
<td>Provide its members with access to funds and include support services (e.g., child care, education). Loans had a positive impact on women's business and on welfare of their families.</td>
<td>Most women report an increase feeling of economic security since joining the Forum (P.11). They also have a growing realization that it is possible to have some control over their lives... Most Forum members report that they have gained greater respect, power and decision-making...(P.15).</td>
<td>P. 1, 11, 15, 18</td>
<td>Yes</td>
</tr>
<tr>
<td>United Women's Woodworking and Welding Project (Peggy Antrobus &amp; Barbara Rogers)</td>
<td>SEEDS/1983 (no. 2)</td>
<td>Jamaica</td>
<td>1976 started</td>
<td>To provide vocational training to women in non-traditional feminine areas/Income-generation plus the establishment of a cooperative.</td>
<td>8 months of vocational training assistance on the establishment of a cooperative based on the production and sale of furniture and housewares.</td>
<td>1976 46-women 2-men 1983 25-women 1 man</td>
<td>Successful vocational training for women's woodwork and welding. They are trying to establish a cooperative and close to becoming self-sufficient.</td>
<td>For the first time in their lives, they experience a sense of autonomy and control over their environment. Note: the project has examples of self-report such as: &quot;At the beginning I thought that I would not be able to work in this machine. Now I can do it.&quot;</td>
<td>P. 11</td>
<td>Yes</td>
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### TABLE 1 (continued)

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<tr>
<td>Developing non-craft employment for women in Bangladesh (Marty Chen)</td>
<td>SEEDS/1984 (no. 7)</td>
<td>Bangladesh</td>
<td>1976 started</td>
<td>To develop non-craft employment opportunities and participatory associations for rural women</td>
<td>Training technical support, credit, and support services</td>
<td>1976-1984 rice processing, 3,810 animal husbandry, 2344 horticulture, 843 poultry, 800 agricultural production, 200</td>
<td>Developed a successful program of non-craft employment opportunities for women</td>
<td>There are also visible changes in the women themselves. Many women have lost their veneer of shyness and become assertive and outgoing (P.15)</td>
<td>P. 15</td>
<td>Yes</td>
</tr>
<tr>
<td>Community management of waste recycling: the SIRDO (integrated System for Recycling organic waste) new drainage system (Marianne Schmink)</td>
<td>SEEDS/1984 (no. 8)</td>
<td>Mexico</td>
<td>1980 started</td>
<td>Community-based income-generating activities. The establishment of a cooperative to operate and maintain the SIRDO (new drainage system) and sale of the fertilizer</td>
<td>-technical assistance -technology -information and support services -training -housing equipped with a new drainage system (SIRDO)</td>
<td>1982-14 women, 4 men</td>
<td>The cooperative was selling its fertilizer in two main supermarkets in the city, but at this initial stage, the cooperative was willing to sell below real costs in order to build a market for its product.</td>
<td>The SIRDO and its related activities have greatly increased women's visibility within the community and their confidence in handling community</td>
<td>P. 15</td>
<td>Yes</td>
</tr>
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</table>

Note: Example of self-report: Now, if anyone says anything wrong I answer back, before I used to keep quiet. Where did I get my courage? From my self-confidence and wisdom... (P.18)
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<tr>
<td>The Black Bay Vegetable Scheme of St. Lucia 1974-1977</td>
<td>Collaborative project at the Population Council, The Women and Development Unit, University of the West Indies</td>
<td>St. Lucia</td>
<td>1974-1977</td>
<td>Move participants from subsistence to commercial farming for the domestic and export markets, through an irrigated vegetable production</td>
<td>Access to management and credit facilities, technical assistance, project machinery equipment, irrigation facilities, fertilizers, etc., and marketing arrangements</td>
<td>Eleven farmers, one of whom was a female. However women form fifty percent of the farm families participating in the project</td>
<td>The project failed, due to low production frequent breakdown of equipment, extended drought etc., which led to demise of the project by 1977</td>
<td>&quot;...women's areas of influence over decision-making and ongoing shaping of the project are virtually negligible.&quot;</td>
<td>P. 33</td>
<td>Some farmers made small profits. Four farmers registered. All three years. There was a disparity in the wages paid to male and female hired workers.</td>
</tr>
<tr>
<td>Bank Loans to the Poor in India 1982</td>
<td>Journal of the Poor in Bombay: Do culture and Women Benefit? Society 1984 (Jana Everett vol. 10, and Mira Savara)</td>
<td>India</td>
<td>1982</td>
<td>Generate employment, increase productivity and reduce poverty by providing capital to the self-employed in trading, production and service activity</td>
<td>Provide loans for the self-employed to help them meet their needs for fixed and working capital</td>
<td>391 (based on the branches studies)</td>
<td>Programs targeted for self-employed poor women may actually benefit various intermediary roles as much as (or more than) they benefit the women themselves</td>
<td>&quot;Anecdotal evidence from our interviews suggested that women thought bank loans increased the respect they received from family and community members. Several women reported that for the first time they felt they were &quot;somebody&quot; because the banks had given them loans. Their increased self-confidence in some cases led to assertive behavior</td>
<td>P. 282</td>
<td>Yes</td>
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<tbody>
<tr>
<td>Women’s construction collective (Ruth McLeod)</td>
<td>Learning about women and Urban Services in Latin America and the Caribbean Project of the Population Council 1986</td>
<td>Jamaica</td>
<td>1983-1984</td>
<td>To train unemployed women and find them jobs at the trade level in the building and construction industry (male-dominated world of construction)</td>
<td>Intensive training program, placed in jobs and monitored. Loans for tools in the building industry</td>
<td>1983-10 women</td>
<td>Project participation helped in job placement</td>
<td>&quot;The change in the women has also been dramatic. As they found themselves able to earn their own livings in a male-dominated industry they developed new confidence. Many have become articulate spokeswomen. As the group evolves, individual and group responsibility has also grown through the necessity of making and adhering to group decision.&quot; Pages 154 to 157 present several anecdotal evidences</td>
<td>Yes</td>
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<tr>
<td>Urban Family Planning Services Project (Patrick J.H. Marnane)</td>
<td></td>
<td>Peru</td>
<td>1981-1983</td>
<td>To establish a community-based contraceptive distribution system in five areas of Lima and to expand the income-generating handicraft skills of women through work with mother's club</td>
<td>Community-based distributors promote the use of contraceptives among their neighbors and friends and provide supplies to users</td>
<td>N/A</td>
<td>The results fall short of its goals, due to supervisory and logistical limitations. However the program was beginning to take hold. Now acceptors had doubled during the last two quarters</td>
<td></td>
<td>Yes</td>
<td>(handicraft production activities)</td>
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<tr>
<td>Women in Development (Richard Burke)</td>
<td>AID/1985</td>
<td>Guatemala</td>
<td>1981-1984</td>
<td>Create an organization to assist in increasing the economic productivity of poor women in rural and urban areas and to address the socio-cultural constraints that these women face in development</td>
<td>Provision of skills training, group motivation techniques, establishment of loan fund and technical assistance</td>
<td>100 women</td>
<td>Over the three year project, less than one-third of the 33 enterprises funded had been in existence over a year</td>
<td>Yes</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Women's Training and Advisory Services (Teresita Perez and Maryanne Dulansey)</td>
<td>AID/1984</td>
<td>Dominican Republic</td>
<td>1982-1984</td>
<td>Improve the socioeconomic condition of low-income women and their families by assisting them to better utilize their own resources and those services offered by the community, enabling them to fend for themselves in the labor market</td>
<td>Delivery of skills and human development training, plus small business loans and a variety of counseling services</td>
<td>2500 women</td>
<td>&quot;...according to the beneficiaries' own accounts, has been instrumental in raising their cultural awareness as well as their self-esteem. For the first time in their lives, they have been confronted with the reality of self and the possibility of choosing among alternatives to change their lives.&quot;</td>
<td>P. 21</td>
<td>Yes</td>
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**TAJLE 1 (continued)**

**Evaluation of Women's Income Generation Projects**

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<tbody>
<tr>
<td>Palm oil purchasing/food marketing in Cameroon (Donald R. Jackson)</td>
<td>Assessing the Impact of Development Projects on Women AID/1980 Paper no. 8 (Ruth Dixon)</td>
<td>Cameroon</td>
<td>N/A</td>
<td>Increase production, employment, and incomes</td>
<td>Technical assistance, credit and group mobilization</td>
<td>All members of 62 villages co-ops are women</td>
<td>Improved nutrition at lower cost of palm oil -Higher incomes from food sales -Some loss of social contact at market</td>
<td>Higher self-esteem</td>
<td>P. 11 (table 2)</td>
<td>Yes</td>
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<tr>
<td>San Marcos Sewing Center in Philippines (New Trans Century)</td>
<td>Assessing Philippine Development Projects on Women AID/1980 Paper no. 8 (Puth Dixon)</td>
<td>N/A</td>
<td>Increased production, employment, and incomes</td>
<td>Provision of physical infrastructure, training and other inputs</td>
<td>20 women (45 more to be added)</td>
<td>Increased incomes from sale of children's clothing and innovation of working outside the home</td>
<td>Sense of pride and accomplishment</td>
<td>P. 12 (table 2)</td>
<td>Yes</td>
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<tr>
<td><strong>Food processing, toy-making, silk screen, crafts in Kenya (New International Century)</strong></td>
<td>Assessing the Impact of Development Projects on Women AID/1980 Paper no. 8 (Ruth Dixon)</td>
<td>Kenya</td>
<td>N/A</td>
<td>Increase production, employment, and incomes</td>
<td>Technical assistance, and group mobilization</td>
<td>&quot;70 women</td>
<td>Income growing self-confidence; opportunity to work together by four groups</td>
<td>P. 13 (table 2)</td>
<td>Yes</td>
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<tr>
<td><strong>Audio cassettes on health and nutrition in Tanzania</strong></td>
<td>Assessing the Impact of Development Projects on Women AID/1980 Paper no. 8 (Ruth Dixon)</td>
<td>Tanzania</td>
<td>N/A</td>
<td>Improve welfare (health)</td>
<td>Training and group mobilization</td>
<td>Rural women in 2 villages</td>
<td>Initiated Self-awareness and pride in self-increased help activities in health, nutrition, gardening and crafts</td>
<td>P. 15 (table 2)</td>
<td>No</td>
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<tr>
<td><strong>Women in Development Project, Phase I (Mission Evaluation)</strong></td>
<td>AID/1983 Haiti 1979-1983 Help low-income women find employment and participate in socioeconomic improvement programs</td>
<td>Haiti</td>
<td>1979-1983</td>
<td>Income-generation =60 Loan program =17 (husband and wife team) Loan program =106 members 1981-82 PAP = 670</td>
<td>Skills training program, education program, assistance to small income-generating projects placement services program</td>
<td>N/A</td>
<td>N/A</td>
<td>Yes</td>
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<tr>
<td>Industrial and Commercial Job Training for Women (Joseph W.B. Bredie et al)</td>
<td>AID/1983</td>
<td>Morocco</td>
<td>1979-1983</td>
<td>Integrate women trainees into the labor ministry's industrial and commercial training centers to enable them to acquire professional qualifications and to assist them in job placement. Recruiting training, counseling, and assisting women to secure employment.</td>
<td>Technical assistance, U.S. participant training and provision of equipment (all sectors)</td>
<td>650-trainees, 5500-trainees (industrial and commercial)</td>
<td>The selection procedure is adequate. Three new curricula were produced, however, only used informally. Most of the equipment was properly and fully used. 71% of the women trained in pilot skills secured employment, however graduates usually find employment through their own efforts</td>
<td>N/A</td>
<td>N/A</td>
<td>Yes</td>
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<tr>
<td>Appropriated Technology for Rural Women Project (Cornelia Butler Flora)</td>
<td>Inter-American Commission of Women of the American States (1985)</td>
<td>Bolivia</td>
<td>1979-1985</td>
<td>To create women based community organizations, by introducing appropriate technology and managerial skills, in three areas: agricultural and animal husbandry, small industry and handicrafts, community and home services. (In 34 communities in the two countries)</td>
<td>Community organizations, technical assistance, training and joint take-off capital</td>
<td>Beneficiaries varied as did the productive activity related</td>
<td>It is viewed as a success, projects in both countries served to integrate women into &quot;...the women were taught a unique skill which they are proud...&quot;</td>
<td>&quot;Women have gained a respect for their own abilities...&quot; &quot;...increasing the status of women in the community, at least according to the accounts of the women and men involved.&quot;</td>
<td>P. 19 (Bolivia)</td>
<td>Yes</td>
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<tr>
<td>Women Enterprise and Development</td>
<td>The Pathfinder Fund 1984/MID/PED</td>
<td>Brazil</td>
<td>1980-1984</td>
<td>Support five group enterprises for low-income women</td>
<td>Equipment, grants, and training in bookkeeping, managerial and technical productive skills.</td>
<td>These five enterprises benefit approximately one hundred women.</td>
<td>All projects are still operating. Three projects are generating enough income to meet current expenses. Most projects saw an increase in formal schooling, fertility, and improvement on family welfare. All five projects produce goods in quality to be sold in the formal market. They have had varying degrees of success.</td>
<td>&quot;On the individual level, women in all five projects experienced a dramatic increase in self-confidence, assertiveness, and in their ability to make decisions and work harmoniously in a group.&quot;</td>
<td>P. vif</td>
<td>Yes</td>
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<td>Brazil 1982-1984</td>
<td>Metalworking</td>
<td>First Year-28</td>
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<td>Costa Rica 1982-1984</td>
<td>Ice cream Factory in Limon</td>
<td>First Year-16</td>
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<tr>
<td>Honduras 1981-1984</td>
<td>Poultry (egg production)</td>
<td>First Year-35</td>
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<tr>
<td>Honduras 1982-1984</td>
<td>Bakery</td>
<td>First Year-27</td>
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<td>Jamaica 1981-1984</td>
<td>Crafts and Sewing Enterprise</td>
<td>First Year-4E</td>
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Note: They document the project intensively and generate good qualitative data.

"Changes were documented in self-confidence, ability to take initiative and assume responsibility capacity to work within a group, and aspirations not only for themselves but also for their daughters..."
TABLE 1 (continued)

Evaluation of Women's Income Generation Projects


Carasco, Beryl. 1985. "The Black Bay Vegetable Scheme of St. Lucia." Collaborative Project of the Population Council, the Women and Development Unit, University of the West Indies, Barbados.


