This is to certify that the

thesis entitled

MOTHERS OFFERING MOTHERS SUPPORT: THE
DIFFUSION OF A PREVENTIVE PRENATAL INNOVATION

presented by

Marcy Elisabeth Meyer

has been accepted towards fulfillment
of the requirements for

Master _of Arts_____degree in _Communication_

Charles Atkin

Major professor

Date __August 2, 1993__

PLACE IN RETURN BOX to remove this checkout from your record.
TO AVOID FINES return on or before date due.

DATE DUE	DATE DUE	DATE DUE

MSU Is An Affirmative Action/Equal Opportunity Institution

c:\circ\datedue.pm3-p.1

MOTHERS OFFERING MOTHERS SUPPORT:
THE DIFFUSION OF A PREVENTIVE PRENATAL INNOVATION

By

Marcy Elisabeth Meyer

A THESIS

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

MASTER OF ARTS

Department of Communication
and Urban Affairs Program

1993

ABSTRACT

MOTHERS OFFERING MOTHERS SUPPORT:
THE DIFFUSION OF A PREVENTIVE PRENATAL INNOVATION

By

Marcy Elisabeth Meyer

The Mothers Offering Mothers Support (MOMS) Program is an innovative parent-to-parent prenatal support intervention that seeks to reduce the number of low birthweight infants born to at-risk women in Michigan. The MEMO for MOMS is a questionnaire that attempts to measure the level of perceived change agent success in MOMS program participants. This scale was mailed to clients in the MOMS program (n=72). Respondents (n=23) were 69% white, 19% African American, 6% Asian, and 6% Hispanic, with a mean age of 21.8, 11 years of education, and 76.5% Medicaid status. Although no significant correlation was found between client score on the MEMO for MOMS and level of preventive health behavior (PHB), certain items in the MEMO for MOMS scale were moderately associated with PHBs. This preliminary investigation is a descriptive study that calls for future research in the diffusion of prenatal support programs.

ACKNOWLEDGEMENTS

TABLE OF CONTENTS

LIST OF TABLES

INTRODUCTION

Significance

In the United States, our infant mortality rate (IMR) is higher than many other industrialized countries. The United States ranks 22nd in infant mortality among industrialized nations with a rate 10.6, in spite of the fact that we spend more per capita for prenatal care than does any other country in the world (USDHHS, 1991). A body of literature exists that seeks to explain the etiology of infant deaths. Many studies focus on factors that may contribute the growing gap between the IMR for black and white infants in the United States: Although infant mortality rates have declined for both blacks and whites over the last three decades, a large racial gap in infant mortality persists in the United States. The slower relative decline for black infant mortality rates is linked to an increased incidence of low birth weight (LBW) infants in the African-American population (USDHHS, 1991). This disparity exists in the State of Michigan and the United States as a whole. The relationship between IMR and LBW is a major public health issue that presents a challenge to epidemiologists, health policy makers, health communicators, hospitals and clinics, community members, and women's and children's advocates across the nation.

1

In Michigan, The Mothers Offering Mothers Support (MOMS) Program is an innovative parent-to-parent support intervention that seeks to reduce the number of low birthweight infants born to at-risk women. The MOMS Program is based at Butterworth Hospital's Regional Perinatal Center in Grand Rapids, and it offers support services to women in Western Michigan who are admitted to the prenatal clinic to receive care for their high-risk pregnancies. In this program, at-risk pregnant women in the prenatal clinic are paired with volunteers: experienced parents from their community who have previously given birth to a premature or low birthweight infant. Services include weekly contact, emotional and informational support, transportation reimbursement to prenatal appointments, support in labor and delivery, and parenting education.

In order to determine if these services are effective, Butterworth Hospital and the Institute for Children, Youth, and Families are co-investigating the relationships between program activities and birth outcomes. On-going longitudinal program evaluation includes qualitative interviewing and quantitative analysis of questionnaires that evaluate changes in perceived levels of client psychosocial variables: the Maternal Social Support Index (Pascoe, Loda, Jeffries, and Earp, 1981); Rosenberg Self Esteem (Rosenberg, 1965), and the Profile of Mood States (McNair, Lorr, and Droppelman,

1971). Matched file data from hospital chart abstracts provides additional information about participant demographic characteristics, lifestyle, and medical risk variables.

In this study, the author developed the MEMO for MOMS in an attempt to assess the significance of variables associated with the adoption of prenatal health promotion in the Butterworth Hospital MOMS Program. Because the MOMS Program is a preventive innovation, it is appropriate to evaluate it with variables modified from Diffusion Theory (Rogers, 1982). The MEMO for MOMS is a questionnaire that attempts to measure change agent success in the Butterworth MOMS community-based health promotion effort. Specifically, a client's score on the questionnaire indicates perceived volunteer support parent effectiveness. It is hypothesized that elements of perceived volunteer support parent effectiveness will have a positive correlation with the amount of preventive health behavior in which a pregnant client engages.

The theoretical implications of this study are linked to previous work in community-based health promotion. For example, the communication of health promotion to low-income at-risk pregnant women by low-income women in the same community who have experienced a previous low birthweight or preterm birth is an example of community-based health promotion. The MOMS program consists of local health providers and community volunteers working together to overcome individual and institutional barriers to prenatal

health: Through their efforts, they can realize an improvement in prenatal health status and birth outcomes of women in their community.

Theoretical linkages also exist with previous research conducted in diffusion theory, particularly the implications for evaluating the diffusion of health innovations. The mode of health communication in a parent-to-parent support program is an element in the process of diffusing a preventive innovation: In this case, interpersonal communication is a vehicle for diffusing information about health education and social support. The women who are involved as health promoters can be called "volunteer MOMS", "lay health workers", or "change agents". Diffusion theory provides a conceptual framework for determining the degree of the change agent's effectiveness. Thus, the preventive prenatal innovation can be evaluated in part by exploring the perceived relationship that exists between the volunteer and client. Social support interventions are frequently evaluated with psychometric scales and linked medical records that describe birth outcomes. Diffusion theory lends an alternative framework for evaluating the process of health communication.

Background

National Data

The infant mortality rate (IMR) is a standard by which it is possible to compare the quality of maternal and child health care delivery systems across international, national,

state, and local boundaries. The rate of infant mortality refers to the number of infant deaths per 1,000 live births. (MDPH, 1988). Infants are categorized as babies under one year of age. According to the Report of the Secretary's Task Force on Black and Minority Health, infant mortality rates have two components: neonatal deaths that occur in the first 28 days of life, and postneonatal deaths that occur between 28 days and one year (USDHHS, 1986). Neonatal deaths reflect the pre-pregnancy health status of the mother, the quality of prenatal care that she receives during her pregnancy, and the care that she receives during delivery and in the post-partum period. Postneonatal deaths are thought to reflect the living conditions, quality of child care, and the degree of medical care available for preventable illnesses.

It is helpful to examine rates over time to understand trends in infant deaths. According to the USDHHS, the infant mortality rate has declined from 1960 to 1980 (see Table 1).

Table 1

U.S. INFANT MORTALITY RATES 1960-1980		
1960	1970	1980
26.0	20.0	12.6

Note. per 1,000 live births. Data from Health Status of Minorities and Low-Income Group (p.102) by USDHHS, 1991, Washington, DC: U.S. Government Printing Office.

One could logically conclude that the reduction in
infant mortality rates is due to inception of Medicaid (1965)
and the miracles of modern medicine made possible by the NICU
in the 1970s. More than any other program, it was the
Medicare/Medicaid legislation of 1965 that established the
popular concept that health care is a right. Medicaid was
unique in that it has helped reduce financial barriers to
care as well as to bring appropriate health services to high-
risk mothers and children--primary care as well as high tech
medical interventions made possible by modern equipment in
the Neonatal Intensive Care Unit. However, despite the
overall decline in infant mortality rates, recent studies
indicate that the incidence of infant mortality is not
declining equally among different ethnic groups (USDHHS,
1986, 1991; MDPH, 1988).

The most recent national statistics on the status of
minority health indicate that the racial disparity is
actually increasing. In 1960, the rate for black infants was
193% of the rate for white infants; in 1987, the rate was
208% higher for blacks than whites (see Table 2).

Table 2

INFANT MORTALITY RATES BY RACE 1960-1987				
	1960	1970	1980	1987
black	44.3	32.6	21.4	17.9
white	22.9	17.8	11.0	8.6

(Table 2 cont'd.)

Note. per 1,000 live births. Data from Health Status of Minorities and Low-Income Group (p.100) by USDHHS, 1991, Washington, DC: U.S. Government Printing Office.

In order to understand the reasons for the growing gap between black and white infants in infant mortality rates, it is helpful to understand the etiology of infant moribidity and mortality. For example, there are many conditions that lead to infant mortality, among them birth defects, accidents, sudden infant death syndrome, and disorders related to low birth weight or preterm labor. Although both white and black infants suffer from common causes of infant mortality, there is a striking dissimilarity in the incidence with which infants die from disorders related to low birth weight. Black infants die from complications related to low birth weight and preterm labor at nearly four times the rate of white infants (see Table 3).

Table 3

CAUSES OF INFANT MORTALITY BY RACE	
causes of infant mortality	ratio black: white
a. congenital anomalies	1.1
b. SIDS	1.9
c. disorders related to LBW/PTL	3.9
d. respiratory distress syndrome	1.9

(Table 3 cont'd.)

Note. per 1,000 live births. Data from Health Status of

Minorities and Low-Income Group (p.105) by USDHHS, 1991,

Washington, DC: U.S. Government Printing Office.

These findings about the primary causes for infant

mortality are paralleled by USDHHS statistical analysis of

the discrepancy between the percentage of low birth weight

infants in black and white populations. Over the past two

decades, the ratio between black and white low birth weight

infants has increased from 2.04 to 2.23. Thus, the racial

disparity in the distribution of infant deaths related to low

birth weight and preterm labor may be due to the increasing

number of low birth weight infants born to African American

women (see Table 4).

Table 4

PERCENT OF INFANTS OF LOW BIRTHWEIGHT BY RACE			
	1970	1980	1987
black	13.9	12.5	12.7
white	6.8	5.7	5.7
ratio	2.04	2.19	2.23

Note. per 1,000 live births. Data from Health Status of

Minorities and Low-Income Group (p.108) by USDHHS, 1991,

Washington, DC: U.S. Government Printing Office.

According to a recent government report, risk factors for infant mortality include live birth order (first and third or higher); maternal characteristics, including advanced maternal age as well as young age; low educational attainment; marital status; maternal substance abuse; and late initiation of prenatal care (USDHHS, 1991). Risk factors for infant deaths related to low birth weight may include maternal age, marital status, inadequate prenatal care, smoking, substance abuse, and poverty (MDPH, 1988). Recent studies call for a more in-depth investigation of the relationships that exist between poverty, ethnicity, and poor birth outcomes (Collins and David, 1990; Hansell, 1991; Kleinmen, Pierre, Madans, Land, and Schram, 1988; Lia Hoaberg et al., 1990; Machala and Miner, 1991; Reed, 1990; Sable, 1990; Starfield et al. 1991; and Zambrana, R., Dunkel-Schetter, C., and Scrimshaw, S., 1991). It is interesting that, although ethnicity is clearly associated with increased risk of infant mortality and low birthweight, government reports do not explicitly recognize it as a risk variable in and of itself. Perhaps this is because of a desire to avoid propagating the myth of race as a biological rather than sociological variable. At any rate, this is an omission that needs to be duly noted.

According to MDPH statistics, Michigan has a poor track record when it comes to taking care of pregnant women and babies: in 1984, Michigan had the highest non-white infant mortality rate in US. In that year it also tied for first

place tie with Pennsylvania for the highest LBW rate. Again, the relationship between low birth weight and infant mortality rates can be compared and contrasted with the national divide: In Michigan, the greater racial disparity in the incidence of low birth weight infants (see Table 5) may explain in part the fact that 76.4% of non-white infant deaths were infants weighing less than 2500 g. (MDPH, 1988).

Table 5

INCIDENCE* OF LBW INFANTS IN MICHIGAN, 1986		
black	white	ratio
140	54.3	2.58

Note. per 1,000 live births. Data from Minority Health in Michigan (p.73) by MDPH, 1988, Lansing, MI.

Review of the Literature

Community-based Health Promotion

Goeppinger, Lassiter, and Wilcox (1982) define community health as community competence. It involves the presence of four conditions that are necessary elements in the process of community health: 1) the commitment to community collaboration as a way to identify the problems and needs of a community; 2) the ability to achieve a working consensus on goals and priorities; 3) the ability to agree on ways and means to implement the agreed-upon goals; and 4) the

ability to collaborate effectively in the required actions. In essence, this process involves the cooperation of members from the professional health service delivery service as well as individuals from a community's informal helping system or "hidden health care system" (Levin, 1983). In this way, caretaking, emotional support, advice, and advocacy can be organized across several social networks as a strategy for community health promotion (Israel, 1985).

Community-wide approaches are especially advisable when one attempts to understand determinants of women's health (Rodriquez-Trias, 1992). Because women are central players in family and community dynamics, health policy makers, providers and researchers cannot ignore the complex ecological factors that contribute to their health problems. Health promotion must be viewed as a collaborative process created with community members as well as an array of tactics designed by an agency to produce certain behavioral outcomes in a certain population: the goal is to foster change in the social environment and not only the knowledge--attitude--behavior hierarchy of isolated individuals. Truly collaborative efforts must work to create effective health promotion programs that have goals that are compatible with the needs of the program participants. To this end, there is a need for collaboration with community members at all stages of program development, implementation, and evaluation (Eng, Salmon, and Mullan, 1992).

The utilization of peer health workers to provide health education and services to underserved populations is an intervention widely used in other nations and one that originally gained popularity in the United States during the Great Society initiatives under the Economic Opportunity legislation of the mid 1960's. Projects in maternal and child health were designed to employ peer health workers of similar culture and community characteristics as the target population to bridge the socio-cultural gap between providers and families as well as to provide informational and supportive health care services to underserved groups. Lay health workers often shared similar cultural backgrounds and neighborhoods with their clients, and they were thought to be able to gain access to and establish contact with individuals who otherwise might be unapproachable. Further, paraprofessionals often reported experiencing personal advancement opportunities and significant personal growth as a result of their training and outreach work (Riessman, 1965). Today, increasing health care costs and the growing proportion of low-income women with inadequate prenatal health care has led public health providers to a renewed interest in the use of peer health workers for education, outreach, and advocacy (Committee for the Study of the Future of Public Health, 1988).

A review of the literature indicates that peer health workers are successful in teaching concepts of primary or secondary prevention as well as to increase maternal-child

health services compliance and utilization (Chamberlain, 1987). Recent studies suggest that indigenous lay health workers can be effective in delivering educational and social support programs for at-risk pregnant women (Amezcua, 1990; Giblin, Poland, and Ager, 1990; Levin, 1983; Meister, Warrick, de Zapien, and Wood, 1992; Pharis and Levin, 1991). Aided by persuasive communication and amenable health policy, prenatal volunteers could influence women to adopt behavioral changes that would reduce their risks of premature and low-birthweight babies. Potential benefits include increased physical health, preventive health care, increased self-esteem, reduced dependency on social services, renewed psychological growth, and increased positive parenting skills. Similarly, a community-based intervention can make environmental changes act as buffering agents between maternal risk factors and the health of a newborn baby: Community-based parent-to-parent support programs are designed to reduce the risk of LBW babies in at-risk populations by offering support services and advocacy to women who need them most.

An analysis of volunteer prenatal programs in Michigan (Meyer et al., unpublished manuscript) indicates that community-based health promotion programs for at-risk pregnant women provide a wide range of services. Services vary between programs and often reflect the nature of the parent organization as well as the needs of the client population. In general, services can be broken down into

five categories: one-to-one peer support (non-medical); one-to-one *non*-peer support; assistance to access prenatal care; provision of prenatal care; and material support. One-to-one peer support (non-medical) includes making home visits, recruiting clients, completing intakes, counseling, giving nutritional, prenatal, and parenting information, offering emotional support. One-to-one *non*-peer support includes the delivery of similar services, but is offered to the client by someone of a different community, background, culture, or socioeconomic status. Assistance to access prenatal care is a category that includes referrals (such as how to apply for WIC, Medicaid, or where to make appointments for prenatal care), phone calls for appointment reminders or advocacy, and transportation, travel reimbursement, or child care. Some programs actually provide prenatal medical care, i.e. monthly checkups, diagnostic tests, labor and delivery, or support in labor and delivery. Finally, material support can provide housing, pregnancy testing, maternity clothes, baby clothes, cribs and car seats.

Social Support

Can non-medical social support improve a woman's ability to make informed decisions about being pregnant and about managing her pregnancy, thereby potentially enhancing the prospects for her pregnancy outcome? This question is one being asked by public health workers, nurses, and doctors who are concerned about the growing racial disparity in infant mortality rates in America. Social support may be

seen as the quantity and quality of emotional, instrumental, informational, or financial aid that is obtained from one's social network. It is postulated that social support may influence physical health in many ways: the provision of advice, services, or access to new social contacts; direct economic or physical assistance; exposure to the forces of social control and peer pressure; and the stress-buffering effects of intimacy, nurturance, and reassurance of worth (Berkman, 1984).

Several studies suggests that changes in psychosocial attitudes and social support may act as mediating variables between risk factors and birth outcomes (Norbeck and Tilden, 1983; Pharis and Levin, 1991; O'Hara, 1986; Meister et al., 1992; Giblin et al, 1990; Olds, D., Henderson, C., Tatelbaum, R., and Chamberlin, R., 1986; Heins, Nance, and Ferguson, 1987). There is substantial evidence to suggest that there is a strong negative correlation between a woman's level of social support and her risk of pregnancy complications. Several recent studies suggest that strong negative correlations exist between social support, depression, life stress, poor weight gain, cigarette smoking, alcohol and substance abuse (Giblin et al., 1990; Zuckerman, Amaro, Bauchner, and Cabral, 1989; Pharis and Levin, 1991; Meister et al., 1992). Of particular interest is the finding that women living in high-violence neighborhoods are significantly more likely to experience pregnancy complications than women living in lower violence neighborhoods (Zapata, Rebolledo,

Atalah, Newman, and King, 1991; Romano, Bloom, and Syme,
1991). Within high-violence neighborhoods, lower levels of
social support were significantly associated with a woman's
alcohol use during pregnancy, partner substance use, and risk
of pregnancy complications (Amaro, Fried, Cabral, and
Zuckerman, 1990). Despite the intuitively appealing nature
of these findings, one must note that these studies are not
without limitations in research design: the majority of the
studies in the field of social support and pregnancy are not
longitudinal in nature (Broadhead, Kaplan, James, et al,
1983); As such, correlation, but not causation, can be
inferred between the presence of social support and outcome
variables. In addition, measurement may be a problematic
issue if the prevalence of a risk variable is obfuscated by
the limitations of self-reporting techniques. Future
research needs to focus on prospective studies that examine
the relationships between social support and community health
in greater detail.

Weenig and Midden (1991) treat the subject of social
network influences on diffusion and persuasion. Their
findings support the hypothesis that the effectiveness of a
persuasive communication program aimed at promoting adoption
decisions depends on the successful achievement of two
successive processes: *information diffusion* and *persuasion.*
In essence, they link the process of information diffusion to
the number of social ties in an individual's social network,
and the adoption decision to the strength of communication

ties. Although their research pertains primarily to the diffusion of an environmental innovation (the adoption of energy conservation measures), their findings are relevant to preventive health innovations as well. The authors found that a direct tie with a community volunteer of the project group was a significant positive predictor of program awareness. Second, they found that adoption decisions were positively related to advice received from strong ties (i.e. family member, opinion leader, or close friend) and not to advice received from weak ties (i.e. acquaintances, casual friends, work associates). One can apply these findings to community-based health promotion efforts: in order for diffusion to occur, there is a need for collaboration between community members and agency. The number of weak social ties between clients and community program volunteers can be increased to stimulate communication and information dissemination; Participation of community members and client's strong network ties can minimize potential conflicting messages between clients and their family, friends, and opinion leaders (St. Clair and Anderson, 1989).

In their work that investigates the epidemiological evidence for a relationship between social support and health, Broadhead et al. (1983) state that a strong argument can be made for a causal relationship between social support (the independent variable) and health (the dependent variable). This conclusion is qualified by the finding that a review of literature does not demonstrate the necessary

antecedent-consequent relationship necessary to indicate causality: many studies are retrospective or cross-sectional, and so can only express confidence in their results in terms of correlation. However, the authors suggest that three variables should be mentioned for their statistical interaction or effect modification of social support: education; gender; and baseline health status. Education may also interact with social support so that the least educated receive the greatest benefit; social support is apparently of greater benefit to women than men; and social support may be more beneficial to those already in poor health. These three variables (low educational attainment, female gender, and medical/social risk status) are representative of the demographic characteristics of the clients in the MOMS prenatal health innovation.

What is the relationship between social support and diffusion? Although this topic is not directly addressed in the literature, it would seem that certain elements of change agent success are positively correlated with social support. Take for instance, three variables: perceived empathy, trustworthiness, and client-orientation in terms of interpersonal interaction. These three variables are elements of the MEMO for MOMS questionnaire. Intuitively, it would appear that the more that a lay health worker shares elements of social support with a client (for example, intimacy, emotional support, material or informational resources, and advice), the more that the client would be

inclined to make positive attributions about the degree of empathy, trust, and client-orientation in their interpersonal interaction. In turn, these attributions would increase the potential for information diffusion and adoption of innovation. The relationship between diffusion variables and change agent success will be explored in greater detail in the Methods section.

Diffusion Theory

According to Green and Raeburn (1990), an ecological model of health promotion defines health as "the product of the individual's continuous interaction and interdependence with the family, the community, the culture, the societal structure, and the physical environment in which she lives." It is perhaps with such insight that Rogers (1983) discusses diffusion theory, the roles of the change agent, her strengths and her weaknesses in relation to the ecology.

Rogers defines *diffusion* as the process by which an innovation is communicated through certain channels over time among the members of a social system. A preventive innovation is "a new idea that an individual adopts in order to avoid the possible occurrence of some unwanted event in the future" (Rogers, 1983). Proper prenatal care is an example of a preventive innovation: Medical experts indicate that proper prenatal care, adequate nutrition, and avoidance of risk behavior during pregnancy *may reduce the risk* of giving birth to a premature or low birthweight infant (Olds et al., 1986; Lia Hoaberg et al., 1990).

However, because of the uncertainty of the desired consequences, preventive innovations often do not enjoy a rapid rate of adoption. For example, any pregnant woman knows that there is no guarantee that she will give birth to a perfectly healthy baby. A woman may follow doctor's orders and adhere to a strict regimen of proper prenatal care, adequate nutrition, and avoidance of risk behavior during pregnancy; yet, despite her efforts to adopt a healthy lifestyle during pregnancy, it is possible that she may still give birth to a low birthweight infant. On the other hand, another woman who drinks alcohol in moderation, smokes half a pack of cigarettes a day, and disregards health-promoting behaviors in pregnancy may nonetheless give birth to a perfectly normal infant.

While medical experts can never be certain of the desired consequences of preventive prenatal care, they can also experience difficulty in communicating the nature of this uncertainty: not all pregnant women in the lay public are familiar with technical terminology, probability, or the concept of statistical uncertainty. In this instance, a doctor might have difficulty explaining the nature of risk to an at-risk pregnant woman, let alone persuading the woman to effect behavioral change. Therefore, it is the job of the health outreach worker as an intermediary to *communicate the risk -- as well as the uncertainty* (National Research Council, 1989) inherent in the failure to adopt healthy behavior during pregnancy .

According to Rogers, "a *change agent* is an individual who influences clients' innovation decisions in a direction deemed desirable by a change agency. If an agency with resources to influence policy initiatives were to feel that health promotion for high-risk pregnant women in our society is a priority, then Rogers' *change agent* could be employed to influence innovation decisions which concern nutrition and proper prenatal care. This hypothetical relationship mirrors the situation in Maternal Support Services or Maternal Infant Outreach programs, where state health departments employ paraprofessionals to encourage client compliance with prenatal care.

Rogers' "Generalizations 9-1 to 9-12" state that "a change agent's relative success in securing the adoption of innovations by clients is positively related to: 1) the extent of change agent effort in contacting clients; 2) a client-orientation, rather than a change agency-orientation; 3) the degree to which the diffusion program is compatible with client's needs; 4) the change agent's empathy with clients; 5) higher social status among clients; 6) greater social participation; 7) higher education; and 8) cosmopoliteness (i.e. a cosmopolitan nature exhibited by those not bound by local or national habits or prejudices)."

Further, he generalizes that "change agent success is positively related to: 9) homophily (i.e. the degree to which pairs of individuals who interact are similar in certain attributes, such as beliefs, education, social

status, and the like) with clients; 10) credibility in the clients' eyes; 11) the extent to which she works through opinion leaders; and 12) an increase in clients' ability to evaluate innovations" (Rogers, 1983).

Rationale

In order to explain the rationale for this study, it is necessary to define the variables being measured and to clearly explain the logic behind the expected results. The independent variable is the client's MEMO for MOMS score (indicates perceived volunteer support parent effectiveness); The dependent variable is client preventive health behavior (measured by number of prenatal visits; sufficient weight gain; smoking, drinking alcohol, or substance abuse). The relevant hypotheses are as follows:

H_0: No relationship is posited between a client's score on the MEMO for MOMS (indicates perceived volunteer support parent effectiveness) and the amount of preventive health behavior in which a pregnant client engages (number of prenatal visits; sufficient weight gain; quitting smoking, drinking alcohol, or substance abuse).

H_1: Positive correlations are posited to exist between a client's level of preventive health behavior and the following variables:

a. program compatibility with client needs (items 8-9 and 25-30);

b. an increase in clients' ability to learn about or evaluate innovations (items 22-24);

c. change agent credibility in terms of technical expertise and trustworthiness (items 17-19);

d. perceived homophily between client and change agent (items 15-16);

e. perceived client-orientation in terms of perceived quality of interpersonal interaction (items 4-5);

f. perceived change agent empathy (items 6-7);

g. level of educational attainment (from demographic data);

h. frequency of change agent contact with client (items 1-3);

i. degree to which change agent's advice is perceived to be consistent with that of opinion leaders (items 20-21);

j. social participation among clients (frequency of contact with and number of new members in social network) (items 10-11);

k. cosmopoliteness of client (items 12-14); and

l. social status of client (from demographic data). Variables are drawn from Rogers list of "Generalizations 9-1 to 9-12". They are presented in order from strong positive to weak positive as an organizational scheme only; no hypothesis is made about the relative strengths of each hypothesis.

H_0: Inter-volunteer differences will be reflected in client scores and preventive health behaviors.

H_1: Inter-volunteer differences will be reflected in client scores and preventive health behaviors.

This investigation is conducted in an attempt to understand and evaluate a preventive intervention that seeks to reduce the incidence of premature and low birthweight infants in an at-risk population. The goal of the program is to enable the support parent to provide material and emotional support to the client in an effort to improve birth outcomes. If a client scores high on the <u>MEMO for MOMS</u>, it indicates that the client perceives herself and her support parent to have certain characteristics. According to diffusion theory, the presence of these attributes in the client and the support parent is a predictor of change agent success. A high level of change agent success increases the probability that the client will adopt the preventive innovation. It follows that a client who perceives her support parent to be effective is more likely to engage in preventive health behavior than a client who does not perceive her support parent to be effective. Certain attributes, such as client ability to learn about or evaluate innovations, program compatibility with client needs, and change agent credibility (in terms of technical expertise and trustworthiness), may play a more influential role in client adoption of preventive health behaviors than other factors. However, it is beyond the scope of this study to predict the strength of relationships between all relevant variables.

METHODS

Psychometric Theory

In social science research, theory plays an important role in the development of measurement scales. According to Suen (1990), psychometric theory is the science behind scale development. Scales are collections of items that reveal the level of an underlying theoretical variable (DeVellis, 1991). Central issues in psychometrics include: how to develop items; how to select items; how to transform responses into numerical scores; how to assess the quality of these scores; how to interpret these scores; and how to ascertain that the scores are not biased against certain groups of individuals.

Elements of Instrument Design

The MEMO for MOMS questionnaire fuses concepts from communication theory and human ecology. It is designed to measure change agent success in parent-to-parent support programs for at-risk pregnant women. The items in MEMO for MOMS have been developed from a wide variety of sources, and include conceptual elements from instruments such as Norbeck's Social Support Questionnaire (Norbeck, Lindsey, and Carrieri, 1981), the Maternal Social Support Index (Pascoe, 1981), and the Cardsort Rating of 32 Program Services (Pharis

and Levin, 1991). Additional material was derived from literature that explored the nature of resources and demands in stress and social support during pregnancy (Norbeck and Tilden, 1983; Romano, Bloom, and Syme, 1991).

The 31-item questionnaire (see Appendix C) is designed to rate client perception of change agent success. Answers are constructed along an adjectival response scale, with three to six discrete responses possible for each item. Respondents are asked to circle the most accurate response. A review of health measurement scales indicates that "the minimum number of categories used by raters should be in the region of five to seven" (Streiner and Norman, 1989, p. 27). This "rule of thumb" is often used because a smaller number of categories tends to reduce instrument reliability (Nishisato and Torii, 1970). However, for the target audience of clients with low educational attainment, four possible answers are given for items with adjectival responses. This is because simpler answers give clearer options for client selection. Options range along a continuum, for example: "often... sometimes... seldom... never"; "very well... quite well... somewhat well... not at all well"; "a lot... somewhat... a little... not at all"; "usually... sometimes... seldom... never"; "not enough... just about right...too much"; and numerical responses (i.e. "0... 1-2... 3-4... 5-6... 7 or more"). These responses are paired with questions that measure frequency, intensity, contingency, quality, and quantity, respectively. "Does not

apply" is an option for contingent questions that measure intensity or quantity rather than frequency. Item 31 is an open-ended question used to uncover client-generated anecdotal evidence. This qualitative material may assess change agent effects that are not tapped by the first 30 items.

An attempt has been made to represent each variable in the questionnaire by more than one item. However, this does not apply to generalizations 5 and 7 because they measure social status among clients and higher education. These two items will be gathered by standard demographic questions that are routinely attached to client questionnaires by the staff in the hospital setting within which the study will be conducted. Items 1-3 seek to measure change agent contact with client; items 4-5 are designed to measure client-orientation; items 6-7 attempt to measure change agent empathy; items 10-11 are intended to measure social interaction among the client population; items 12-14 seek to measure cosmopoliteness in terms of social interaction and exposure to mass media; items 15-16 are designed to measure homophily; items 17-19 were written to measure credibility in terms of technical expertise and trustworthiness; items 20-21 are intended to measure consistency of advice with that of opinion leaders; items 22-24 try to assess client ability to evaluate innovations; and items 8-9 and 25-30 attempt to measure compatibility with client needs. It must be noted that elements of material and emotional support (Thoits,

1982) form the nexus of items in the client need category.
Grouping of the items is orchestrated by the distinct
socioemotional and instrumental components of social support
(Thoits, 1982). Many of these items are conceptually based
in a cardsort rating device that measures social support for
low-income women (Pharis and Levin, 1991).

Reliability and Validity of MEMO for MOMS

Reliability is defined as the degree of consistency or
stability with which the instrument measures an attribute
(Smith, 1988). Reliability can be established by a variety
of methods. Internal consistency can be tested by comparing
one part of the instrument with another. The 31 item scale
represents twelve distinct yet presumably interrelated
factors: Individually, each factor represents a distinct
facet of the relationship between change agents and clients;
when viewed as an ensemble, the instrument is composed of
items that operationalize change agent success. The alpha
coefficient has a single value for any given set of data, and
is equal to the mean of all possible split-half coefficients
associated with a particular set of data. However, in the
MEMO for MOMS scale, each variable is often represented by
only two items. As such, this method for assessing
reliability does not appear to be the most appropriate.

Validity refers to whether the instrument really
measures what it intends to measure (Smith, 1988). Face
validity was established by expert evaluation to determine
whether items adequately covered the conceptual model and

were appropriate for self-administration by the client population. Dr. Lee Anne Roman, a published expert in the field of Neonatal Intensive Care Unit parent support, Dr. James Dearing, a professor of Communication and diffusion theory, and Christie Deeds, a paraprofessional coordinator at the Butterworth MOMS program were in complete agreement that there was sufficient congruence between the conceptual model and the questionnaire. Items that seek to measure specific elements of change agent success integrate Roger's treatment of diffusion theory (1983) and volunteer services offered by the Butterworth MOMS program.

A hypothetical relationship will be tested between change agent success and preventive health behavior (PHB) by correlational analysis. Scored questionnaire results will be compared with level of client PHB: relationships will be examined between level of PHB and 1) total client score on the MEMO for MOMS; and 2) client score on the 12 subscales that represent variables of perceived change agent success. Correlations will be analyzed for strength and significance using SPSS. It is hypothesized that perceived change agent success will have a strong positive correlation with client level of PHB.

Hypotheses

The questionnaire will be administered to clients in the MOMS program at Butterworth Hospital. Correlational analysis will test the hypotheses that: 1) perceived change agent success has no correlation with client preventive health

behavior in the Butterworth Hospital MOMS Program; and 2) that no inter-volunteer differences exist between client scores . In order to reject the null hypothesis, client scores on the MEMO for MOMS must have a strong (positive) correlation with the amount of preventive health behavior in which they engage. Preventive health behavior (PHB) will be measured by information provided on the client's hospital chart abstract and the baby's birth certificate. Specific PHBs include: 1) the absence of risk behaviors (i.e. smoking, alcohol, cocaine, or inadequate weight gain); and 2) the total number of client prenatal visits. 'Risk behaviors' will be scored positively or negatively, depending on how they impact prenatal health. 'Prenatal visits' will be scored according to the total number of prenatal clinic visits. Thus, stated, PHB level will be measured and coded so that PHB = (total prenatal visits) + (weight gain) - (alcohol use) - (tobacco use) - (cocaine use). To this end, the more preventive health behaviors in which a client engages, the higher her score will be.

Two supporting hypotheses are suggested. First, correlations of varying intensity should exist between a client's level of preventive health behavior and those items in the MEMO for MOMS questionnaire that attempt to represent the following variables: program compatibility with client needs (items 8-9 and 24-30); an increase in clients' ability to evaluate innovations (items 22-24); credibility in terms of technical

expertise and trustworthiness (items 17-19); homophily (items 15-16); client-orientation in terms of perceived quality of interpersonal interaction (items 4-5); change agent empathy (items 6-7); level of educational attainment (from demographic data); change agent contact with client (items 1-3); consistency of change agent's advice with that of opinion leaders (items 20-21); social participation among clients (items 10-11); cosmopoliteness (items 12-14); and social status (from demographic data). Second, since each change agent has more than one client, inter-volunteer differences should be reflected in client scores and preventive health behaviors. By coding each client questionnaire by volunteer, we can determine which, if any, change agent variables remain relatively constant between clients.

Method of Administration

The questionnaire was mailed out one time only to program participants (n=72), with a cover letter from the paraprofessional program coordinator. The letter explained the reason for the evaluation, encouraged clients to return their completed questionnaires, and mentioned that a gift certificate would be procured for each client upon the receipt of her completed program evaluation (the gift certificate was a $5 coupon for Meijer; It was funded by a federal research grant as an incentive to increase the response rate in the target population). In fact, despite this incentive, an initially low response rate of 23 (32%)

and nine returned questionnaires (client had moved and left no forwarding address) in the first three weeks prompted us to follow up on collecting data for the program evaluation. As a result, the paraprofessional program coordinator and investigator made telephone calls to remind the 40 clients who had not yet responded to send in their questionnaires as soon as possible. When appropriate, they offered to help clients complete the survey over the telephone by filling in their responses on a blank questionnaire.

RESULTS

Follow-up

Eighteen clients did not have telephone numbers in the program records, so follow-up call were not feasible. Out of 32 follow up phone calls made, one client was contacted in person, messages were left for five clients with relatives, seven client numbers did not answer, and 19 had moved. Over all, at least 28 clients (39% of the total participants) had moved and left no forwarding address since the time of their involvement in the MOMS Program. This high mortality rate illustrates one major difficulty associated with conducting outreach evaluation on prenatal support programs for at-risk women: locating the program participants. On-going program evaluation will compare the characteristics of clients who responded to the questionnaire with those who did not. The goal will be to identify ways in which the response rate can be increased in future research that involves participants in the MOMS program.

Participants

Of 23 returned questionnaires, 18 were essentially complete and could be matched by case number with clients who had participated in the pilot study during their pregnancy. This was a crucial linkage because birth certificate information about prenatal PHB was stored in the data base that was created during the pilot study. The mean age of study participants was 21.8 years. Sixty-nine percent were white, 19% were African American, 6% were Asian, 6% were Hispanic, and 6% were from other ethnic categories. Eighty-eight percent of the participants were single and 12% were married. The mean level of education in the population was 11 years; however, 44% were high school graduates, 18% had earned a GED, and 11.8% had attended college but not received a diploma. The majority of study participants were on Medicaid (76.5%); the rest had private insurance (11.8%), were uninsured (5.9%), or had "other" insurance (5.9%). Most respondents had been involved in the MOMS program for six months or less (61.1%); others had spent seven months to a year (22.7%), or more than one year (16.7%) in the program.

Because of the low response rate, we decided to compare demographic characteristics of respondents and non-respondents. Respondents and non-respondents were quite similar in educational, economic, and marital status. For example, 53% of respondents had fewer than 12 years of education compared with 49% of non-respondents; eighty-eight percent of respondents and 80% of non-respondents were

single; seventy-six percent of respondents and 69% of non-respondents were on Medicaid. However, there was a racial disparity between respondents and non-respondents: Non-respondents were much more likely to be minorities than respondents (46% vs. 31%).

Mean and Standard Deviation of Perceived Change Agent Success and PHB

Total MEMO for MOMS scores were calculated by adding up responses for each coded item. The scale had a possible range of 29-167, with 167 as the highest level of perceived change agent success. MEMO for MOMS scores ranged between 46 and 126, with a mean of 98 and a standard deviation of 22. PHB scores ranged from 5 to 87, with a mean of 36 and a standard deviation of 18. Overall, clients perceived that volunteers had high levels of credibility, empathy, client orientation in interpersonal interaction, advice congruent with that of opinion leaders, and the ability to implement program goals compatible with client needs. Clients also perceived that they had learned a lot about pregnancy, childbirth, and parenting from their program involvement. The data for mean scores is presented in Table 6.

Table 6

Means and Standards Deviation of Perceived Change Agent

Success Variables

variable	X̄	R*	SD	cases
contact	10.0	1-23	5.59	18
orient	5.86	2-8	1.56	21
empathy	6.45	2-8	1.93	20
cl.needs	21.82	8-32	5.77	17
social	2.45	0-20	3.42	20
cosmop	10.95	2-19	3.11	22
homoph	5.14	2-8	1.93	21

variable	X̄	R*	SD	cases
cred	9.79	3-12	2.80	19
opinion	5.85	2-8	1.53	20
eval	8.95	3-12	2.67	21
SES	1.75	1-4	1.12	20
ED	11.23	1-16	2.11	22
PHB	36.22	⁻32-98	18.10	46
memotot	98.09	29-167	22.02	11

* denotes possible range of scores.

Part-Whole Comparison

Preliminary analysis of the data revealed that certain variables had a stronger positive correlation with the total MEMO for MOMS score than others. For example, volunteer credibility (items 17-19) and program compatibility with client needs (items 8-9 and 25-30) had equally strong positive correlations with the total score ($r=.88$, $p.01$). Next, consistency of advice with the that of opinion leaders (items 20-21) was strongly correlated with total score ($r=.85$, $p.01$). Client ability to evaluate interventions (items 22-24) was also strongly correlated with the total score ($r=.83$, $p.01$). Perceived empathy (items 6-7) and

perceived homophily (items 15-16) also had strong correlations with the total score (r=.82, *p*.01) and (r=.80, *p*=.01), respectively. Total contact was significantly associated with the total score (r=.78, *p*.01). Client orientation in interpersonal interaction (items 4-5) was also associated with total score (r=.75, *p*.01).

Items that attempted to measure the four remaining variables, education (years of school); socio-economic status (insurance); social participation among clients (10-11); and cosmopoliteness (12-14), were not significantly correlated with total score. In addition, these variables were neither significantly correlated with other variables in the questionnaire nor with one another.

However, the data indicates that certain variables in the questionnaire were strongly associated with others. For example, client ability to learn from or evaluate the innovation was strongly correlated with client-orientation in interpersonal interaction (r=.83, *p*=.01). Other strong positive correlations included: ability to learn/evaluate and volunteer credibility (r=.81, *p*=.01); volunteer advice consistent with that of opinion leaders and volunteer credibility (r=.82, *p*=.01); volunteer credibility and client-orientation in interpersonal interaction(r=.79, *p*=.01); volunteer credibility and perceived empathy (r=.79, *p*=.01); homophily and volunteer credibility (r=.77, *p*=.01); client ability to learn/evaluate and program compatibility with

client needs (r=.72, *p*=.01); and homophily and client ability to learn/ evaluate (r=.72, *p*=.01). The data on part-whole comparison is presented in Table 7.

Table 7

Part-Whole Comparison of MEMO for MOMS

	contact	client-orientation	empathy	client needs	homophily	credibility	opinion leaders	evaluate (learn)
contact	1.00	.54*	.37	.37	.65*	.66*	.65*	.64*
client-orientation	.54*	1.00	.37	.59*	.50	.79*	.56*	.83*
empathy	.37	.37	1.00	.66*	.64*	.79*	.59*	.64*
client needs	.37	.59*	.66*	1.00	.68*	.65*	.49	.72*
homophily	.65*	.50	.64*	.68*	1.00	.77*	.73*	.72*
credibility	.66*	.79*	.79*	.65*	.77*	1.00	.82*	.81*
opinion leaders	.65*	.56*	.56*	.49	.73*	.82*	1.00	.66*
evaluate/ learn	.64*	.83*	.64*	.72*	.72*	.81*	.66*	1.00
social	.25	.09	..27	.38	.23	.08	.08	.06
cosmop	-.09	.09	.01	.27	.10	.02	.08	.13
SES	-.41	.31	-.02	.02	-.15	.20	-.04	.00
ED	-.12	-.04	-.11	.02	-.14	-.06	-.08	-.02
PHB	.01	.15	.21	-.09	-.31	.23	.40	.27
memotot	.78*	.75*	.83*	.88*	.80*	.89*	.85*	.83*

*p=.01

Table 7 (cont'd.)

	SES	education	social interaction	cosmop	PHB
SES	1.00	.30	-.04	-.21	.16
education	.30	1.00	.26	-.12	-.39
social interaction	-.04	.26	1.00	-.11	-.56
cosmop	-.21	-.12	-.11	1.00	.04
memotot	.04	.02	.46	.27	.12

To summarize the data in Table 7, significant correlations existed between variables measuring perceived change agent success. For example, volunteer credibility was correlated with consistency of advice with opinion leaders ($r=.82$, $p.01$), client ability to learn from /evaluate prenatal intervention ($r=.81$, $p.01$), client-orientation in interpersonal interaction ($r=.79$, $p.01$), empathy ($r=.79$, $p.01$), homophily ($r=.77$, $p.01$), and program compatibility with client needs ($r=.65$, $p.01$). Client ability to learn from /evaluate prenatal intervention had strong positive correlations with the same variables: Client-orientation in interpersonal interaction ($r=.83$, $p.01$), program compatibility with client needs ($r=.72$, $p.01$), homophily ($r=.72$, $p.01$), credibility ($r=.81$, $p.01$), empathy ($r=.64$, $p.01$), and consistency of advice with opinion leaders ($r=.66$, $p.01$). Socio-economic status, education, cosmopoliteness, and social participation among clients showed no significant correlations with other variables.

Influence of Perceived Change Agent Success on PHB

Although the total MEMO for MOMS score was not significantly associated with client PHB (r=.12), certain variables were more strongly associated with PHB than others: Social participation (⁻·56), consistency of advice with that of opinion leaders (.40), and education (⁻·39) were most strongly correlated with PHB, although not at significant levels. In addition, certain items in the questionnaire were moderately correlated with individual PHBs (see Table 8).

Table 8

Correlations Between Scale Items and Client PHB

item	alcohol use	weight gain	risk status
understands	-.62*	.46	.50
reassures	-.49*	.67*	.37
friendship	-.50*	.29	.38
comforts	-.53*	.53	.51
learn about pregnancy	-.52*	.31	.49
learn about parenting	-.46*	.44	.31
mother agrees	.	.62*	.16
health habit	.	-.37	.68*

* p=.05
# includes medical risk as well as behavioral risk.
. coefficient cannot be computed.

As illustrated in Table 8, alcohol use has a moderate negative correlation with level of perceived empathy (understanding r=.62, *p*.05; reassure (r=-.49, *p*.05); friendship (r=-.50, *p*.05); comfort (r=.-53, *p*.05); and ability to learn about/evaluate interventions in pregnancy (r=-52, *p*.05) and parenting (r=-.46, *p*.05). Weight gain was correlated with ability to reassure (r=.67, *p*.05) and advice that agreed with that of the client's mother (r=.62, *p*.05). Helping with a health habit was associated with risk status (r=.68, *p*.05). These relationships will be explored in the discussion section.

Up to this point, the analysis has focused on examining significant correlations between variables. It is sometimes helpful to take a closer look at the correlations that are not significant. On a hunch that tobacco use should be more strongly correlated with item 27 "help with a health habit" (r=.32), the author decided to use a cross tab to examine the relationship in greater detail. All seven respondents who felt that their volunteer was "not at all helpful" in helping them change a health habit (i.e. smoking, drinking alcohol, weight gain, or substance abuse), were non-smokers. The relationships presented in Table 9 will be examined in the discussion section.

Table 9

The Relationship Between Tobacco Use and Health Habit

cigarettes per day	help with a health habit			
	1	2	3	4
0	7		1	2
10		1	1	
20			1	

Responses to item 31 were anecdotal, and thus varied widely. Of the 14 respondents who answered item 31, seven made positive statements about the MOMS program, one made a negative statement about her volunteer partner, and six said that they would like to have had more contact with their MOMS partner.

DISCUSSION

Limitations of the Study

Along with any study that cannot control the total environment and its actors, there are certain limitations of this research that must be acknowledged. One directly relates to the results not being generalizable outside the program population. Although the demographic characteristics of the program participants are roughly comparable to the state-wide population of low-income pregnant women, enrollment in the program is voluntary. Thus, the population under study may have different perceptions of the benefits involved with a social support prenatal program than the larger clinic population.

A second limitation of this study lies in the descriptive nature of the research. Because the methodology is primarily qualitative, the MEMO for MOMS is neither reliable nor valid as a tested measure of change agent success. To this end, the data must be interpreted with caution. Although the original intent of this research was to create an instrument to measure the construct of change agent success, the research design may have precluded the verification of this condition.

As previously stated, because of time constraints, the study is cross-sectional, rather than longitudinal. Second, the questionnaire was not pre-tested for three reasons: to begin with, the number of the program participants was small (n=72) and the probability great that the sample size was too small to attain a sufficient level of statistical power in order to reject the null hypothesis in an untested 30-item questionnaire (Lipsey, 1990). Further, the characteristics of the program participants were not represented in the general population, so it was not practical to administer the pretest to a group of undergraduate students. Finally, program coordinators recognized that clients in the MOMS parent-to-parent-support program do not have an easy time with filling out lengthy program evaluations: Administering the questionnaire to the program participants through the mail on consecutive days would not have encouraged a high rate of return.

The study is also limited in that the response rate was very low (33%). The rate of return precluded an inter-volunteer rating that would have tested the hypothesis that total MEMO for MOMS scores vary between volunteers. Further research should focus on demographic characteristics of respondents and clients who failed to return the questionnaire, as well as alternate methods for collecting data from hard-to-reach clients.

Finally, the study is limited in the way that the questionnaire responses were coded. Specifically, all items were not weighted equally. This discrepancy in coding scheme allowed certain variables to have a greater impact on the total MEMO for MOMS and PHB scores than others.

Examining Relationships in the Part-Whole Comparison

It can be helpful to take a closer look at three relationships in the part-whole comparison: the relative mean scores of each variable in the questionnaire; the correlations between variables and total score; and the associations between variables. By examining these relationships, we can reach a clearer understanding of what it means to measure perceived change agent success.

According to the data in Table 6, clients perceived that volunteers had high levels of credibility, empathy, client orientation in interpersonal interaction, advice congruent with that of opinion leaders, and the ability to implement program goals compatible with client needs. Clients also reported that they had learned a lot about pregnancy, childbirth, and parenting from their program involvement. This finding indicate that these variables may measure valuable skills that volunteers exercise in their interaction with clients.

Analysis of the data in Table 7 indicated that certain variables had a stronger positive correlation with the total MEMO for MOMS score than others. These variables include volunteer credibility, program compatibility with client

needs, consistency of advice with the that of opinion leaders, client ability to evaluate interventions, perceived empathy, perceived homophily, total contact, and client orientation in interpersonal interaction. These variables may be strongest predictors of perceived change agent success because they are contingent upon volunteer performance. In contrast, items that attempted to measure education, socio-economic status, social participation among clients, and cosmopoliteness were client-specific, and thus not significant predictors of total score.

The data in Table 7 suggest significant correlations existed between variables measuring perceived change agent success. Volunteer credibility and client ability to learn from /evaluate prenatal interventions were strongly correlated with one another. Both variables were also correlated with consistency of advice with opinion leaders, client-orientation in interpersonal interaction, empathy, homophily, and program compatibility with client needs.

One interpretation of these data would be to suggest that volunteers are perceived to be highly credible if they are perceived to be consistent with opinion leaders, client-oriented, empathetic, homophilous, and responsive to client needs. In turn, perhaps clients learn more if they perceive their volunteers to be credible sources of information.

Inter-Item Analysis of Perceived Change Agent Success and PHB

Data from Table 7 indicate that this study failed to reject the null hypothesis. Total level of client PHB was not significantly associated with MEMO for MOMS score or perceived change agent success variables. One must question whether the MEMO for MOMS scale is actually measuring perceived change agent success; further, is perceived change agent success related to PHB? It is possible that missing data prevents us from answering these questions: The correlation between PHB and memotot was calculated from 11 cases; associations between PHB and MEMO for MOMS variables were drawn from only eight cases. More often than not, incomplete birth certificate information or unanswered questionnaire items left a gap in the data set; this missing data stops us from drawing valid conclusions about the relationship between the MEMO for MOMS scale and PHB.

However, as illustrated by the data in Table 8, several items attempting to measure perceived change agent success variables are associated with client PHB. Items six (understands problems), seven (reassures), eight (friendship), nine (comfort), 22 (learn about pregnancy), and 24 (learn about parenting) are negatively correlated with alcohol use. Items seven (reassures) and 20 (mom agrees with advice) are correlated with adequate weight gain in pregnancy. These correlations could be interpreted to mean that a volunteer's mentoring and teaching have a positive effect on client PHB.

Item 27 (help with a health habit) is associated with total risk score. This may mean that women most at risk are more likely to value the advice that a volunteer gives about changing a health habit. One must note here that the total risk score includes medical variables as well as lifestyle variables. These medical risk factors may act as confounding variables to inflate the total risk score: in reality, women who score high on item 27 (health habit) may not be at high risk for lifestyle variables. Instead, it may be their level of *medical* risk that leads them to value their volunteer's advice about health habits.

One surprising finding was the absence of a significant correlation between item 27 "help with a health habit" and tobacco use in the client population (r=32, *p*.14). A closer examination of the data (see Table 9) indicates that this association may be misleading because of a flaw in instrument design: that is, of the eight respondents who answered 1) "not at all" to the health habit question, seven were non-smokers. These non-smokers may have answered that they did not value their volunteer's ability to help them with a health habit because the question *did not apply* to them. This finding argues persuasively for greater use of discretion in selecting item response options.

Finally, responses to open-ended question 31 indicate that clients generally viewed the program in a favorable light, describing volunteer partners as "wonderful", "helpful", "understanding", or "great". Most respondents

indicated that they would have liked to have had more contact with their volunteer, either during their pregnancy or after giving birth. Travel distance, length of time in the program, and end of program involvement soon after pregnancy were all cited as factors contributing to 'insufficient contact'. In one client's words, "I really needed a support person to talk to. I was alone 18 hours a day and afraid. My baby is now 16 months old and I still could use someone with a baby to talk to." This anecdotal evidence suggests that most clients in the MOMS program, especially mothers who are socially isolated, might profit from more frequent contact with their volunteer support parents.

CONCLUSIONS

This preliminary investigation, while primarily descriptive in nature, could be the foundation for a more in-depth study of perceived change agent success in prenatal health promotion programs. As previously stated in the section pertaining to study limitations, a larger, more representive sample might increase the generalizability of the findings as well the statistical power of the MEMO for MOMS scale. A longitudinal research design with a pretest, T1, and T2 data would also strenghten the scientific merit of this study. Alternative methods for collecting data should also be explored because mailed self-administered questionnaires did not have a high rate of return. One option to increase the survey response rate might be to engage clients in face-to-face interviews six weeks after program entry and again at time of program completion. In addition, any data missing from individual items in the questionnaires could be filled in by entering the mean response for each item across all respondents. This procedure would increase the total number of cases for correlational analysis.

As mentioned in the discussion section, more careful selection of item response options, coding, and indexing schemes could increase the future probability of rejecting the null hypothesis. To this end, "does not apply" could be included as a response option for items 26 and 27. In addition, careful indexing could ensure that all variables are weighted equally.

When creating a new scoring index for the dependent variable, items measuring PHB could be assigned values ranging from 1-3, depending on whether the behavior was optimal, acceptable, or unacceptable: Obstetric guidelines suggest that for the number of prenatal visits, an optimal range would be considered 10-14; for weight gain, 24-35 lbs. would be optimal; for alcohol, tobacco, and cocaine, an optimal level would be zero usage. Optimal levels would be assigned a value of three points. For all items, acceptable levels would receive two points, and unacceptable levels would receive one point. Thus, the PHB scale's possible range would change from the current ⁻32-98 to 5-15: The higher the score, the higher the client level of PHB. This method of coding would ensure that each item has an equal impact on total PHB level.

For the independent variable, or 'memotot', creating a new index would also ensure that each variable would have the same potential to impact the total score. For example, the variable 'client needs' is represented by eight items in the questionnaire, and 'client orientation' has only two. Each

item currently has a possible range of 1-4, so clients can receive 32 points for 'client needs' and 8 points for 'client orientation'. A new index would allow four points as the maximum score for each variable: Thus, a client who scored six points on 'client orientation' would receive three points; one who scored 25 points on 'client needs' would also receive three points. According to this method of indexing, the possible range for 'memotot' would change from 29-167 to 12-48.

In a more refined version of the MEMO for MOMS, it might also be advisable to exclude items that attempt to measure cosmopoliteness and social participation among clients in the prenatal support program. The inclusion of these variables in the questionnaire may be an example of a reality isomorphism that occurs when theory does not always fit well with the constraints of practice: Diffusion Theory has most frequently been used for evaluating innovations in developing nations. There, perhaps cosmopoliteness and social participation are major factors in client ability to adopt innovations. In the context of an American prenatal health innovation, cosmopoliteness and social participation could be replaced with more culture-specific variables: for example, 'exposure to prenatal health promotion through mass media' and 'strength/size of social networks'. To this end, future research in the field of the diffusion of prenatal innovations should tailor Diffusion Theory to evaluate health promotion programs in a culturally-sensitive manner.

APPENDICES

APPENDIX A

STUDY EXPLANATION

April 15, 1992

Dear MOMS partner:

At this time, we would like to ask you to participate in a MOMS program evaluation. This means that we need you to complete two short questionnaires that tell us how you feel about the MOMS program. The questions are designed to describe your experience in the MOMS program, as well as the relationship that exists between you and your MOMS partner. This information will help us keep the program sensitive to the needs and concerns of program participants.

It is important for you to be aware that all research questionnaires will be given a code number and that your identity will be kept confidential. Your role as a MOMS partner will not be jeopardized if you choose not to participate in the evaluation. If you have any questions about the consent or evaluation process, please feel free to give us a call at Michigan State University (517) 353-6617 or Butterworth Hospital (616) 732-2627.

We have tried to keep these surveys as short as possible, and feel that it should not take you very much time to complete them. We would appreciate your efforts to fill out the questionnaires and return them in the stamped, self-addressed envelope as soon as possible. Thanks for considering our request for additional information. We need your help to make our program and community a better place.

Sincerely,

Lee Anne Roman, R.N., Ph.D.   Judy Lindsay, R.N., M.A.

Joe Moore, M.D.

Program Research Staff

APPENDIX B

INFORMED CONSENT FORM

NAME:_____

I understand that Butterworth Hospital is conducting a study about the MOMS Parent-to-Parent Support Program. This research is being directed by Judy Ferdig, Dr. Joseph Moore, Dr. Lee Anne Roman, and Marcy Meyer of Butterworth Hospital and the Institute of Children, Youth, and Families at Michigan State University.

I understand that information I gave on the MEMO for MOMS questionnaire may be released to project staff in order to be included in a descriptive study of MOMS clients.

I understand that a record may be kept of information that I share verbally or in writing with the MOMS program nurses about my concerns and feelings about my role as a MOMS client, unless I specify that a particular segment of information may not be used for study purposes.

I understand that all information that I give will be treated CONFIDENTIALLY and that my name will NOT appear on any written records or reports.

This project has been explained to me and I understand the explanation given.

I understand that I am under NO obligation to participate in this study, and that if I choose NOT to participate, this will not affect my involvement in the MOMS program at Butterworth Hospital.

I understand that I am free to discontinue my participation in the study at any time WITHOUT penalty from Butterworth Hospital or project staff. I also understand that I may refuse to answer any question asked of me.

I understand that, at my request, I can receive a summary of research findings of this project after my participation is completed.

SIGNED(Mother) _____   DATE_____

SIGNED_____   DATE_____
(Parent's signature if under 18 years of age)

SIGNED (Witness) _____   DATE_____

APPENDIX C

Code #:
Date:

MEMO for MOMS

This is a short survey that will tell us how you feel about the MOMS program. You and your baby are very important. We need your feedback to make our program and community a better place. In addition to circling the best answer for each question, feel free to say what you truly feel... we *need* to know what you think. Your name won't be on this paper. So, answer this the best you can, and know that we welcome your opinions and answers to any questions we forgot to ask (please put additional comments at the end). Thanks for your help.

1) How many times a month does your MOMS partner call you on the telephone?

     0   1   2   3   4   5   6   7   8   10 or more

2) How many times a month do you see your MOMS partner?

     0   1   2   3   4   5   6   7   8   10 or more

3) How do you feel about the frequency of your contact?

     NOT ENOUGH   JUST ABOUT RIGHT   TOO MUCH
        (1)   (3)   (2)

4) How well does your MOMS partner listen to you when you need someone to talk to?

   VERY WELL   QUITE WELL   SOMEWHAT WELL   NOT AT ALL WELL
     (4)   (3)   (2)   (1)

5) How often does your MOMS partner ask you what you think about the MOMS program?

   OFTEN   SOMETIMES   SELDOM   NEVER
    (4)   (3)   (2)   (1)

6) When you're having a problem, how often do you think that your MOMS partner understands what you're going through?

   USUALLY   SOMETIMES   SELDOM   NEVER
    (4)   (3)   (2)   (1)

55

7) How much does your MOMS partner reassure you by sharing experiences when you feel anxious about your pregnancy?

A LOT	SOMEWHAT	A LITTLE	NOT AT ALL
(4)	(3)	(2)	(1)

8) How much do you value your friendship with your MOMS partner?

A LOT	SOMEWHAT	A LITTLE	NOT AT ALL
(4)	(3)	(2)	(1)

9) How much does your MOMS partner comfort you when you feel stressed out?

A LOT	SOMEWHAT	A LITTLE	NOT AT ALL
(4)	(3)	(2)	(1)

10) How many times a week do you talk with another woman in the MOMS program?

0   1   2   3   4   5   6   7   8   10 or more

11) How many mothers have you met through the MOMS program?

0   1   2   3   4   5   6   7   8   10 or more

12) How often do you travel out of your neighborhood?

OFTEN	SOMETIMES	SELDOM	NEVER
(4)	(3)	(2)	(1)

13) How many minutes per day do you read magazines or newspaper?

NONE   A FEW MINUTES   15 MINUTES   1/2 HOUR   1 HOUR OR MORE

14) How many hours a day do you watch TV?

0   1   2   3   4   5   6   7   8   10 or more

15) How much do you and your MOMS partner have in common?

A LOT	SOMEWHAT	A LITTLE	NOT AT ALL
(4)	(3)	(2)	(1)

16) How much do you and your MOMS partner think alike ?

A LOT	SOMEWHAT	A LITTLE	NOT AT ALL
(4)	(3)	(2)	(1)

17) How much do you value the advice your MOMS partner gives you about your pregnancy?

A LOT	SOMEWHAT	A LITTLE	NOT AT ALL
(4)	(3)	(2)	(1)

18) How much do you value the advice your MOMS partner gives you about taking care of your baby?

A LOT	SOMEWHAT	A LITTLE	NOT AT ALL
(4)	(3)	(2)	(1)

19) How much trust do you have in your MOMS partner?

A LOT	SOMEWHAT	A LITTLE	NOT AT ALL
(4)	(3)	(2)	(1)

20) How much does your mother's advice agree with the advice your MOMS partner gives you about your pregnancy?

A LOT	SOMEWHAT	A LITTLE	NOT AT ALL
(4)	(3)	(2)	(1)

21) How much does your best friend's advice agree with the advice your MOMS partner gives you about your pregnancy?

A LOT	SOMEWHAT	A LITTLE	NOT AT ALL
(4)	(3)	(2)	(1)

22) How much have you learned about pregnancy from your MOMS partner?

A LOT	SOMEWHAT	A LITTLE	NOT AT ALL
(4)	(3)	(2)	(1)

23) How much have you learned about childbirth from your MOMS partner?

A LOT	SOMEWHAT	A LITTLE	NOT AT ALL
(4)	(3)	(2)	(1)

24) How much have you learned about taking care of your baby from your MOMS partner?

A LOT	SOMEWHAT	A LITTLE	NOT AT ALL
(4)	(3)	(2)	(1)

25) How much has your MOMS partner encouraged you to go back to school or GED classes?

A LOT	SOMEWHAT	A LITTLE	NOT AT ALL
(4)	(3)	(2)	(1)

26) If you have children, how often has your MOMS partner assisted you to arrange child care for your child or children?

OFTEN	SOMETIMES	SELDOM	NEVER
(4)	(3)	2)	(1)

27) How helpful has your MOMS partner been in helping you change a health habit? (for example, smoking, alcohol, drugs, eating too much or too little)

VERY HELPFUL	QUITE HELPFUL	SOMEWHAT HELPFUL	NOT AT ALL HELPFUL
(4)	(3)	(2)	(1)

28) How much has your MOMS partner taught you about different birth control methods?

A LOT	SOMEWHAT	A LITTLE	NOT AT ALL
(4)	(3)	(2)	(1)

29) How well does your MOMS partner help "cut red tape" for you or your family when you need support services or medical referrals?

VERY WELL	QUITE WELL	SOMEWHAT WELL	NOT AT ALL WELL
(4)	(3)	(2)	(1)

30) How much has your MOMS partner helped you set some goals for your future?

A LOT	SOMEWHAT	A LITTLE	NOT AT ALL
(4)	(3)	(2)	(1)

31) Please add any thoughts you would like to share about the program in the space below.

APPENDIX D

OFFICE OF VICE PRESIDENT FOR RESEARCH   EAST LANSING • MICHIGAN • 48824-1046
AND DEAN OF THE GRADUATE SCHOOL

April 5, 1993

TO: Ms. Marcy Meyer
        1312-I University Village
        East Lansing, MI 48823

RE: .   IRB #:   93-137
        TITLE: BUTTERWORTH HOSPITAL MOMS PROGRAM EVALUATION
        REVISION REQUESTED: N/A
        CATEGORY: 1-C
        APPROVAL DATE: 04/01/1993

The University Committee on Research Involving Human Subjects' (UCRIHS) review of this project is complete. I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and methods to obtain informed consent are appropriate. Therefore, the UCRIHS approved this project including any revision listed above.

UCRIHS approval is valid for one calendar year, beginning with the approval date shown above. Investigators planning to continue a project beyond one year must seek updated certification. Request for renewed approval must be accompanied by all four of the following mandatory assurances.
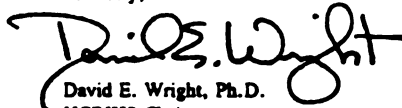
1.   The human subjects protocol is the same as in previous studies.
2.   There have been no ill effects suffered by the subjects due to their participation in the study.
3.   There have been no complaints by the subjects or their representatives related to their participation in the study.
4.   There has not been a change in the research environment nor new information which would indicate greater risk to human subjects than that assumed when the protocol was initially reviewed and approved.

There is a maximum of four such expedited renewals possible. Investigators wishing to continue a project beyond that time need to submit it again for complete review.

UCRIHS must review any changes in procedures involving human subjects, prior to initiation of the change. Investigators must notify UCRIHS promptly of any problems (unexpected side effects, complaints, etc.) involving human subjects during the course of the work.

If we can be of any future help, please do not hesitate to contact us at (517) 355-2180 or FAX (517) 336-1171.

Sincerely,

David E. Wright, Ph.D.
UCRIHS Chair

DEW:pjm

cc: Ms. Judy Lindsay
        Dr. Joseph Moore
        Dr. Lee Anne Roman

February 22, 1993

ButteRwORth
HOSPITAL

Joseph Moore, M.D.
Butterworth Hospital
100 Michigan, NE
Grand Rapids, MI 49503

Dear Dr. Moore:

By means of the expedited review process, the Butterworth Hospital Research and Human Rights Committee has given approval to the amendment of your study "Providing Social Support in High Risk Mothers and Infants: Prenatal Positive Parenting" (90-20). This amendment deals with a program follow up evaluation questionnaire to be given to the study participants.

The Human Rights Committee and the F.D.A. requires you submit in writing, a progress report to the committee by January 1, 1994 and you will need reapproval should your study be ongoing at that time.

If you have any questions please phone me or Linda Pool at 774-1291.

Thank you.

Sincerely,

Jeffrey S. Jones, M.D.
Co-Chairperson, Butterworth Hospital Research and Human Rights Committee

JSJ/jfn

c: Judy Lindsay

variable	value	frequency	percent
contact	1	2	11.1
	5	2	11.1
	7	3	16.7
	8	1	5.6
	9	2	11.1
	10	1	5.6
	12	1	5.6
	14	1	5.6
	15	1	5.6
	16	2	11.1
	17	1	5.6
	21	1	5.6
orient	2	2	9.5
	5	5	23.8
	6	5	23.8
	7	8	38.1
	8	1	4.8
empathy	2	2	10.0
	4	1	5.0
	5	2	10.0
	6	2	10.0
	7	5	25.0
	8	8	40.0

item	value	frequency	percent
momcall	0	3	16.7
	2	2	11.1
	3	3	16.7
	4	4	22.2
	6	1	5.6
	7	1	5.6
	10	4	22.2
momonth	0	4	25.0
	1	1	6.3
	2	2	12.5
	3	4	25.0
	4	3	18.8
	5	1	6.3
	8	1	6.3
frequenc	1	7	41.2
	2	1	5.9
	3	9	52.9
malisten	1	2	11.8
	2	2	11.8
	3	2	11.8
	4	11	64.7
whathink	1	2	11.1
	2	3	16.7
	3	10	55.6
	4	3	16.7
maunders	1	2	12.5
	3	4	25.0
	4	10	62.5
reassure	1	2	11.8
	2	3	17.6
	3	5	29.4
	4	7	41.2

61

variable	value	frequency	percent		item	value	frequency	percent
cl.needs	8	1	5.9		friendsh	1	3	17.6
	16	2	11.8			3	3	17.6
	18	2	11.8			4	11	64.7
	20	1	5.9					
	21	2	11.8		comfort	1	2	11.8
	22	1	5.9			2	2	11.8
	23	2	11.8			3	2	11.8
	24	1	5.9			4	11	64.7
	25	1	5.9					
	27	2	11.8		encschl	1	6	37.5
	31	2	11.8			2	3	18.8
						3	2	12.5
						4	5	31.3
					chilcare	1	9	60.0
						2	1	6.7
						3	2	13.3
						4	3	20.0
					helphlth	1	8	53.3
						2	1	6.7
						3	3	20.0
						4	3	20.0
					birthcont	1	6	35.3
						2	7	41.2
						3	1	5.9
						4	3	17.6
					mred tape	1	4	25.0
						2	4	25.0
						3	4	25.0
						4	4	25.0
					setgoals	1	3	18.8
						2	3	18.8
						3	6	37.5
						4	4	25.0

variable	value	frequency	percent		item	value	frequency	percent
social	0	8	40.0		talk othr	0	14	82.4
	1	4	20.0			2	1	5.9
	2	3	15.0			3	1	5.9
	5	1	5.0			5	1	5.9
	6	1	5.0					
	8	1	5.0		othrmoms	0	6	35.3
	9	1	5.0			1	6	35.3
	11	1	5.0			2	2	11.8
						5	2	11.8
						7	1	5.9
cosmop	5	1	4.5		travel	1	1	5.6
	7	3	13.6			2	2	11.1
	8	1	4.5			3	3	16.7
	9	3	13.6			4	12	66.71
	10	1	4.5					
	11	4	18.2		readnews	1	1	5.6
	13	5	22.7			2	5	27.8
	14	1	4.5			3	2	11.1
	15	2	9.1			4	5	27.8
	17	1	4.5			5	5	27.8
					watch tv	0	1	5.6
						1	1	5.6
						2	2	11.1
						3	3	16.7
						4	2	11.1
						5	4	22.2
						6	2	11.1
						7	1	5.6
						8	2	11.1
homo	2	3	14.3		incommon	1	4	23.5
	3	1	4.8			2	5	29.4
	4	3	14.3			3	5	29.4
	5	5	23.8			4	3	17.6
	6	5	23.8					
	8	4	19.0		thinksame	1	3	17.6
						2	5	29.4
						3	6	35.3
						4	3	17.6

variable	value	frequency	percent	item	value	frequency	percent
cred	3	1	5.3	advpreg	1	1	6.7
	4	1	5.3		2	2	13.3
	7	2	10.5		3	4	26.7
	8	1	5.3		4	8	53.3
	9	1	5.3				
	10	3	15.8	advcare	1	2	12.5
	11	2	10.5		2	1	6.3
	12	8	42.1		3	3	18.8
					4	10	62.5
				trust	1	3	17.6
					2	1	5.9
					3	5	29.4
					4	8	47.1
opinion	2	1	5.0	agreemom	1	1	6.3
	4	2	10.0		2	5	31.3
	5	5	25.0		3	6	37.5
	6	5	25.0		4	4	25.0
	7	4	20.0				
	8	3	15.0	agreefrnd	1	1	6.3
					2	4	25.0
					3	6	37.5
					4	5	31.3
eval/learn	3	1	4.8	lrnpreg	1	2	11.8
	4	2	9.5		2	2	11.8
	7	2	9.5		3	5	29.4
	8	1	4.8		4	8	47.1
	9	6	28.6				
	10	1	4.8	lrnbirth	1	2	11.8
	11	5	23.8		2	4	23.5
	12	3	14.3		3	5	29.4
					4	6	35.3
				lrncare	1	3	17.6
					2	1	5.9
					3	7	41.2
					4	6	35.3
SES	1	13	65.0				
	2	1	5.0				
	3	4	20.0				
	4	2	10.0				
ED	3	1	4.5				
	10	4	18.2				
	11	4	18.2				
	12	10	45.5				
	13	2	9.1				
	14	1	4.5				

variable	value	frequency	percent		item	value	frequency	percent
PHB	5	1	2.2		pprenat	1	1	1.3
	7	1	2.2			4	3	4.0
	10	1	2.2			5	2	2.7
	11	1	2.2			7	2	2.7
	14	2	4.3			8	5	6.7
	16	2	4.3			9	3	4.0
	18	1	2.2			10	8	10.7
	19	1	2.2			11	6	8.0
	20	1	2.2			12	10	13.3
	24	3	6.5			13	6	8.0
	27	2	4.3			14	9	12.0
	29	2	4.3			15	13	17.3
	30	1	2.2			16	3	4.0
	34	2	4.3			19	1	1.3
	37	2	4.3			20	1	1.3
	38	1	2.2			24	1	1.3
	39	2	4.3			26	1	1.3
	40	1	2.2					
	41	3	6.5		lbgain	10	1	2.1
	42	2	4.3			11	1	2.1
	43	1	2.2			12	1	2.1
	44	1	2.2			14	5	10.4
	45	2	4.3			15	3	6.3
	49	1	2.2			17	1	2.1
	52	1	2.2			19	1	2.1
	55	1	2.2			20	2	4.2
	58	1	2.2			21	1	2.1
	60	2	4.3			22	1	2.1
	63	1	2.2			23	1	2.1
	66	1	2.2			24	5	10.4
	70	1	2.2			25	1	2.1
	87	1	2.2			26	1	2.1
						27	1	2.1
						30	3	6.3
						32	2	4.2
						33	3	6.3
						35	1	2.1
						36	1	2.1
						40	3	6.3
						42	1	2.1
						45	2	4.2
						49	1	2.1
						50	3	6.3
						55	1	2.1
						72	1	2.1

variable	value	frequency	percent		item	value	frequency	percent
					tobacco	0	50	69.4
						1	1	1.4
						2	1	1.4
						5	1	1.4
						6	1	1.4
						10	9	12.5
						12	1	1.4
						15	1	1.4
						20	6	8.3
						40	1	1.4
					alcohol	0	67	93.1
						1	3	4.2
						2	2	2.8
					cocaine	0	69	97.2
						1	2	2.8
memotot	46	1	9.1					
	82	1	9.1					
	87	1	9.1					
	93	1	9.1					
	96	1	9.1					
	102	1	9.1					
	103	1	9.1					
	109	1	9.1					
	114	1	9.1					
	121	1	9.1					
	126	1	9.1					

LIST OF REFERENCES

LIST OF REFERENCES

Amaro, H., Fried, L., Cabrla, H., and Zuckerman, B. (1990). Violence during Pregnancy and Substance Abuse. American Journal of Public Health, 80, 575-579.

Amezcua, C., McAlister, A., Ramirez, A., and Espinoza, R. (1990). A Su Salud: Health Promotion in a Mexican-American Border Community. In Neil Bracht (Ed.), Health Promotion at the Community Level (pp. 257-276). Newbury Park, CA: Sage Publications.

Berkman, L. (1984). Assessing the Physical Health Effects of Social Networks and Social Support. Ann Rev Public Health, 5, 413-432.

Braithwaite, R., and Lythcott, N. (1989). Community Organization and Development for Health Promotion Within an Urban Black Community: A Conceptual Model. Health Education, 20, 56-60.

Broadhead, W., Kaplan, B., James, S., et al. (1983). The Epidemiologic Evidence for a Relationship Between Social Support and Health. American Journal of Epidemiology, 117, 521-537.

Chamberlain, R. (1987). Beyond Individual Risk Assessment: Community Wide Approaches to Promoting the Health and Development of Families and Children. Washington, DC: The National Center for Education in Maternal and Child Health.

Collins, J. and David, R. (1990). The Differential Effect of Traditional Risk Factors on Infant Birthweight among Blacks and Whites in Chicago. American Journal of Public Health, 80, 679-681.

Committee for the Study of the Future of Public Health. (1988). The Future of Public Health. Washington, DC: National Academy Press.

Devellis, R. (1991). Scale Development: Theory and Applications. Newbury Park, CA: SAGE Publications.

Eng, E., Salmon, M., and Mullan, F. (1992). Community Empowerment: The Critical Base for Primary Health Care. Community Health, 15, 1-12.

Goeppinger, J., Lassiter, P., and Wilcox, B. (1982). Community Health is Community Competence. Nursing Outlook, 30, 464-467.

Giblin, P., Poland, M., and Ager, J. (1990). Effects of Social Supports on Attitudes, Health Behaviors and Obtaining Prenatal Care. Journal of Community Health, 15, 357-368.

Green, L., and Raeburn, J. (1990). Contemporary Developments in Health Promotion: Definitions and Challenges. In N. Bracht (Ed.), Health Promotion at the Community Level. (pp. 29-42). Newbury Park: SAGE Publications.

Hansell, M.J. (1991). Sociodemographic Factors and the Quality of Prenatal Care. The American Journal of Public Health, 81, 1023-1029.

Heins, H., Nance. N., and Ferguson, J. (1987). Social Support in Improving Perinatal Outcome: The Resource Mothers Program. Obstetrics and Gynecology, 70, 263-266.

Hobfoll, S. (1986). Stress, Social Support, and Women. New York: The Hemisphere Publishing Corporation.

Israel, B. (1985). Social Networks and Social Support: Implications for Natural Helping and Community Level Interventions. Health Education Quarterly, 12, 65-80.

Iyasu, S., Becerra, J., Rowley, D., and Hogue, C. (1992). Impact of Very Low Birthweight on the Black-White Infant Mortality Gap. The American Journal of Preventive Medicine, 8, 271-277.

Kleinmen, J., Pierre, M., Madans, J., Land, G., and Schram, W. (1988). The Effects of Maternal Smoking on Fetal and Infant Mortality. American Journal of Epidemiology, 127, 274-282.

Last, J. (1987). Public Health and Human Ecology. East Norwalk, CT: Appleton & Lange.

Levin, L. (1983). Lay Care: The Hidden Resource in Health Promotion. Health Education Monograph, 3. 6-23.

Lia-Hoaberg, B., Rode, P., Skowholt, C., Oberg, C., Berg, C., Mullett, S., Choi, T. (1990). Barriers and Motivators to Prenatal Care Among Low-Income Women. Social Science and Medicine, 30, 487-495.

Lipsey, M. (1990). Design Sensitivity: Statistical Power for Experimental Research. Newbury Park, CA: SAGE Publications.

Machala, M. and Miner, M. (1991). Piecing Together the Crazy Quilt of Prenatal Care. Public Health Reports, 106, 353-361.

Mahon, J, Mc Farlane, J, Golden, K. (1991). De Madres a Madres: A Community Partnership for Health. Public Health Nursing, 8, 15-19.

McNair, D., Lorr, M., and Droppelman, L. (1971). Profile of Mood States. San Diego, CA: Educational and Industrial Testing Service.

Meister, J., Warrick, L., de Zapien, J., and Wood, A. (1992). Using Lay Health Workers: Case Study of a Community-Based Prenatal Intervention. Journal of Community Health, 17, 37-51.

Meyer, M., Lindsay, J., Roman, L., Moore, J., Boger, B., Trott, T., and Townsend, M. (1993). March of Dimes Survey of Volunteer Prenatal Programs in Michigan. Unpubished manuscript.

Michigan Department of Public Health. (1988). Minority Health in Michigan: Closing the Gap. Lansing, MI.

_____. (1991). 1991 Infant Death Report.

National Research Council. (1989). Improving Risk Communication. Washington, DC: National Academy Press.

Nishisato, N., and Torii, Y. (1970). Effects of Categorizing Continuous Normal Distributions on the Product-Moment Correlation. Japanese Psychological Research, 13, 45-49.

Norbeck, J., and Tilden, V. (1983). Life Stress, Social Support, and Emotional Disequilibrium in Complications of Pregnancy: A Prospective, Multivariate Study. Journal of Health and Social Behavior, 24, 30-46.

Nunnally, J. (1978). Psychometric Theory. New York: McGraw-Hill.

O'Hara, M. (1986). Social Support, Life Events, and Depression During Pregnancy and the Puerperium. The Archives of General Psychiatry, 43, 569-573.

Olds, D., Henderson, C., Tatelbaum, R., and Chamberlin, R. (1986). Improving the Delivery of Prenatal Care and Outcomes of Pregnancy: A Randomized Trial of Nurse Home Visitation. Pediatrics, 77, 16-28.

Parcel, G., Perry, C., and Taylor, W. (1990). Beyond Demonstration: Diffusion of Health Promotion Innovations. In N. Bracht (Ed.), Health Promotion at the Community Level. pp. 29-42). Newbury Park: SAGE Publications.

Pascoe, J., Loda, G., Jeffries, V., and Earp, J. (1981). The Association Between Mothers' Social Support and the Provision of Stimulation to their Children. Journal of Developmental and Behavioral Pediatrics, 2, 15-19.

Pharis, M., and Levin, V. (1991). "A Person To Talk to Who Really Cared": High-Risk Mothers' Evaluation of Services in an Intensive Intervention Research Program. Child Welfare, LXX, 307-320.

Reed, W. (1990). Racism and Health: The Case of Black Infant Mortality. In P. Conrad and R. Kern (Eds.), The Sociology of Health and Illness: Critical Perspectives. (pp. 34-34). New York: St. Martin's Press.

Reissman, F. (1965). The "Helper" Therapy Principle. Social Work, 10, 26-32.

Rodriguez-Trias, H. (1992). Women's Health, Women's Lives, Women's Rights. American Journal of Public Health, 82, 663-664.

Rogers, E. (1983). Diffusion of Innovations. New York: The Free Press.

Romano, P., Bloom, J., and Syme, S.L. (1991). Smoking, Social Support, and Hassles in an Urban African-American Community. American Journal of Public Health, 81, 1415-1422).

Rosenberg, M. (1965). Society and the Adolescent Self Image. Princeton, NJ: Princeton University Press.

Sable, M., Stockbauer, J., Schramm, W., and Land, G. (1990). Differentiating the Barriers to Adequate Prenatal Care in Missouri, 1987-88. Public Health Reports, 105, 549-555.

Sarason, I. and Sarason, B. (1985). Social Support: Theory, Research and Applications. Dordrecht, The Netherlands: Martinus Nijhoff Publishers.

Schorr, L. (1988). Within Our Reach: Breaking the Cycle of Disadvantage. New York, NY: Anchor Press.

Smith, M. J. (1988). Contemporary Communication Research Methods. Belmont, CA: Wadsworth Publishing Co.

Snapp, M.B. (1989). Toward Race, Class, and Gender Inclusive Research on Stress, Social Support, and Psychological Distress. Memphis, TN: Memphis State University.

Spector, R. (1991). Cultural Diversity in Health and Illness. East Norwalk, CT: Appleton and Lange.

St. Clair P. and Anderson, N. (1989). Social Network Advice During Pregnancy: Myths, Misinformation, and Sound Counsel. Birth, 16, 103-108.

Starfield, B., Shapiro, S., Weiss, J., Liang, K-Y., Ra, K., Paige, D., and Wang, X. (1991). Race, Family Income, and Low Birth Weight. American Journal of Epidemiology, 134. 1167-1174.

Streiner, D. and Norman, G. (1989). Health Measurement Scales: a Practical Guide to their Development and Use. New York: Oxford University Press.

Suen, H. (1990). Principles of Test Theories. Hillsdale, New Jersey: Lawrence Erlbaum Associates.

Thoits, P. (1982). Conceptual, Methodological, and Theoretical Problems in Studying Social Support as a Buffer Against Life Stress. Journal of Health and Social Behavior, 23, 145-159.

USDHHS. (1986). Report of the Secretary's Task Force on Black and Minority Health. Washington, DC: U.S. Government Printing Office.

_____. (1989). The International Classification of Diseases. (2nd edition, 9th revision). Washington, DC: Public Health Service, Health Care Financing Administration

_____. (1991). Health Status of Minorities and Low-Income Groups. Washington, DC: U.S. Government Printing Office.

Weenig, M., and Midden, C. (1991). Communication Network Influences on Information Diffusion and Persuasion. <u>Journal of Personality and Social Psychology, 61,</u> 734-742.

Zambrana, R., Dunkel-Schetter, C., and Scrimshaw, S. (1991). Racial-Ethnic Women in Los Angeles County. <u>Journal of Community Health, 16,</u> 283-294.

Zapata, C., Rebolledo, A., Atalah, E., Newman, B., and King, M.C. (1992). The Influence of Social and Political Violence on the Risk of Pregnancy Complications. <u>American Journal of Public Health, 82,</u> 685-692.

Zuckerman, B., Amaro, H., Bauchner, H., and Cabral, H. (1989). Depressive Symptoms During Pregnancy: Relationship to Poor Health Behaviors. <u>American Journal of Obstetrics and Gynecology, 160,</u> 1107-1111.