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UNIVERSITY COLLEGE OF NORTH WALES, BANGOR DOCTORAL DISSERTATION

AFFECTIVE FACTORS INFLUENCING COMPLIANCE TO HEALTH SCREENING

by

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For Michael and Kevin for being there

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SUMMARY

Research has shown that organised and effective cervical screening programmes can save lives. The present research was undertaken to detect some of the cognitive and emotional factors that might affect the probability that women respond to invitations for cervical screening. Based on an analysis of the literature on compliance behaviour, it has been hypothesized that there are differences in attitudes and beliefs of women who comply to cervical smear tests (CST) in comparison to those who do not comply, and that women with a positive self-image are more likely to comply to health screening than women with a less positive self-image. Two methods were used to test these hypotheses. A computerized version of Osgood's semantic differential and a structured personal questionnaire. The semantic differential was administered to 57 responders and 43 nonresponders to invitations for a CST. These women were individually interviewed in their homes. Twenty-six concepts pertaining to emotional, social, parental, and health-related domains were tested. This test was followed-up by a structured personal questionnaire. The results indicated that fear, worry, and embarrassment were negatively correlated with the decision to have a CST. The concepts fear and worry correlated significantly with cancer and CST for nonresponders, whereas for the responders only fear and cancer were significantly correlated, thus indicating that the nonresponders consider the CST as a test to detect cancer rather than as a preventive measure. Responders appeared to have a higher self-esteem and a better relationship with their husbands; whereas, nonresponders seemed to be women whose life revolves primarily around the family. Suggestions for effective persuasion for preventive health behaviour could be formulated on the basis of these results. Implications for health promotion and improvements in doctor-patient interactions are also discussed.

AFFECTIVE FACTORS INFLUENCING COMPLIANCE TO HEALTH SCREENING

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CONTENTS

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CHAPTER 1 - CERVICAL CANCER IN BRITAIN	p.	4
 A. Background and statistics regarding cervical cancer B. The biology of cervical cancer C. Screening and cervical cancer D. The problem 	р. р. р.	4 5 6 9
CHAPTER 2 - DEVELOPMENT AND APPLICATION OF		
THE CONCEPT OF HEALTH BEHAVIOUR	p.	11
 A. Introduction B. Definition of health behaviour C. Operationalization D. Compliance with medical advice E. Definition of Compliance F. Overview of determinants of compliance G. Personality, individual experience, and compliance H. Satisfaction and compliance 	р. р. р. р. р. р.	11 12 16 19 20 21 22 24
CHAPTER 3 - REVIEW OF LITERATURE	p.	26
A. Overview of the health belief model B. Studies of compliance and health related behaviour	р. р.	26 28
CHAPTER 4 - CONSIDERATION OF CONTRADICTING RESULTS OF RESEARCH	p.	104
CHAPTER 5 - THE SEMANTIC DIFFERENTIAL	Р.	113
 A. Description of the semantic differential B. Method and application C. Concept selection D. Example of an application of the semantic differential. A case study of multiple personality 	р. р. р.	113 114 122 123
CHAPTER 6 - THE STUDY	p.	135
A. Self-esteem, compliance, and cervical screening B. Pilot study C. Main study C.1 Method C.2 Results	р. р. р. р.	135 139 140 140 143

C.2.1 Results of the semantic differential C.2.2 Results of the questionnaire C.3 Discussion	р. р. р.	143 157 162
CHAPTER 7 - IMPLICATIONS FOR HEALTH PROMOTION	p.	170
APPENDIX A - PILOT STUDY RESULTS	p.	174
APPENDIX B - INSTRUCTIONS FOR SEMANTIC DIFFERENTIAL	p.	177
APPENDIX C - PERSONAL QUESTIONNAIRE	Ρ.	179
REFERENCES	p.	181

3

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CHAPTER 1

CERVICAL CANCER IN BRITAIN

A. Background and Statistics Regarding Cervical Cancer

The prevention of cervical cancer through the implementation of efficient screening programmes has been the subject of a great deal of debate and media coverage. Cervical cancer is one of the most preventable cancers; unlike many other cancers, there is an easily detectable and usually prolonged premalignant phase (British Medical Association [BMA], 1986). However, it continues to threaten thousands of women in Britain as well as in other countries. If cervical cancer is so potentially preventable, why do approximately 2,000 women in England and Wales (Office of Population Censuses and Surveys [OPCS], 1986) die from this disease each year? The answer can be attributed partly to the attitudes of both patients and doctors, partly to the natural history of the disease, and partly to an ineffective cervical screening programme.

The death rate from cervical cancer is known to increase with age, with the majority of deaths between the ages of 45 and 74 years. Recently, however, women under 35 years have shown an increased incidence (Parkin, Nguyen-dinh, & Day, 1985; Paterson,

Peel, & Joslin, 1982). Draper & Cook (1983) pointed out that although the 25-35 year age group accounted for only six percent of total deaths from cervical cancer the mortality rate for this group has doubled in only ten years (OPCS, 1976; Wolfendale, King, & Usherwood, 1983). Registrations of cervical cancer in women under 35 have also doubled in ten years, and now represent In fact, using a 14% of all registrations (BMA, 1986). computerized model of British data, Beral (1986) predicted that there will be a 60% increase in cervical cancer registrations and a 70% increase in mortality in the under 50 age group in just ten years time. His prediction was based on the assumption that the incidence of cervical cancer in women born since 1965 will not continue to increase as it has done for those born in the preceding 30 years. Thus the figure reported by Beral should be considered conservative.

B. The Biology of Cervical Cancer

There are two principal forms of cervical cancer, adenocarcinoma and squamous cell carcinoma (SCC). Either can be detected by cervical screening but SCC constitutes 95% of all cervical cancers. It is characterised by a relatively long 'precancerous' phase (Cervical Intraepithelial Neoplasia - CIN) in which the cells of the cervix show differing degrees of abnormality from mild (CIN1) to severe (CIN3). Beyond CIN3 the abnormal cells invade the underlying tissue and cancer develops (BMA, 1986). Treatment varies with the stage, from minor

surgical procedures for CIN to more severe treatment, such as hysterectomy and/or radiotherapy, for established cancers. Cervical screening can detect all degrees of abnormality from early stages to advanced. Survival is linked to the stage of the disease, being virtually 100% after treatment of CIN, approximately 90-95% in early stages, but only 30% or less in advanced stages (BMA, 1986). Clearly, cervical screening should result in fewer deaths with the greatest reduction being achieved if all cancers were detected in the CIN phase.

The connection between SCC and sexual activity has long been known (BMA, 1986). The disease does not usually occur in virgins (Wynder, Cornfield, Schroff, & Doraiswami, 1954). It is more common in women who have had (or their partners have had) multiple sexual partners, or who started intercourse at an earlier age, and has a high incidence in prostitutes (Rotkin, 1973). Smoking may also increase the risk (Williams & Horm, 1977). However, it is also found in women with none of these characteristics. Nonetheless, the disease shares many of the epidemiological characteristics of sexually transmitted infections (BMA, 1986) and a great deal of attention has been paid to investigating a possible infective cause.

C. Screening and Cervical Cancer

Mortality from cervical cancer has been significantly reduced in countries where effective and organized screening programmes are in effect (Celentano, Shapiro, & Weisman, 1982; Laara, Day, & Hakama, 1987; MacGregor, Moss, Parkin, & Day,

1985).

One of the most successful screening programmes appears to be the one started in British Columbia in 1949. By 1968 75% of the female population had been screened and the incidence of invasive disease was halved though there was no effect on the mortality rate (Canadian Task Force on Cervical Screening [CTFCS], 1976). However, by 1978 the incidence had been halved again and mortality more than halved (Boyes, Worth, & Anderson, 1981). A comparison with neighbouring provinces revealed clearly that a higher screening rate was associated with a reduction in mortality (CTFCS, 1976).

In Finland 80% of the female population between the ages of 35 to 55 years were involved in a screening programme which led to a substantial reduction in the incidence of cervical cancer in that age group (Day, 1984). In Iceland 85% of women in the 25-59 age range were screened (and then treated) with a 54% fall in mortality (Johannesson, Geirsson, & Day, 1978).

In the Tayside and Grampian regions in Scotland progressive screening programmes have been adopted (Duguid, Duncan, & Currie, 1985; Macgregor, & Teper, 1978a). In Tayside 47% of all women over the age of 16 have been screened, over 70% of women in the 20 to 39 age group, with significant reductions in both the incidence and mortality of cervical cancer, especially in women in the 35 to 54 age group. Similar results have been shown in Grampian, but elsewhere in Scotland there was a small rise (Macgregor & Teper, 1978b), which could be attributed to ineffective screening programmes. With the exception of the

Tayside and Grampian regions, the United Kingdom has failed to reduce the death toll from cervical cancer (BMA, 1986; Schwatrz, Savage, George, & Emohare, 1989).

In Britain the national screening rate is not known (BMA, 1986). Cervical screening programmes have existed for over 20 years. However, until recently there was no systemized national screening programme and therefore no way of determining the proportion of the female population that had been screened. It is estimated that approximately three million cervical smears are In 1980 54% of the smears were from women performed annually. In 1982 55% of positive under 35 years old (Roberts, 1982). smears (precancerous and cancerous) occurred in women under the age of 35 (Department of Health and Social Security, Health and Personal Social Services Statistics for England, 1985). It should be noted that the percentage of the population screened or the number of screened women who subsequently developed cancer is not known. Clearly, identification of the individual for statistical purposes is essential for a successful screening programme.

Research has shown that organized and effective cervical screening programmes can save lives. Consequently in 1985, a Joint National Health Service/Welsh Office Working Party on Cervical Cytology Screening Services in Wales recommended that a computerised call and recall programme be implemented by each Health Authority. However, the implementation of a successful call and recall system is a complex and technical task and is only part of the solution. Attitudes and behaviours of women and doctors deserve strong consideration if an effective programme is to be achieved. Since many deaths from cancer of the cervix can

be prevented by programmes that increase participation in cervical screening, it is important to understand the factors that predispose, enable, and reinforce these attitudes and behaviours and to target the population at risk.

D. The Problem

The present research was undertaken to detect some of the underlying cognitive and emotional factors that might affect the probability that women would respond to invitations for cervical screening. The hypotheses are 1) that there are differences in the attitudes and beliefs of women who comply to cervical smear tests in comparison to those who do not comply, and 2) that women with positive self-concepts are more likely to comply to health screening than women with less positive self-concepts. If these hypotheses should result to be true, then it should be possible to ascertain cognitive strategies to adopt to assist in health promotion in general, and to reduce resistance to cervical smear screening in particular.

As will be seen later in greater detail, the population studied consisted of 100 women throughout Clwyd, North Wales, who had either accepted or declined invitations for cervical smear tests.

Two methods to determine factors underlying possible differences in attitudes and beliefs were used. The first method was the semantic differential developed by Osgood (1952; Osgood, Suci, & Tannenbaum, 1957) which is a technique used for observing

and measuring the psychological meaning of concepts. This technique has been used in a great variety of studies including personality, education and political biases, mood differences, and phenomenology of emotions. The second method was a concise and specific personal questionnaire designed to supplement the semantic differential. That is, the personal questionnaire was used for gathering some related information about attitudes and beliefs that the semantic differential could fail to supply. This information could be used to validate the semantic differential results as well as provide additional indicators about possible sources of attitudinal influences. A description of the semantic differential is given in Chapter 5.

CHAPTER 2

DEVELOPMENT AND APPLICATION OF THE CONCEPT OF HEALTH BEHAVIOUR

A. Introduction

There is a current awareness of health status that is raising consciousness and generating activity designed to promote optimal health and reduce health problems (Girdano & Dusek, 1989). The rediscovered interest in positive health is a legacy of the constitution of The World Health Organization (WHO) in which health is defined as

> "A state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." (WHO, 1946).

Only recently has credit been given to the idea that lifestyle-related health problems may be expressions of emotions and unmet psychological needs or, conversely, may be due to "successful" coping mechanisms which turn out to be unhealthy behaviours (Girdano & Dusek, 1989). It is therefore plausible that there may be a distinct link between an individual's emotional state and following health practices.

Literature on health and health behaviour reflects a diversity of approaches: from etiology and causal analysis, to assessment of interventions, identification of processes of change and health policy formulation (Anderson, Davies, Kickbush, McQueen, & Turner, 1988). Researchers from a variety

of disciplines have been investigating the wide range of issues in health behaviour. Psychologists have usually considered attitudes and knowledge associated with health behaviours, often those considered deleterious to health. Sociologists focused on environmental and social conditions have predisposing to different lifestyles. Anthropologists have begun to look more seriously at their own societies to explore explanatory models and beliefs related to health as well as to epidemiologists have typically considered a disease. Whereas relatively narrow band of 'risk behaviours' which measure the frequencies and intensities of specific behaviours to disease outcomes (Anderson et al., 1988). Some epidemiologic studies, such as the Alameda County Study (Belloc & Breslow, 1972), have considered general health behaviours to future outcomes.

Health behaviour change theory and techniques are being developed and expanded in these various disciplines using prevention and treatment techniques together with education, counselling, and/or behavioural intervention (Girdano & Dusek, 1989). The emphasis today is on how individuals seek to promote their own health and how health professionals can assist or enhance this health status.

B. Definition of Health Behaviour

There has been an expanding body of literature on health behaviour since Parsons (1958) defined a "health role" as being an individual's obligation to maintain health in order to perform

effectively. Early studies focused on those behaviours in which patients were put in direct contact with the health system. For example, Keegles (1963) defined regular dental checkups as health behaviour. Rosenstock (1969) defined obtaining chest x-rays and brushing teeth as indicators of health behaviour.

Kasl & Cobb (1966) refocussed and expanded the definition of health behaviour as

"any activity undertaken by a person believing himself to be healthy for the purpose of preventing disease or detecting it at an asymptomatic stage" (Kasl & Cobb, 1966, p.246).

This is in contrast with illness behaviour, defined as "any activity undertaken by a person who feels ill, for the purpose of defining the state of his health and rediscovering suitable remedy," and sick-role behaviour, "the activity undertaken by those who consider themselves ill for the purpose of getting well." It should be noted that the three modes of behaviour are not discontinuous and the edges between are somewhat blurred (Rosenstock, 1974). The emphasis of this research is on the first of these areas, that of health behaviour.

Although Kasl and Cobb defined health behaviour by the intentions of an individual, many researchers seem to have interpreted this in terms of medically approved practices designed to prevent disease versus self-empowered actions (Anderson et al., 1988). Most studies focused on the use of preventive health services with individuals as 'consumers' rather than as 'producers' in how they tried to obtain this commodity called health. Subsequent studies have investigated a larger

variety of preventive activities as health behaviours.

During the early 1970s, in the United States, lack of consideration of self-defined health behaviour was being challenged (Maklan, Cannell, & Frenchy, 1974) and is best known from studies which adopted the approach of Harris & Guten (1979). They have investigated a range of self-defined (but not necessarily self-initiated behaviours), termed 'health protective behaviour,' which is

> "any behaviour performed by a person regardless of his or her perceived health status, in order to protect, promote or maintain his or her health, whether or not such behaviour is objectively effective towards that end" (Harris & Guten, 1979, p. 18).

This definition takes into account individuals undertaking protective behaviours whether or not these beliefs correspond to professional medical advice. It also avoids distinguishing between symptomatic and asymptomatic individuals, which is a distinction that has occupied a great deal of social scientific research. That is, exploring the conditions under which a given physical state is viewed as symptomatic and results in a decision to seek medical help. The meaning of health is left to the individual and opens the door to consideration of cognitive and social aspects as well as concepts of physical disease, which appears the basis of many earlier to have been conceptualizations.

A more recent elaboration of the concept of health protective behaviour (Berkanovic, 1982) has distinguished between

behaviours undertaken by the individual from those recommended by a health professional whilst also attempting to reintroduce the issue of symptoms. He differentiates 'lifestyle changes' undertaken by asymptomatic individuals from 'treatments' which are defined as those undertaken by people with symptoms. What is not clear is how changes unrelated to the symptoms of people taking 'treatments' are classified (Anderson et al., 1988). However, this approach comes close to a definition of health behaviour as self-care, and other researchers have included health behaviour within the broader concept of self-care (Hickey, 1986).

Recent conceptualizations have broken down 'health behaviour' into its components by distinguishing between behaviours intended to reduce the risk of disease or accident and those meant to improve health (Rakowski, 1986), and to a smaller degree, between medically approved practices and self-defined health behaviours (Pill & Stott, 1988; Stott & Pill, 1987). The tendency has been for 'preventive' and 'health promoting' behaviours to be defined on the basis of expert professional opinion, so that individuals may have both or neither purpose in mind whilst engaging in the behaviour (Anderson et al., 1984).

Few conceptualizations of health behaviour (Maklan, Cannell, & Frenchy, 1974) explicitly define it as being directed toward environmental as well as personal change and none seem to include general as well as individual behaviour. However, Lipowski (1977) in a comprehensive overview of the field of psychophysiological medicine advocates a holistic approach to

health and disease and stresses the importance of studying people as 'individual mind-body complexes ceaselessly interacting with the social and physical environment in which they are embodied' (Lipowski, 1977, p. 234).

A more recent definition of health behaviour is offered by Girdano & Dusek (1989) in which they define it simply as

> "the specific [behaviour] that impacts on physical, mental, and spiritual wellbeing" (Girdano & Dusek, 1989, p. 4).

The total quality of life is implied in their definition and encompasses the physiological, social, psychological, emotional, and spiritual aspects of the individual. Based on this premise, health behaviour change needs to include all of these aspects in a synergistic manner, with the ultimate outcome being that of enhancing the participant's quality of life (Girdano & Dusek, 1989).

C. Operationalization

Due to inexact qualification of health concepts certain terms such as health habits, health practices, and health behaviour have become basically interchangeable in usage (Anderson et al., 1984). For example having immunizations, checkups, or following a medically prescribed diet could be termed as any one of the above concepts.

The selection of health practices often derives from one of the most influential of the empirical studies, the Alameda Study

(Belloc & Breslow, 1972). A sample of over 6000 residents of Alameda County, California was done to assess the physical health of respondents on a continuum from severe disability to high energy level. The presence or absence of positive health practices were also examined and included: a minimum of seven hours of sleep, regular meals, regular exercise, no smoking, and, moderate alcohol consumption. All were positively related to better health. It was found that the average life expectancy of a 45-year-old man reporting six or seven positive health practices was 11 years greater than that of another man of the same age who followed only four or fewer positive health practices. A similar pattern was found for women, although the life expectancy differential was only seven years (Belloc, 1973). The Alameda study suggests that health behaviours are linear and reflect a unitary dimension of behaviour (Tapp & Goldenthal, 1982). On the other hand, Steele & McBroom (1972) studied other indicators of health behaviour: physical checkups, dental visits, eye doctor visits, and private insurance coverage. They conclude that based low health behaviour is multidimensional on intercorrelations amongst these measures.

Harris & Guten (1979) randomly selected 842 individuals living in Cleveland, Ohio and asked them to list the three most important things they did to protect their health. The responses were classified into 30 behaviours and respondents were asked to sort them into those behaviours that applied to their daily lives and those that did not. Analysis of these data reflected five distinct clusters that included 18 of the 30 items. Harris and Guten interpreted these as: health practices (getting enough

sleep, relaxing, eating sensibly, limiting foods, proper weight, avoiding overwork); safety practices (fixing things, checking conditions, having a first aid kit and emergency telephone numbers); preventive health care (physical and dental checkups); environmental hazard avoidance (avoiding crime and pollution areas); and harmful substance avoidance (no smoking, no drinking).

Tapp & Goldenthal (1982) asked people about the frequency with which they engaged in behaviours about nutrition, tobacco use, alcohol use, drug use, road and water safety, exercise and physical activity, rest and relaxation, and personal health care. A factor analysis revealed three fairly distinct dimensions of health behaviour: preventive activities (intended to promote health), protective-avoidant behaviours (health preservation through good safety practices), and awareness-denial behaviour (pursuing good health practices and not abusing drugs and alcohol).

As for preventive health procedures, physical and dental examinations have typically been investigated, because these actions are supposed to be representative of the rational medical model (Steele & McBroom, 1972). A study on working-class women (Stott & Pill, 1987) looked at 'health procedures' in the form of participation in breast self-examination, cervical smear tests, dental visits and ante-natal visits.

Basically, these research approaches check the individual's personal behaviour against certain activities considered appropriate for protecting health. The researcher defines the

activities so that 'the range and typology of health behaviour is limited only by the imagination of the researcher and the purpose of the research' (Steele & McBroom, 1972, p. 383). Agreement on the importance of different health behaviour has yet to be The development of effective indices and determined. cumulative scores is a common goal amongst researchers but one which is difficult to achieve due to problems with internal consistency and reliability of the measures (Seemen & Seemen, 1983). A study by Harris, et al. (1984) attempted to prioritise different health behaviours in a national survey conducted in the United States. One hundred and three health experts were asked to rate 65 health and safety factors These ratings were used to affecting adults and children. develop a composite Prevention Index.

Much of the research in health behaviour has come from self-reports such as surveys in which questions about specific preventive or health promoting behaviours are asked. They have formed the basis for the exploration of health practices which include socioeconomic status, health beliefs, education, and social participation.

D. Compliance with Medical Advice

One of the most frequently researched aspects of health behaviour is compliance - following the recommended advice of a physician or health professional. Yet progress in improving individual attendance and maintenance in this direction has been slow; apparently because reasons for not following advice or

orders are extremely resistant to modification (Gatchel & Baum, 1983). This resistance can become problematic in that failure to follow recommended advice may cause a serious breakdown in the treatment process and possibly resulting in more serious complications.

E. Definition of Compliance

Compliance is a term generally used to refer to adherence or cooperation - following professional advice to adopt certain attitudes concerning health or health related behaviours, typified by smoking cessation or following a prescribed diet. Noncompliance refers to failure to follow advice - the degree to which an individual does not adhere to what has been prescribed (Sackett & Haynes, 1976). The Oxford dictionary offers the following definition of compliance

> "acting in accordance with a request, command or someone's wishes" (Oxford, 1989, p. 173).

Compliance is basic to an effective doctor-patient relationship (Willson & McNamara, 1982) and directly influences the effectiveness of treatment (Sansom, MacInerney, Oliver, & Wakefield, 1975).

There are many different kinds of compliance: medication taking, prevention, and lifestyle changes; and the ability to measure them is often limited (Gatchel & Baum, 1983). Studies of treatment of a wide range of illnesses, for example coronary

heart disease, and diabetes, have indicated that only 40-70 percent of patients comply with physicians' prescriptions or advice (Becker & Maiman, 1975; Haynes, Taylor, & Sackett, 1979; Vincent, 1971). Rates of compliance with preventive procedures advised by physicians are even lower (Gordis, Markowitz, & Lillienfield, 1969).

Inability to accurately measure noncompliance hinders interpretation of these data. Are self-reports by patients valid? Some evidence suggests that these reports are valid (Francis, Korsch, & Morris, 1969) but other studies suggest this is an invalid measure of noncompliance (Park & Lipman, 1964; Sheiner, Rosenberg, Marathe, & Peck 1974). Since most patients wish to be thought of positively, they cannot be expected to willingly portray themselves negatively by admitting to failures (Gatchel & Baum, 1983). Research also indicates that physicians' estimates of their patients' rates of compliance are invalid (Davis, 1966; Kasl, 1975; Mushlin & Appel, 1977).

F. Overview of Determinants of Compliance

Several studies have attempted to understand the causes of noncompliance and identify factors relating to compliance (as complex and difficult as this is). As previously mentioned, many diverse approaches have been used including searches for personality variables or demographic characteristics that may be related to compliance, examination of doctor-patient interaction, and consideration of health beliefs as a factor (Gatchel & Baum, 1983). There are also general factors to consider. For example,

aspects of the prescription itself (such as unpleasant side effects) or if it is too complicated (too many different coloured pills at different times), will probably result in low or noncompliance (Gatchel & Baum, 1983). Often compliance decreases as the length of treatment increases. For example, long periods of prescribed medication are often discontinued early (Haynes, 1976). Another consideration is the financial cost the higher the cost, the less likely compliance. The greater the effort or lifestyle change the lower compliance is likely to be. Thus, a number of social and/or environmental factors may exert some general influences on adherence to advice (Kasl, 1975; Ziffblatt, 1975).

G. Personality, Individual Experience, and Compliance

Some researchers have studied personal attributes that may affect compliance. Some patients complain and some accept advice more readily (Ley, 1977). The complainers will most probably be less satisfied with the physician and, as a result, may be less compliant. Some patients are generally predisposed not to follow advice. However, no direct evidence for such personality effects has been reported (Gatchel & Baum, 1983). Certain personal attributes may predispose an individual to be more or less compliant. A psycho-dynamic approach to compliance issues might suggest that patient behaviour is actually symptomatic of underlying psychological problems (Balint, 1964; Blum, 1972; Strain & Hamerman, 1978). There is no direct evidence of this in

the research either but obsessions, depressive episodes, phobias, and the like are clearly implicated as having some role in compliance behaviour and need to be considered (Kasl & Cobb, 1966).

Relationships between various background variables, for example education and adherence to advice, have also been examined. There has been some evidence to suggest that factors relating to cultural, social, or educational status or income level are correlated with compliance (Strain, 1978). If a person cannot afford to fill a prescription, cannot read, or has social or cultural objections to certain prescriptions, compliance is likely to be affected. However, very few studies have shown relationships between such variables and compliance (Gatchel & Baum, 1983). Baekeland and Lundwall (1975) have noted the role of a sense of well-being in compliance behaviour, but very few studies have found evidence of demographic variables affecting compliance (Haynes, 1976).

Although evidence indicates little support for the idea that background determines degree of compliance, some attributes have been isolated which affect adherence to advice. Economic variables figure chiefly amongst such factors. Physicians must be sensitive to costs, in terms of both money and perhaps time off work (Hieb & Wang, 1974). Thus, social factors and responsibilities may, at times, conflict with compliance.

Predictive model research supports the view that when such factors are used in combination - more than one or two are used to predict noncompliance - or when specific factors are related to specific illnesses or situations, better prediction can be

attained (Gatchel & Baum, 1983). Korsch, Fine, & Negrete (1978) identified approximately 90% of noncompliant patients by use of multiple background variables influencing doctor-patient interaction. Other studies have shared similar successes when using more than one predictor (Gordis, Markowitz, & Lillienfeld, 1969).

H. Satisfaction and Compliance

Patient-physician satisfaction has been determined as a primary factor of compliance. Dissatisfied patients are likely to be less compliant. People appear to be more resistant to persuasive appeals made by physicians with whom they are dissatisfied for some reason (Gatchel & Baum, 1983). A number of variables inherent in the doctor-patient relationship will determine satisfaction (Gatchel & Baum, 1983).

Satisfaction involving medical consultation of children has been studied extensively (Korsch, Gozzi, & Francis, 1968; Korsch, Freeman, & Negrete 1971; Korsch, & Negrete, 1972). Doctors seen as warm and caring had a higher satisfaction rating than doctors perceived as business-like. In addition, more than 80% of those who thought the physician had been understanding were satisfied as compared to only a third of those who did not feel that the doctor tried to understand their concerns. Doctors who communicated well had higher satisfaction ratings than doctors regarded as poor communicators (Korsch, Gozzi, & Francis, 1968). Lastly, mothers whose expectations were met regarding information received were more satisfied than those who felt this information

was not adequately provided (Korsch, Gozzi, & Francis, 1968).

The satisfaction-compliance relationship concerning medical advice was investigated by Francis, Korsch, & Morris (1969). Mothers dissatisfied with the doctor or with the results of the consultation were less likely to comply with the advice.

It has been argued that informational and cognitive factors are responsible for failures to comply with prescribed regimens (Ley & Spelman, 1967). That is, failure to comply is not due to dissatisfaction with the personality of the doctor but rather to genuine problems in understanding and/or remembering the doctor's In one study more than half the patients misunderstood advice. the doctor's instructions (Boyd, 1974); in another almost half of what was said to patients was forgotten (Ley & Spelman, 1967). Thus, they argue that noncompliance for not being satisfied with the doctor is less likely than noncompliance due to the patient not understanding the instructions. Ley and Spelman (1967) list often the three reasons for this lack of understanding: 1) material presented by the doctor is too difficult for patients to understand; 2) patients sometimes do not understand basic physiology or anatomy and do not possess elementary medical knowledge; and 3) sometimes patients are under misconceptions that are so incorrect as to interfere with proper comprehension. In another study, Ley & Spelman (1967) applied the Flesch Formula (Flesch, 1948), a procedure that provides an index of "reading ease" corrected for the range of reading and comprehension abili-The outcome was that much of the ties in the United States. information given to patients was too difficult thus resulting in noncompliance.

CHAPTER 3

REVIEW OF LITERATURE

A. Overview of The Health Belief Model

Much of the research in health behaviour has emanated from the Health Belief Model (HBM) which was formulated to explain preventive health behaviour (Rosenstock, 1966); although Hochbaum is credited with originating research in this area in the early 1950s (Hochbaum, 1952). The HBM argues that an individual engaging in preventive health behaviour 1) believes himself susceptible to contracting a given condition unless action is taken; 2) believes in the seriousness of the consequences of such a condition; 3) believes in the benefit of the recommended course of action in that it reduces the disease threat; 4) does not perceive barriers (expense, pain, inconvenience) to taking the action; and 5) experiences a cue or trigger to initiate appropriate action.

This model, as well as others adapted from it, has been a useful predictor of compliance (Gatchel & Baum, 1983). Doctors perceptions of an individual's condition do not affect compliance whereas the individual's perceptions of severity and susceptibility are compliance-related (Becker & Maiman, 1975; Becker, 1976). This is especially so when preventive health behaviours are considered. That is, people who believe they are

likely to become ill thus causing negative consequences are more likely to take some action (Gatchel & Baum, 1983). This has been demonstrated in many areas of research including dental instruction, cancer screening, and heart disease testing (Kegeles, 1963; Fink, Shapiro, & Roester, 1972; Haefner & Kirscht, 1970).

Research has also taken into account perceptions of efficacy of treatment and cost benefit analyses in decisions on whether or not to comply with prescribed regimes. For example, when medication is involved, simple beliefs regarding the likelihood that it will improve the patient's condition are strong determinants of compliance (Becker, 1976). Any questions involving side effects, safety of treatment, or distress associated with treatment become powerful suppressors and reduce the likelihood that patients will follow the doctor's advice (Becker, 1974).

The Health Belief Model attempts to consider an individual's subjective states regarding his health rather than objective characteristics of it. Actual severity of an illness is not related to compliance but an individual's perception of the severity is (Gatchel & Baum, 1983). Revisions in the model have expanded its range to include intentions as well as beliefs (Rosenstock, 1974; Becker & Maiman 1975; Becker, 1976). However, the occurrence of beliefs and intentions that are correlated with, compliance does not necessarily mean that they cause a person to comply. The model assists in the prediction of compliance but does not provide information as to how it is determined.

B. Studies of Compliance and Health Related Behaviour

Rosenstock (1974) comprehensively reviewed the research in health behaviour which used the HBM as well as other models attempting to predict behaviour and analyzed the major findings of the studies undertaken; the focus was on identifying factors that help explain why people use health services. He argues that since the ultimate aim of understanding health behaviour is an applied one, the problem of persuading people to use health services may appropriately be considered.

In an early study (which was one of a series of related studies) using the HBM, Leventhal, Hochbaum, and Rosenstock (1960) investigated the impact of the threat of Asian influenza on 200 families randomly selected from two medium-size cities in the United States. Each family was interviewed twice. The first interview was intended to be completed before most people had the opportunity to be vaccinated (or to take any other preventive action) and before much influenza-like illness had occurred in the communities. The second interview was to be done after all available evidence indicated that the epidemic had subsided.

However, only partial success was achieved in satisfying these conditions as community vaccination programmes, as well as the spread of the epidemic, moved much faster than had been anticipated. For these reasons, the sample was reduced to 86 respondents. The respondents had, at the time of the initial interview neither taken preventive action relative to influenza

nor had they experienced influenza-like symptoms in themselves or Twelve of the 86 scored other members of their families. relatively high on a combination of beliefs in their own susceptibility to influenza and the severity of the disease; five of these 12 subsequently made preventive preparations relative to influenza. On the other hand, at the time of the first interview, the remaining 74 respondents rejected either their own susceptibility to the disease or its severity or both. Of these, only eight (11%) subsequently made preparations relative to influenza. The authors note that although the samples on whom comparable data could be obtained were small, the differences were statistically significant beyond the one percent level of significance. The authors suggest the results indicate that prior beliefs in susceptibility and severity are instrumental in determining subsequent action.

Kegeles (1963) used the HBM to attempt to determine the conditions under which members of a prepaid dental care plan would come for preventive dental check-ups or for prophylaxis in the absence of symptoms. The study originated with a sample of 430 individuals but some had to be excluded because information was not available to determine whether past dental visits had been made for preventive purposes or for treatment of symptoms, and some could not be coded on all the belief variables. Kegeles attempted to measure the participant's perceived susceptibility to a variety of dental diseases, the perceived severity of these conditions, his beliefs about the benefits of preventive action and his perceptions of barriers to those actions.

Although the sample size was relatively small, Kegeles demonstrated that successive increases in the number of beliefs exhibited by participants corresponded to an increase in the frequency of making preventive dental visits. The data revealed: 1) three individuals who were low on all three variables made no preventive visits; 2) of 18 individuals who were high on any one variable but low on the other two, 61% made such visits; 3) of 38 individuals that were high on two beliefs and low on one, 66% made preventive visits; and, 4) of 18 individuals who were high on all three variables, 78% made preventive dental visits.

Kegeles (1963) did a follow-up study using the originally sampled population of more than 400 in the previous study plus a comparable control group. Three years after the initial collection of data (in 1958), a questionnaire was sent to both the original sample and the control group requesting information about the three most recent dental visits. The objective of the follow-up was to determine whether the beliefs identified during the original study were associated with subsequent behaviour during the following three years. Since it was a prospective study almost all the original population could participate.

Kegeles found that perceptions of seriousness, whether considered independently or together with other variables, and of benefits taken alone were not associated with subsequent behaviour. However, the perception of susceptibility did show a correlation with making subsequent preventive dental visits.

Of those who had earlier seen themselves as susceptible, 58% made subsequent preventive dental visits whilst 42% who had not accepted their susceptibility made such visits. When beliefs about susceptibility and benefits were combined, a more accurate prediction was possible of who would or would not make preventive dental visits. When considering only those who scored high on susceptibility, and cross-referencing with beliefs in benefits, 67% of those high on both beliefs made subsequent preventive visits whilst only 38% low in beliefs in benefits. Thus, Kegeles concluded the combination of susceptibility and benefits was important in predicting behaviour.

Another model, which is a classical epidemiologic model, was developed by Suchman (1966) in an attempt to classify and integrate a wide range of variables concerning preventive health behaviour. Suchman argues that the acceptability of any health or social change measure may be classified according to his proposed model which consists of three categories: 1) host factor (personal readiness), that is concerned with the personality characteristics of the individual. For example, recognition of the seriousness of the problem, acceptance of personal vulnerability, or seeing promise of need satisfaction; 2) environmental factor (primarily social influences), such as the social pressure to act, the acceptability of the action, or the extent of incorporation into role performance; and, 3) agent factor (situational or action factors), for example the attractiveness of the action, the favorableness of the

environment in which the action is present, or the effort required by the action.

In order to test his model, Suchman interviewed sugar cane cutters in Puerto Rico to test their acceptance or rejection of an accident preventive measure (protective gloves). Personal interviews were conducted with 115 sugar cane workers in which each worker was given an explanation and demonstration of the glove's purpose and then asked if he wanted to try the glove. Initially 47 workers rejected the glove, 11 rejected it within a short time period, and 57 accepted it and continued to use it. Two major methods for promoting the use of gloves were employed: 1) a community organization approach which attempted to secure the approval of the sugar cane community as a whole for the use of the glove, and to translate this approval into social pressure upon the individual sugar cane cutter to adopt the glove, and 2) a safety education approach which attempted to influence the sugar cane cutter directly by means of an educational campaign showing the need, advantages, and proper use of the glove.

In reference to the host factors the most pronounced difference in acceptance of the glove occurred in regard to age. A higher percentage of workers under the age of 50 (60% compared to 41% over age 50) accepted and used the glove. Workers whose fathers were also sugar cane cutters were more likely to accept the glove (51%) than workers without a family background in sugarcane (30%) and married workers were also more accepting (72% under the age of 50 and 42% over 50). A greater acceptance was also found amongst higher income workers than amongst those with a lower income. Education made no difference statistically.

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A strong and highly significant relationship between the attitudes of the workers towards accident prevention and their acceptance or rejection of the glove was found. Individuals who believed that most accidents are preventable and/or are caused by carelessness were much more likely to accept and use the glove (60% as compared to 22%). Also the belief that it was possible for such accidents to happen to 'oneself' was also a favourable factor disposing the worker toward acceptance of the glove (57% that felt personally vulnerable used the glove as compared to 34% who did not).

In relation to what Suchman terms 'general adjustment to life', it was found that those workers reporting symptoms of emotional disturbance such as nervousness or exhaustion were much less likely to accept the glove than those who failed to report such symptoms (68% versus 32%). Also notable is that in the accepting group there was a higher percentage of workers who evaluated themselves as excellent or good sugar cane cutters than those who rated themselves as only average or bad (51% versus 33%) whereas in the nonaccepting group 67% rated themselves as average or bad workers. Another area that was found to be related to acceptance or rejection of the glove was fatalism. Workers who were inclined to be fatalistic were less likely to accept the glove. A final host factor examined concerned health knowledge and behaviour in general. Individuals who would seek medical care in the presence of certain symptoms as opposed to self treatment were more likely to accept the glove.

Environmental influences and social pressures also

influenced behaviour. The characteristics of those workers who were willing to read the campaign literature on prevention of sugar cane cutting accidents were quite similar to the characteristics of those who later accepted the glove. It was also found that the higher the worker's score on a scale of social participation, the more likely he was to accept the glove (78% compared to only 32%). This finding indicates the strong influence that social support and interaction can play.

The final factor to discuss is that of the agent characteristics. Unless the "rewards" (fewer injuries) offered from using the glove outweighed the "punishments" (comfort and work rate), Suchman hypothesized it would be doubtful that any combination of personal readiness or social support factors would in and of themselves do the job. Individuals who found something wrong with the glove would be more likely to reject it. For example, amongst those sugar cane cutters who gave a generally positive evaluation of the glove, 60% accepted it as compared to only 8% with a generally negative evaluation.

In conclusion, the host factor of "personal readiness" as measured by attitudes towards general adjustment, fatalism, and health knowledge and behaviour affected acceptance of the preventive measure. The agent factor, as represented by the negative and positive characteristics of the protective measure, also strongly affected acceptance. While environmental factors related to exposure to mass media and social participation were found to be related to acceptance, attempts to utilize social pressures to secure acceptance did not prove as successful as direct health education.

Antonovsky & Kats (1970) agree with Suchman's model in that it provides a valuable comprehensive check list of variables, and that there is good reason to expect all these variables are associated with preventive health behaviour. However, they argue that a major drawback is that Suchman's model fails to distinguish amongst the different types of variables involved, and to specify the "linkage" amongst these same variables.

Antonovsky and Kats propose an integrated model of the determinants of preventive health behaviour which is not very There are differences dissimilar from Rosenstock's model. however, with the authors main point of departure being that all behaviour is motivated, that is, goal-directed, and also that a "cue to trigger an appropriate action" is not necessary. They argue that it seems reasonable to anticipate that a person who "qualifies" for a given action on all other counts will create The proposed model specifies three general types his own cues. of goals relevant to preventive health behaviour: 1) enhancement of health or avoidance of ill-health; 2) achievement of approval by significant others; and 3) achievement of self-approval. The authors assume all three goals are operative for all people but with different strength. They term these three goals the "predisposing motivation" variable. For example, even if a person is highly motivated in terms of one or more of these goals it still cannot be assumed that he will engage in a particular If the goal is Type 1, then the person must be behaviour. persuaded that the action will lead to the goal, that is, enhancing health or avoiding illness. If the goal is Type 2 or 3

there must also be a link between the specific action and group or self approval. They argue the three goals are not necessarily mutually exclusive and may be reinforcing.

The authors call "effective motivation" to participate in the behaviour a person's desire to improve his health and the thought that a particular behaviour will help in doing so, and/or the wish he has for group approval and the thought that "significant" others will value such behaviour, and/or when selfapproval is the goal because the behaviour is a "good" thing to do.

The second type of variable is in reference to those variables which will determine whether being motivated will be translated into action, that is, those variables which will either allow or hinder an individual from engaging in a particular behaviour. The authors call this "blockage type" variables. Internal blocks could include 1) knowledge, in that a person needs to know how to go about engaging in a particular behaviour (for example, if the behaviour is going to a breast screening clinic due to the appearance of symptoms a woman must know what a cancer symptom is); 2) anxiety or fear in that, if the behaviour is going for a preventive dental checkup, an individual must not be afraid of possible pain that the dentist might cause. External blocks would be perceived as lack of availability of resources such as time, money, and the like.

Thus, the authors argue that when a person is effectively motivated - whatever the motivation is - to participate in a particular preventive health behaviour and if there are no blocks in doing so, then he will be likely to do so. The authors also

36

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distinguish these two variables from a third variable which they call the "conditioning type". These would be variables that presumably condition the motivating and blockage variables. For example, if an individual feels susceptible to illness then this is likely to intensify the salience of the goal of avoiding ill health. The lack of knowledge block is likely to be minimized by a good education. Emphasis on preventive action in childhood would probably increase the chances that an individual will think such behaviour is good. Previous negative experiences are quite likely to increase the fear or anxiety blockage. A low socioeconomic status could contribute to the time and money blocks. A general passive orientation and rejection of the concept of preventability are likely to cause an individual to perceive the action as not beneficial.

In sum, the authors hypothesize that the combination of effective motivation and blockage variables predicts a given preventive health behaviour which consequently is explicable by reference to the conditioning variables. The authors state that there is no given order of occurrence of these three variables. That is, a person with a low income may have attended an unpleasant clinic and the following experiences might enhance anxiety which then creates a blockage.

The authors see the predictor variables, effective motivation and blockage, as interactive variables. That is, each makes an independent contribution to preventive health behaviour but also influences the other. In addition, these predictor variables also interact with the conditioning variables by

influencing them and/or being influenced by them.

Antonovsky & Kats (1970) studied 384 hospital employees and their dependents to determine under what circumstances an individual will engage in preventive dental behaviour. This research tested some of the hypotheses stated in the proposed model.

Employees of the Hadassah Medical Organization were invited to come to its dental clinic for a comprehensive dental checkup after which a curative programme for optimal dental health was initiated. Approximately one year after the initial checkup, the patient was invited for another checkup and scheduled for incremental treatment. Charges were limited to the cost of materials. The employee and his dependents were eligible to participate. The employees were placed into five occupational groups with approximately 75 respondents in each group: physicians including scientists, nurses, administrative workers, technicians, and manual workers. The eligible dependents (except children under the age of 15) provided a second sampling.

The main emphasis of the research was the study of attitude change, however, this paper reports only the results of the initial interviews. The instrument used for testing was a closed, multiple choice questionnaire with a series of questions designed to constitute a Guttman scale for each of the relevant variables. Interviews of employees were conducted at the medical facility when possible and for other employees and all dependents in their homes.

Preventive dental health behaviour was measured by questions about reasons for going to the dentist in the previous three

years, frequency of checkup visits, and proximity of the last examination.

The authors obtained two findings they deemed noteworthy. Employee respondents, though they differed little in the proportions of people who had not visited a dentist in the past three years, could be grouped into three at the positive end of the scale: physicians were the most preventive-oriented; nurses, officials, and technicians were next; and manual labourers had the smallest proportions at the high levels. Second, dependents were far less preventive-oriented than employees as a group, and resembled the manual labourers; although they did differ in that one-third of them had not been to a dentist at all in the past three years.

In reference to salience, the authors' previously presented model offered three possible but not necessarily mutually exclusive types of predisposing motivation. In this study only the salience of dental health as a goal was measured. Among employees in the highest salience category, 40% were high on previous dental behaviour compared with 23-29% of the intermediate salience groups and only 6% of the lowest category. The authors note however that more than half the respondents high on salience were low on preventive dental behaviour which indicates that salience itself, though related to preventive behaviour, did not account for a major part of the variance (three questions were used to measure salience).

As for effective motivation or benefit, an individual must believe the behaviour is effective in goal-achievement or that

refraining from such behaviour would have the opposite effect (four items were used to measure potential benefit).

The authors have argued that, given the motivation to act, an individual will do so only if he is not blocked from doing so. One potential deterrent is lack of knowledge which proved to be highly associated with preventive dental behaviour. The data showed no consistent differences between high and medium knowledge groups but a significant difference with the low knowledge group (data were based on two questions).

A second blockage variable considered was anxiety. That is, the hesitation in undertaking a particular action due to perceived or anticipated pain or embarrassment for example, associated with that action. Among all employees there appeared to be an inverse linear relationship between anxiety and preventive dental behaviour, though the two intermediate anxiety groups differed only slightly. Among the dependents a similar relationship occurred. But in both cases when the low anxiety group was compared to the others combined, the association was statistically significant at the 0.05 level (three questions concerning pain and fear were used to measure anxiety).

External blockage was represented by only one question relating to financial difficulty, which showed an association with preventive dental behaviour. This association could be due to the fact that the respondents in this study participated on a materials-cost basis and so the question was not one that was necessarily relevant for this particular research.

The authors' proposed theoretical model consists of a combination of five variables and also implies that each variable

makes an independent contribution to preventive behaviour. The findings indicate that this was the case although the associations were not always consistent or strong.

The results revealed a substantial difference in the behaviour of employees and dependents with the latter being lower on preventive dental behaviour. Although the relationships between predictor and dependent variables tended toward the same direction in both groups they were often weaker amongst the dependents. Based on the results, the authors ascertained that the dependents were less often characterized by a favourable attitude with the exception of one area; the financial ability question. This question was the only one in which the family situation was a factor as well as the individual's attitude. Thus, the authors suggest that the family provider might take a less optimistic position in this case than his dependents. This seems credible since half the dependents were teenagers rather than spouses or parents and thus attitudes may in part be influenced by parental authority.

Haefner & Kirscht (1970) collected experimental data on the HBM in an attempt to clarify relationships between initial beliefs, experimental treatments, subsequent beliefs, intentions to act, and behaviour. The subjects were 166 nonacademic university employees ranging in age from 18 to 68 years. Most were high school graduates, less than 20% had a college degree, and 86% were women (primarily clerical workers).

The study investigated the effects of exposure to separate films on heart disease, cancer, and tuberculosis. Subjects were

questioned about their emotional reactions, beliefs concerning disease, intentions to take health related actions, and behaviour. Participants were randomly placed in three experimental groups and a control group (each consisting of approximately 41 subjects). Each experimental group was shown a different film on three successive days in varying order. Each film contained material about the nature and prevalence of disease, its consequences, and actions that could be taken to prevent it. The films on cancer and tuberculosis stressed the desirability of seeking regular professional examinations whilst the film on heart disease recommended both professional checkups and the adoption of certain personal health practices.

A week before viewing the films the participants completed a questionnaire on their beliefs about health and illness and about what health related actions they had taken. After viewing each film another questionnaire dealing with emotion aroused by the film and beliefs concerning various diseases was completed. When all the films had been viewed the participants answered some additional questions about their intentions to take various health related actions. The control group, that did not view any films, answered the same questions as the experimental groups with the exception of those relating to the degree of emotional arousal caused by the films. Approximately eight months after the films were shown, the participants were sent an unannounced questionnaire on health related behaviour subsequent to seeing It was completed and returned by 135 of the the films. participants; 102 from the experimental groups (approximately 34 subjects each) and 33 from the control group.

The data was assessed for health belief changes which occurred as a result of threatening communications (films) and the relationship of the beliefs, individually and in combination, to a variety of intended actions and to reported behaviour subsequent to the communication situation.

The results showed cancer to be considered the most severe disease and just below heart disease in perceived susceptibility. Cancer was rated lowest in general beliefs in the benefits of taking health actions whereas preventive measures for heart disease, also viewed as relatively threatening, were perceived as high. In fact it was the lowest of the three diseases in perceived susceptibility and severity and the highest in perceived benefits of preventive actions.

Of the protective actions against the three diseases the participants rated all as relatively easy to perform if they wanted. Going to a doctor for a checkup and having an x-ray, the two medical actions, were regarded as easier than changing personal living habits with the exception of taking vitamins which was rated as the easiest action of all. The most difficult action was consuming fewer calories.

When the belief measures were analyzed regarding potential threat (susceptibility and severity) the mean score for cancer was slightly higher than for heart disease whilst tuberculosis was much lower.

When combining perceived efficacy into the analysis the differences in overall belief scores became clearer. The mean scores for this measure were: cancer, 11.17; heart disease,

13.39, and tuberculosis, 9.93. The differentiation reflects that although cancer and heart disease were considered similarly threatening, the participants thought they were more able to prevent heart disease.

Demographic characteristics, when combined with beliefs and behaviours, yielded only a few scattered significant results. Education showed few or no statistically significant correlations with health beliefs with two exceptions: education had a low negative relationship to perceived susceptibility to tuberculosis and a low positive relationship to perceived severity of heart disease. Education also revealed little association to past health related behaviour, except for a positive relationship with reported medical checkups.

The largest percentage of participants were women; however, only one consistent difference appeared between men and women in that women believed that all three diseases were more severe than men did.

A few significant relationships were given due to age. A positive association to perceived susceptibility to, and seriousness of, cancer and to perceived seriousness of tuberculosis. As for past health related behaviour there was only one relationship: a positive association between age and calorie restriction.

After viewing the films, the participants' beliefs about their susceptibility to illness were consistently altered. For each disease the experimental group scored higher on perceived susceptibility than the control group. Perceived seriousness revealed no consistent changes. However, perceived benefits to

taking various actions to prevent a threat to health were modified. The experimental groups rated the efficacy of various actions more favourably than the control group. There were also reciprocal benefits in relation to other health actions not specifically mentioned in the film. For example, the belief that modifying a person's diet would be efficacious in preventing tuberculosis increased significantly after showing the film on tuberculosis (although diet was never mentioned in the film).

The authors concluded that moderate threats induce people to seek a state of balance between fear responses and reassurance. That is, a person put in a fear-evoking situation may actively seek additional reassurance rather than merely assimilate that which is offered. The findings show that the health films significantly modified beliefs in perceived susceptibility and benefits.

Intentions to practice various preventive health practices such as x-rays, physical checkups, regular exercise, and the reduction of fats in diet were also found to be associated with overall health beliefs. From the questionnaire administered eight months later, participants in the experimental group reported having a checkup significantly more often than those from the control group. A similar, but not significant result was found regarding obtaining x-rays.

Further analyses for overall health beliefs about individual disease (cancer and heart disease, but not tuberculosis) showed a significant positive relationship to health action.

In contrast to the findings involving medical actions, no

groups showed differences in the follow-up questionnaire regarding personal living habits. The authors concluded that effectiveness of the health belief in modifying behaviour is specific to the proposed behaviour. Medical actions involve only periodic actions with little interference in daily activities whereas personal living habits would alter established routines. For modifying these actions it was not enough to simply change the participants' health beliefs suggesting that well established behaviour patterns may involve motives that include but also go beyond health care.

The findings in this study are in line with the HBM. However, the authors conclude that apparently the nature of the action is in itself important in determining actual performance. Consequently, efforts need to be developed for influencing personal practices as well as inducing substantial numbers of people to enter the health care system at an earlier stage than they do now.

A study designed to increase participation in repetitive breast screening was conducted by Fink, Shapiro, & Roester (1972). A large scale screening programme for women aged 40-64 was done in an effort to determine whether periodic breast screening (mammography and clinical examinations) was conducive in lowering mortality from breast cancer. Two stratified random samples of about 31,000 women who were members of the Health Insurance Plan of Greater New York (HIP) were selected to take part. One sample was the "study" group and the other the "control" group. The study group was offered an initial screening examination and three follow-up examinations at

annual intervals. Of the 31,092 women invited to take part in the initial screening, 20,211 (65%) were examined. Examinations were given at the medical group centre where the women were enrolled. Women who did not have the initial screening examination were not asked to participate in the annual reexaminations. (However, they continued to be followed for the full study period for the detection of breast cancer outside the programme and for mortality.)

An additional 20% of the examined women were further asked about their prior health behaviour and their views on a number of health topics. Questionnaire and contact effort information is presented from the 3,232 subsample of women for whom health behaviour data were obtained.

Specifically the study examined: 1) differences amongst population groups in their participation in three annual breast screening examinations after an initial examination; 2) the extent to which increasing efforts towards participation of the initial examination affected participation in consequent screening; and, 3) the extent that increased contact efforts contributed to early detection of breast cancer.

Two weeks before the scheduled examination the women were sent a letter giving them a choice of appointment times to which they could respond to by returning an enclosed postcard. After the postcard was returned to the medical office the women were sent a follow-up postcard confirming the appointment time and date.

Most of the women who did not respond to the first contact

were sent another letter which reemphasized the importance of the examination. If the women did not make an appointment by returning the enclosed postcard they were telephoned if their numbers were listed. Women who failed to keep an appointment were also followed-up by telephone calls and it was estimated that six out of every ten women who had missed an appointment were eventually examined.

There were several differences between the women who participated in the initial examination (65%) compared with nonparticipants (35%). The participants tended to be younger, married, and had more education. In fact, 71% of the participants were college educated compared with 57% of the non-participants who had not completed high school. Those who had used an HIP physician during the previous year and also those who had more favourable attitudes in general toward screening were more likely to participate. Finally, women who expressed concern about the possibility of having breast cancer were more likely to participate than women not reporting such concerns.

Women who participated in at least one screening examination were classified into three major categories (based on the effort required to gain their participation in the programme): The "minimum effort group" who received one mailing, the "secondary effort group" who were sent a second letter, and the "repeated effort group" who received letters and telephone calls in attempts to schedule or reschedule appointments.

Sixty percent of the women who participated in the initial examination also had the three subsequent annual reexaminations

for a total of four breast screening examinations. Twelve percent of the participants had only the initial examination and another 12% had the initial and one other examination. In the "minimum" effort group 67% had all four exams compared with 50% in the "secondary" effort group and 38% in the "repeated" effort group. Women in the upper social class were more likely to participate in all four examinations but there was no important relationship between whether or not a woman worked and the number of examinations in which she participated. However, travel time to the medical facility was significantly related to participation. Sixty-three percent of those who travelled 15 minutes or less had all four examinations as compared with 56% who travelled 30 minutes or more.

Women who had seen a physician within the previous year of the initial screening and those who had a family doctor were more likely to have the complete series of examinations. In addition, those who reported having had polio vaccinations (61%) had a significantly higher participation in all four exams compared with those who had not been vaccinated (53%).

Participants' attitudes toward screening examinations during the initial examination and later examinations appeared to have no consistent relationship. However, a significant relationship between completed examinations and attitudes toward screening was observed but only in response to one item - "Physical examinations just make you worry; it's like looking for trouble." Those agreeing with this statement were less likely to have all the examinations than those disagreeing.

There was a higher tendency for women concerned about cancer or who reported breast problems during the initial screening examination to participate in later examinations compared with those not indicating these concerns. Interestingly, a family history of cancer was not an important factor in that 62% with a family cancer history compared with 59% without such history had all examinations.

This study has focused primarily on demographic characteristics and the readiness of the women to participate in the initial screening examinations and the relationship this had upon subsequent annual examinations. The reluctant participant, although not as likely to return for additional examinations as the easily persuaded participant, with additional effort during the initial screening still yielded 80% attendance for at least one more examination and 42% for all four examinations.

The initial screening examinations (based on 20,211 women) resulted in at least as high a breast cancer detection rate amongst the reluctant participants as amongst the women in the minimum effort group (3.7 per 1,000 and 2.4 per 1,000 respectively).

In sum, amongst the women having the initial screening examinations the population groups most likely to comply with the complete series of examinations were women under 60 years of age, those of Jewish faith, and American-born women. They tended to be better educated, have higher incomes and more professional careers. Women who had all the examinations also lived closer to their medical group and were more involved in their group as indicated by the fact that they had a family

doctor and had used the medical facility during the year prior to the initial screening. Those who expressed concern were also more likely to attend all screenings. Many of these variables which have characterized the differences between the participants and the non-participants in the mammography study have been noted in other studies as well (Fink, Shapiro, & Lewison, 1968; Shapiro, Strax, & Venet, 1971).

With respect to efforts to increase participation in screening the authors made two observations. First, the "minimum" effort group was more likely than the "increased" effort group to participate in all the examinations. This was true in almost every comparison made within population characteristics and these differences were usually large. Second, for most population characteristics about 80% of the reluctant participants had at least one additional examination and 40% took part in all four. Even this reduced participation offers support in increasing contact efforts as overall participation in this study increased participation by more than a third.

Of further importance is that breast cancer detection rates were at least as high amongst reluctant participants as amongst ready participants and early detection was equally high in both groups (62% compared with 40% for non-participants). The authors suggest that based on preliminary evidence the cost-benefit value of the extended effort may be judged from the rates of breast cancer and the stage of the disease at the time of diagnosis. The evidence indicates that involving the reluctant participant in breast cancer screening contributes to

early detection and improved prognosis.

Becker, Kaback, Rosenstock, & Ruth (1975) applied the HBM (which for the first time explicitly included health motive) to research genetic screening. They invited an identified Jewish population in the Baltimore-Washington area to participate in screening for the Tay-Sachs trait. Tay-Sachs is an incurable genetic disease which is invariably fatal in early childhood. The Tay-Sachs trait has a frequency in one in 30 Jewish people of Ashkenazi ancestry (Rosenstock, 1974, p. 365). Since the relatively rare disease and the diagnostic test were largely unknown to the lay population, the authors reasonably inferred that the majority had had little contact with the disease, with screening, or with amniocentesis (fetal diagnosis test) and that they had few relevant beliefs about it in advance of the programme.

A mass education campaign was initiated six to eight weeks before screening of the target community began. Multiple educational approaches were used to saturate the communities with clear, appropriate information about Tay-Sachs disease and screening. Since the target population was known (Jews of childbearing age), it was assured that they were exposed to at least some of the educational activities. For this study, the explanatory variables were defined as follows: Health motive (as stated before) was explicitly incorporated into the model to explain health behaviour and involved two components: 1) a positive response indicating a desire to have (additional) children and, 2) a set of generalized items about typical health behaviour, such as the frequency with which the person thinks

about his own health and whether he generally goes to the doctor right away if he feels sick. Perceived susceptibility included the person's belief that he could carry the Tay-Sachs gene and transmit it to his offspring. Severity was interpreted as the individual's views of the potential impact of learning that he was a carrier, especially regarding future family planning. The definition of perceived benefits was in terms of a personal evaluation of how much good it would do the potential carrier to be screened for the trait. For example, did he really need or want to know his carrier status? Costs or barriers to action were not directly measured in this study. However, the authors suggest that these might include usual monetary or convenience factors as well as threats to the individual, such as the impact of learning that he is a carrier of some recessive trait. | How does it affect his self-image, his perception of his health and his well being?

In the first year of screening almost 7,000 adults responded to invitations. They were asked to complete a brief questionnaire just before going through the screening process; 500 of these were selected at random as the participant sample. In addition, 500 questionnaires were mailed to a random sample of non-participants who had been invited for screening; 82% returned the questionnaires. The authors note that both groups had received intensive informational material on Tay-Sachs disease and screening prior to the actual testing.

The results showed that the participants, compared to nonparticipants were significantly younger, had had fewer

children, were less likely to have completed their families, and had slightly better educations. Regarding the health belief variables, the participants differed sharply in perceived susceptibility, the first component of health motivation - 82% of those who expressed the desire to have future children participated in the screening programme whilst less than 19% who did not want any more children participated. There was no significant difference in participation according to perceived severity, the second, less direct motivational measure used. Mean score on perceived susceptibility to being a carrier was highly correlated with participating in the screening programme whilst perceived severity was negatively associated with participation.

When these three variables were combined it became clear that whilst each was associated with participation, perceived susceptibility interacted with the desire to have future children whilst perceived severity played an independent, additive role; for people who wanted additional children, moderate perceived susceptibility and low perceived severity best explains participation. Among those who were not motivated to have additional children, high susceptibility and low severity best explains participation. Irrespective of motivation, the combination of high perceived susceptibility and low perceived severity best accounts for participation.

As regards the benefits-to-barriers ratio, amongst those individuals who indicated that they planned to have more children, the non-participants more than the participants indicated that if either or both husband and wife were carriers

it would change their future child planning behaviour often reporting that they would have no additional children. The authors suggest a possible interpretation of this finding related to beliefs exhibited by participants and non-participants about the transmission and detection of Tay-Sachs disease and about reproductive alternatives. A question on the impact of learning that one member of a married couple was a carrier obtained very different responses from participants and non-participants in that participants were much less likely to alter their plans. The authors suggest that more of the participants had apparently learned that carrier status in only one member of the couple poses no dangers. However, in response to the question on the impact if both parents were found to be carriers, whilst participants were again less likely to change their reproductive plans than non-participants, they did indicate they would reduce the number of children they would have or that they would use "other" approaches such as the use of amniocentesis in order to continue having children. Very few of the non-participants displayed knowledge of the availability of amniocentesis; instead, they tended to indicate that in the event either member of a couple were found to be carriers they would not have further children.

Since more participants than non-participants learned about the fetal diagnostic test, the authors inferred that screening conferred considerable benefits for participants: 1) they could rule out the possibility that both parents carried the recessive gene or 2) if both proved to be carriers, amniocentesis could

rule out the possibility that the fetus had the disease, or 3) if the child had Tay-Sach's disease, they could decide to abort it.

The authors contend that although barriers to screening were not directly studied they were minimized in the present case in that the test was offered at a low cost to a relatively affluent group and at convenient times and locations.

In summary, more participants as compared with nonparticipants, 1) believed they could be Tay-Sachs carriers (high perceived susceptibility), 2) stated that learning that they were carriers would not affect their family planning (low perceived severity), and 3) abortion was appropriate if the fetus should prove to be diseased (high perceived benefits). On the other hand, fewer of the non-participants believed that they were susceptible. Although they favoured abortion to the same extent as the participants, more of the non-participants indicated that learning they were carriers would be quite disruptive of their lives and that it would seriously affect their future family It should be noted that limitations in the length of planning. the questionnaire precluded studying why the non-participants felt that learning of their carrier status would be considerably more disruptive than was true for participants.

The authors emphasize one final consideration. It is believed that in this case perceived severity associated with the Tay-Sachs trait reached such high levels as to become dysfunctional. They note that although the nature of the data in previous studies have precluded the use of standard parametric analytic techniques, it has always been believed that what is needed for behaviour is "an optimal" balance of perception of

health motive, vulnerability, severity, and the psychological benefit/cost ratio. Where the balance amongst these is either quite "low" or quite "high", professionally recommended behaviour is not to be expected. The authors stress the truth of this assertion can only come out of the studies which use measures sensitive to variations in the degree to which each variable is present.

A study measuring differential response to recall in a cervical screening programme was done by Sansom, MacInerney, Oliver, & Wakefield (1975). One-thousand-and-seven women in Manchester, England, were followed-up three years after they had had a negative smear test to see how they responded to a computer-generated recall letter. Seven women had died and 150 had had interim smears (primarily in association with post-natal or regular contraceptive examinations) leaving 850 eligible subjects from which data was obtained. In addition, two small surveys were completed by a subsample of this population - 53 women who responded to recall and 40 women who did not. The women were interviewed at home.

Of the variables considered, social class (as determined by the husband's occupation) proved not to be a determinant of a responder or nonresponder to recall as it had been in initial recruitment to screening (Wakefield & Barie, 1965; Wakefield & Sansom, 1966; Sansom, Wakefield, & Yule, 1970; 1971).

The best response rate to recall (61.4%) was from women who had had their first test in a local health authority clinic and the lowest response rate was from women who had had their first

test at an industrial clinic (on the worksite). The authors also found that women generally returned to the same agency where they had their initial test, which they suggest indicates that returners are characterized as women who strongly favour consistency of experience for this test.

In the subsample surveys the women wre asked how they felt about the cervical smear test (CST). Of the nonresponders, 42.5% had disliked some aspect of the test and/or found it embarrassing or unpleasant but only 24.5% of the responders felt this way. Over half the nonresponders had been to an industrial clinic for their first test. Another noteworthy aspect is that over 90% of all these women had their tests done by female doctors. Thus, since modesty has been shown to be a formidable barrier for a proportion of women, particularly older women (Schwartz, Savage, George, & Emohare, 1989; Scaiff, 1974; Women's National Commission, 1984), the authors contend that it was more a general dislike of the test rather than embarrassment that was a determining factor.

As regards the procedure for recall, women who are due for a CST are sent letters and then two months later a reminder is sent to those who have not yet responded. Over 90% of the women in both groups remembered receiving at least one or two letters and so the decision not to attend was detemrined to be a conscious one. Of the responders, 24.5% remembered receiving two letters, and so the authors concluded that reminders were necessary to urge some women to action.

For many women the single most important aspect of the CST is the result, and so the authors attempted to determine if this

was a variable that kept women from responding. The nonresponders were asked why they had not had a test and the commonest answer was that 'they could not be bothered' or that it was 'inconvenient' (32.5%). Many other reasons or anecdotal excuses were given (lack of time, fear of cancer and of having further tests, irregular periods) for not responding. Because of this the authors then asked the women why they thought other women had not had a repeat smear. Two reasons dominated the answers - fear of the result and embarrassment about the test.

In sum, the authors list several components that are involved when women are asked to respond to recall: 1) repetition of a familiar experience; 2) acceptance of the rationale for regular testing; 3) making the necessary adjustments to daily routine; and, 4) overcoming an emotional reaction to the test.

Most of the interviewed women believed in the efficacy of cervical screening as a preventive health behaviour and so the authors concluded that returners feel that the benefits that accrue from the knowledge that they are, for the moment, free of this form of cancer, outweigh the inconvenience and embarrassment of undergoing a CST; nonreturners do not.

A study by Lytton (1977) of factors that affect compliance in children in the context of parent-child interaction has some possible implications for compliance in adults. Although this study involves young children, the results are of interest if the attitudes and beliefs of children towards complying behaviour could be applied also to adult attitudes and beliefs towards compliance of particular behaviours.

Ninety two-and-a-half year old males (and their parents) were the subjects of this observational study. Variables that contributed to the positive predictions of compliance were: 1) consistently enforced discipline; 2) psychological rewards; 3) encouragement of independence; and 4) maternal play. Barriers that were negatively associated with it were: 1) physical punishment, and 2) material rewards. Thus, mother's comply ratio made a significant contribution to the prediction of child's comply ratio. (It should be noted that father's comply ratio showed an even stronger association but was omitted from the multiple regression analysis due to insufficient information). A reciprocity system existed between child and parent compliance; that is, each person's compliance was reflected by that of the others.

Implications here for preventive health or health education diagnosis for compliance in adults are somewhat obscure but of definite interest. In point of fact, if these behaviours of compliance in children are accurate indicators, then it may be that the same or similar predictions could be applied to adults.

A theoretical framework regarding the association between attitude toward disease and preventive behaviour has been proposed by Ben-Sira (1977) and applied to research on smoking cessation. Ben-Sira contends that understanding the conditions under which it is possible to predict from an individual's attitude toward a disease the extent to which he will actually change his behaviour in order to prevent being afflicted by this disease, is of theoretical as well as of practical significance. An analysis of previous research and application of the concept

of the image of a disease led to the development of a typology of 'involvement with a disease' indicating the extent of a person's feelings regarding susceptibility to, salience, understanding, and preventability of a disease. That is, since the typology indicates the extent of an individual's feeling of being threatened by a disease, as well as the extent of understanding and subsequent perception of the feasibility of coping with the situation, the hypothesis is that preventive behaviour is associated with the level of individual involvement.

The proposed model argues that preventive behaviour may be predicted from attitudes toward a disease to the extent to which a) attitudes are ordered along a sequential line designating a motivational process (susceptibility-salience-understandingpreventability) and, b) behaviour is considered relevant to a specific disease. The author stresses that the proposed theory does not allow for the prediction of the extent of an individual's likelihood to change a behaviour when 'high' on two dimensions which are remote from each other (such as susceptibility and preventability) and 'low' on intervening variables (such as salience and understanding). The proposed theory also does not account for the relative likelihood of engaging in preventive behaviour by someone who is high only on one dimension, if this dimension is not susceptibility or preventability. Regarding the concept of involvement with a disease, a typology composed of four dimensions of a disease was proposed, with highest involvement being indicated by being 'high' on all four dimensions. It has been hypothesized that the

tendency to engage in relevant preventive behaviour will vary from low to high as an individual's involvement in a disease increases along a line of the dimensions of the image of a disease. However, the author stressed that this does not imply that the tendency to engage in preventive behaviour will increase following a simple addition of dimensions on which an individual is high.

To test the hypothesis, a representative sample of 605 urban Israeli housewives were interviewed in their homes by means of a closed questionnaire. It should be noted that the items in this specific study were part of a broader study on consumption habits. BenSira made use of the "Semantic Differential for Health Technique" as developed by Jenkins (1964, 1966) and applied by Antonovsky (1972) in studies of beliefs about diseases. For this study, four scales were applied: susceptibility, salience, understanding, and preventability (the two latter were defined in previous studies as 'control'). Four diseases were selected based on perceived preventability and relevance to preventive behaviour. Perceived preventability was considered as an essential element for the construction of the typology of involvement. The author decided not to include diseases believed to be unpreventable by much of the population (for example, cancer) even though the preventive behaviour being investigated was to stop smoking. Thus, since smoking cessation was selected as the preventive behaviour, two diseases were chosen where smoking is recognized by some portion of the population as a possible cause, and two diseases where cigarette smoking is not perceived as a possible cause. Based on an earlier survey, heart

disease and diseases of the respiratory tract were recognized as possibly being caused by smoking, whilst diabetes and obesity were not usually considered to be caused by smoking.

The results revealed a sequential order of the variables that the author considers as the main elements of an attitude; the order being understood as a motivational process. That is, an arousal of a feeling of susceptibility is associated with an increase of the salience of the disease (indicating emotional distress), which may lead to an increase in understanding (the cognitive aspect), that in turn may increase the belief that such a disease may be prevented (instrumental behaviour). Ben-Sira stresses that suggesting the sequential order as a motivational process is only an interpretation. The relationship between the emotional aspect (susceptibility and salience) and the cognitive (understanding) were quite weak, and between the cognitive and instrumental (preventability) even weaker. From this finding, the author inferred that emotional distress will not necessarily lead to instrumental coping but may instead cause defence mechanisms as an attempt to restore an individual's emotional balance.

However, since only 60% of the population fit the types of the proposed typology of involvement with disease, that is, an individual who is high on all four dimensions (susceptibility, salience, understanding, preventability), the author contends that further research is clearly indicated. Nonetheless, this study may be considered as another step toward understanding the association between attitude and behaviour.

Further research attempting to reveal factors that may enhance or impede participation in preventive behaviour, when both engagement and non-engagement in the prescribed behaviour could have the probability of imposing a "high cost", was done by Ben-Sira & Padeh (1978). A study sample of 1,139 individuals (956 females and 183 males) aged 18 to 39 participated in a Tay-Sachs screening programme. This study was concerned only with the attitudes of the women, who were all Jewish of Ashkenazi origin; and of whom 57.4% were pregnant. The "cost" (material, emotional or other) and "rewards" (sense of relief) of participation for the women were subjectively evaluated by the researchers. It was assumed that for the pregnant women identification of the Tay-Sachs trait could be more costly than for non-pregnant women in that subsequent detection of the fetus as having the disease would result in termination of pregnancy or giving birth to an incurable Tay-Sachs child. The authors also note that non-participation in the screening could be costly as well due to the eventuality of giving birth to a child with Tay-Sachs disease. Consequently, the authors suggested that since pregnant women were more likely to be more emotionally distressed than other women they would be more likely to employ defence mechanisms, such as denial or repression.

The results revealed that pregnant women, for whom participation and non-participation could incur a "higher cost" than for others, tended more than others to participate in the screening programme. The data also showed that pregnant women tended less than non-pregnant women to believe in the possibility that they could be a Tay-Sachs carrier but the difference was not

significant. What was significant was that pregnant women tended more than the others to repress knowledge about 'having heard about somebody having had a Tay-Sachs child'. Thus, the authors concluded that pregnant women, more than non-pregnant women tended to employ more defence mechanisms to reduce emotional distress caused by the threat of Tay-Sachs disease.

In the previously mentioned study by Ben-Sira (1977), individuals most likely to engage in preventive behaviour were those who simultaneously perceived themselves susceptible to a disease and consequently emotionally involved, understood the disease and believed in its preventability. Thus, it appears, preventive behaviour is perceived as rewarding because it resolves the emotional distress caused by the threat of contracting a disease. However, the previous results seem to contradict the results in this study in that pregnant women considered themselves the least susceptible and yet if identified as carriers of Tay-Sachs faced serious consequences in contrast to the reward. To resolve this conflict they employed two mechanisms: instrumental coping, by undergoing the test, and affective defence, in using defence mechanisms. This is a contradiction in terms and the authors suggest that it could be because coping and defence are not mutually exclusive but instead are complimentary factors in motivating participation in certain preventive behaviours.

This study raises some interesting questions about the practice of preventive behaviour and who is most likely to engage in it. However, the participants were all responders and so

attitudes and behaviours of nonresponders for comparative purposes is not available. It is possible that pregnant women and women who are not pregnant should be considered as two very distinct groups as it is likely that pregnant women have different attitudinal and behavioural characteristics in comparison to other women; the specific preventive behaviour involves not only the mother but also the well-being of the child she is carrying.

An intervention study prompting women to seek cervical cytology screening was undertaken by Duer (1982). Based on (anecdotal) reports that for many women the immediate costs of seeking a CST (transportation/babysitting) far outweigh the long range benefits, a screening programme was undertaken. The subjects were women ranging in age from 15 to 48, who were evaluated as lower-income families, and who had not responded to the yearly reminder notice for a smear test. The women were divided into three groups. The first two groups were contacted by additional postcards, and/or telephone calls and home visits They were further subdivided into Groups A and (if necessary). B; Group A was offered transportation and babysitting and Group B was offered \$5.00 upon attendance at the clinic. No attempts were made to contact Group C which served as a comparison group.

The results of this study showed a higher percentage of appointments made by groups A and B compared with Group C but no significant differences between groups A and B. This led the author to hypothesize that perhaps the offers of assistance for clinic attendance were not more powerful in inducing appointments than the effect obtained by contact alone.

Duer also considers why contact alone might lead to greater response than would be obtained without prompts. Being that a cervical smear is a low frequency behaviour it may well be that a postcard or telephone call serves as a sufficient reminder to generate a response. However, for other "less interested or health inclined women" it is not enough and it is only after repeated promptings that the woman "gives in" and makes an appointment. In fact, the high no-show rates for these latter appointments suggests that the women may have felt somewhat pressured to make an appointment but were not motivated to attend. The extent of this perceived pressure is difficult to determine but it should be noted that the most prompts a woman could receive would have been two postcards plus a telephone call or home visit (most received only one postcard and one telephone call). Some women also indicated an appreciation for the personal interest shown in them as perhaps opposed to a too often impersonal clinic situation.

Duer's intervention study highlights that reasons accepted by many health practitioners for non-attendance for screening may represent little more than excuses which could be overcome by additional contact. She concludes that an effective call-recall screening programme could remedy these anecdotal reports so often accepted by health and medical professionals.

Tapp & Goldenthal (1982) examined the interrelationships of health behaviours by means of a 44 item questionnaire designed to assess health habits. The subjects were 71 out-patients, 53% female and 64% married with a median age of 36. The participants

completed the self-administered questionnaire whilst in the The questionnaire included items hospital waiting room. clustered into the following health categories: nutrition, tobacco use, alcohol use, drug use, road and water safety, exercise and activity, rest and relaxation, personal health care. For each question there were three possible numeric values with a low score reflecting good health habits and a high score reflecting poor health habits. In addition the subjects were asked to report their education level and any medications they took regularly. The scores for each of the eight health categories, education level, and amount of medicine taken were then intercorrelated using the Pearson correlation coefficient. A factor analysis was done on the intercorrelations to determine how the variables grouped themselves into independent and orthogonal clusters. Five factors were extracted representing 74% of the total variance in the correlation matrix and were interpreted as follows.

Factor 1 was characterized by high loadings on nutrition, exercise, rest and relaxation, thus indicating active or passive personal health behaviours.

Factor 2 showed high loadings on tobacco use, alcohol use and road and water safety, reflecting a dimension of protective versus risky health habits.

Factor 3 had a high positive loading on drug use and a high negative loading on personal health. There was also a positive loading on alcohol use and a negative loading on safety. The drug use items assess drug abuse practices such as mixing alcohol and drugs, consuming large amounts of caffeine and the like.
Personal Health items reflect the frequency of negative emotional states (depression, anxiety, anger) and the awareness of health practices (first aid, breast exams). The opposite signs of these loadings suggest that high incidence of drug and alcohol use is related to low engagement in good health and safety practices and the infrequent experience of negative emotions. That is, alcohol and drug use may provide a means for the denial of health and safety practices as well as negative emotional experiences.

Factors 4 and 5 were related specifically to education and medication intake, respectively, and were therefore uninterpretable by the authors.

The three interpretable factors in this study reflect somewhat distinct dimensions of health behaviour. These results are consistent with two of the clusters identified by Harris & Guten (1979) as the "health practices" and the "harmful-substance avoidance" clusters. The exact item formats differ between the two studies but the compatibility of the findings show consistency in the dimensions of health behaviours. These behavioural clusters may imply different motivational patterns relevant to health: one which actively pursues health practices and one which protects present health status by avoidance of harmful activities.

The results of this research together with the findings of Harris & Guten (1979), indicate some behavioural manifestations of the Health Belief Model proposed by Becker (1974). Though the current model accounts for both approach and avoidance behaviours, the authors note the motivation to perform these

behaviours may differ for different individuals. The HBM does not account for individual differences in motivation and/or behavioural expression. The authors suggest that further studies are needed to examine the interrelationships between beliefs and particular expressions of health behaviours.

The results of this study indicate that health behaviour is not a unitary dimension and that disease prevention is affected by both passive-avoidant behaviours and active-approach These activities are potentially different for behaviours. different subgroups. Changing an active habit such as drinking requires the elimination of a behavioural pattern (a familiar routine) and adding a new activity such as exercise requires building a new behaviour pattern. The authors differentiate between the two by defining the prevention of disease as "the elimination of risky behaviours that result in ill health" and "reflecting the pursuit of active behaviours which if incorporated into an individual's lifestyle lead to a healthier state". Consequently, intervention strategies need to consider both these aspects of behaviour to maximize their potential effects.

A study on how perceptions of simulated physician-patient interactions influence intended satisfaction and compliance (Wilson & McNamara, 1982), gives some interesting insight into the factors influencing the effectiveness of health care systems. This study investigated the extent to which apparent competence and courtesy influenced enacted patient perceptions of medical care as well as how those perceptions related to satisfaction and compliance with the care delivered.

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Four different videotapes which depicted a physician-patient interaction for a sore throat problem were viewed by small groups of undergraduate psychology students at Ohio University. Differential levels of competence and courtesy were displayed in the various tapes. Subjects were asked to assume the role of the sore throat patient whilst watching one of the four videos. The videos showed four distinct physician roles: highly courteous and highly competent; highly courteous, less competent; relatively inconsiderate but highly competent; and, relatively inconsiderate and incompetent.

A components analysis with Varimax rotation of semantic differential scores administered subsequent to the videotapes revealed the presence of two strong and distinct clusters, one labelled 'courtesy' and the other 'competence'. Univariate analyses of variance indicated that the courtesy manipulation influenced the perception of courtesy and general medical satisfaction (but did not affect the subject's perception of competence significantly), whilst the competence manipulation influenced not only perceived competence but perceived courtesy, general medical satisfaction, and compliance as well. Subjects were able to accurately discriminate the extremes of good and poor physician behaviours.

Although it may be risky to generalize beyond the specific population studied, it may be concluded that the first hypothesis, that persons can accurately perceive physician courtesy and interpersonal skills, clearly proved accurate. The second hypothesis was that subjects were expected to base their

reported satisfaction and compliance on physician courtesy, regardless of competence. Manipulated courtesy did affect satisfaction but had no significant effect on compliance. As a third hypothesis, the authors suggested that negatively disposed persons would perceive the physician as less courteous and less competent and would be less satisfied and compliant than positively disposed persons. However, the hypothesis was disconfirmed by the statistical test.

Although there were limitations to this study, in particular that subjects vicariously experienced a focused medical interaction, the results indicate that understanding patient satisfaction could be crucial to effectiveness in the health care system. If patients are to take an active role in initiating and maintaining health care, then determining and enhancing their values, expectations, and knowledge seems crucial. The authors conclude that for health consumers "dispensing with the notion of their medical obtuseness of naivete is the very first step."

MacClean, Sinfield, Klein, & Harnden (1984) report a study of health related behaviour and attitudes of a random sample of 125 women aged 45-64 who declined acceptance of an invitation to attend a breast screening clinic.

Although this study concentrates primarily on the 125 nonattenders, some of the relevant factors were compared with a small sample of women (21) who attended a breast screening clinic. Interestingly, it was found from this comparison that there were no significant differences in age, socioeconomic class, and educational background of attenders versus nonattenders.

One important reason expressed by non-attenders for refusing the screening invitation was concern about the possibility of actually detecting cancer which they indicated were considerably more alarming than heart disease or nervous disorders. Other reasons given for refusal were practical in nature, such as lack of time (46%), fears, worry, and anxiety (39%), a belief screening was unnecessary (38%), the view that one should not look for trouble (23%), postponement (21%), negative feelings about the imagined clinic experience (37%), family influences (7%), and currently attending another medical facility (14%).

Other significant differences in attitudes of the women surveyed was through a comparison of health related behaviours which showed distinct differences in routine or usual health care. Only thirty percent of the non-attenders used seat belts (before legislation regulating it) compared with 60% of attenders. Non-attenders did not use "specifically healthy" products (such as vitamins), did not have regular dental checkups, lacked knowledge about well-women clinics, had not had cervical smear tests, and had not been hospital inpatients in the last five years (preventive check-ups). Some of these health factors related closely with screening. For example, 63% of nonattenders compared with 42% of attenders went to the dentist only when a problem occurred.

Another interesting point in this study was revealed through a set of statements designed to elicit attitudes regarding possible future misfortunes and means to avoid them. Without giving the level of significance, the authors reported that only

one statement showed a statistical difference in the two groups, the statement "you shouldn't go looking for health problems you'll know soon enough if anything is really wrong" (nonattenders 78% versus attenders 43%).

It was concluded that the women who did not attend were of lower socioeconomic class than the predominantly middle class women seen by the clinic and that their record of using preventive facilities was low. Also, their knowledge about breast cancer was limited and the prospect of breast screening aroused deep anxieties in many who decided not to attend. Based on these findings, the authors considered the results of the study discouraging as "most of the attributes of women who declined the invitation are not subject to rapid modification." They also note the ethical and practical considerations involved, "How justifiable is it to try and bring further pressure to bear on women who choose not to attend for screening?" (Maclean, Sinfield, Klein, & Harden, 1984, p. 282).

The implications for influencing well-being and health promoting behaviour in women are varied and complex but it seems clear that a humanistic approach as well as knowledge and understanding of preventive health practices is essential for health promotion to be effective.

Calnan (1985) attempted to identify ways of "characterizing" participants or non-participants in various types of health behaviours. These included: 1) breast screening, 2) cervical smear test, 3) regular dental checkups, 4) dietary practices, 5) smoking behaviour, 6) exercise, and 7) use of safety belts (before mandatory). The variables considered were: socio-

demographic characteristics, health status, orientation to modern scientific medicine, social support/social networks, control over health, and self-esteem.

The data in this study was collected from a larger survey about women's views about programmes for early detection of breast cancer (Calnan, 1984). 2,084 women aged 45 to 64 were randomly selected from the registers of general practitioners from three cities in England.

The results revealed a low probability that if women carry out one form of preventive health behaviour they will carry out another. The one variable in this study that did distinguish between participation and non-participation in the different forms of preventive behaviours was social class with the exception of cervical screening.

Based on these results, Calnan raises the following question: if an individual's health beliefs are accepted as being one of the major precursors of decision making to adopt or not adopt various types of health behaviour, then which variables concerning health beliefs are important? According to Calnan's results there was some evidence to support the hypothesis that all the interrelationships between the different types of behaviour showed positive statistically significant correlations. Thus, a "distinctive" group who did not carry out any form of preventive behaviour was characterized as being "older women who were not working, who left school before they were 15, and who tended to be socially isolated." However, the interrelationships were modest and the only indication of an individual's self-

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esteem was derived from a single question which asked "Are you a confident type of person?" With closed responses of "yes", "cannot say", and "no".

Social class, age, and educational background may certainly aid in inhibiting or encouraging preventive health practices. However, Calnan's (1985) study did not examine how those variables may influence decision-making, for example, perception of health and its control. The author concedes that further empirical research is needed to identify the precise nature of the relationship between variables such as social class, specific beliefs, and circumstances which could very reasonably affect one's self-esteem.

A significant study by Hill, Gardner, & Rassaby (1985) attempted to identify primary beliefs of women that could be "targets for persuasion" to change intentions, attitudes and behaviours toward breast self-examination (BSE) and cervical screening.

The subjects for this study were 123 women (volunteers in work places and community groups) who were tested by means of the HBM as well as the subjective probability model (SPM), and the theory of reasoned action (TRA) in hopes of discovering predisposing factors for performing BSE and having a CST. All three of these models hold that beliefs are accountable for most, if not all, voluntary health behaviour, but each is related to voluntary health behaviour in a distinctive way.

The HBM was used to predict health action from overall health motivation, perceived severity of and susceptibility to a given illness, beliefs in the benefits of recommended health

actions that guard against illness (preventive actions) and perceived barriers (cost) of performing this action. Hill, Gardner, & Rassaby (1985) also made predictions of possible health intentions from this particular model. The SPM was used to predict intentions from single beliefs and pairs of conditional subjective probabilities that indicate the strength of intentions, on the assumption that the subject says a true An important predictive variable, called statement. "psychological relevance" of a belief for intention of change, is provided from this model. Basically, the more psychologically relevant a belief, the greater the probability the corresponding intention is carried out. Lastly, the TRA model was used to predict intention from attitude and subjective norm, that is, the summed products of referents' opinions about the subject performing the act and the motivation to comply with those referents (Ajzen & Fishbein, 1980).

Each of the aforementioned models showed significant predictions of BSE and CST intentions. However, the authors contend that a composite model of the TRA's attitudinal and normative components along with the barriers' component of the HBM proved to be the most useful for purposes of health education. Significant attitudinal components included: influence of significant others (doctor, mother, husband) reassurance about cancer, and that cancer would be curable. Significant "barriers" for the CST were embarrassment, indignity of examination, discomfort of examination, and cost. "Psychological relevance"

beliefs identified by the TRA model. These are beliefs in which it is necessary to intervene in order to change BSE and CST intentions. The authors concluded that indications for future research would be to continue to look for additional information that could contribute to preventive health behaviours. For example, by using positive persuasion when promoting health education and knowing who and what to target.

In a ten-year research programme, Pill & Stott (1982, 1985a, 1985b, 1986, 1987a, 1987b, 1988; Stott & Pill, 1983, 1987) have done a series of studies about human beliefs, attitudes, and behaviours toward health care and prevention. The research has yielded a great deal of information from which the authors have attempted to determine why individuals make life-style choices which are known to have an adverse impact on health and, secondly, to develop methods of measurement to describe trends in positive health motivation in the community. Three stages of this research programme are presented with the primary emphasis on preventive health practices and procedures of working class women. The participants were 204 women aged 25 to 40 who lived The women were interviewed at home about their in South Wales. health beliefs, attitudes and behaviours regarding health The authors hypothesized that both procedures and practices. types of behaviour might have different antecedents and attempted to distinguish between them as well as describe possible patterns of preventive behaviour and how or if they were interrelated.

The determinants of health procedures included questions about BSE, CST, regular dental checkups, and the like. Health practices referred to today's choices that have been defined by

health professionals as having potential for preventing illness. For these items the Alameda Index (Belloc & Breslow, 1972) was replicated (Pill & Stott, 1985b). It included the following items: regular physical activity, never having smoked cigarettes, moderate or no use of alcohol, regular sleep (7-8 hours daily), proper weight for height, no eating between meals and regular breakfasts. The interrelationships of the health practices were similar to those of the Alameda study. There was no evidence for any substantial common factor underlying the association between physical health status and the habits of daily life that were examined. The authors concluded that their findings supported previous American research in that preventive behaviour is not unidimensional. However their findings do not provide conclusive evidence for the existence of statistically independent dimensions of preventive behaviour.

Antecedent variables (socio-demographic: marital status, number of children under 16, employment status, childhood socialization, education, religious commitments, income, house ownership, participation in organizations, level of perceived support from friends, and relatives) and four belief/attitude variables (belief in personal control, in chance, in powerful others, and index of salience of lifestyle [an index developed by Pill and Stott, 1987b, that measures the respondent's awareness that day to day lifestyle choices affect health]) were included in a stepwise multiple regression analysis to determine which five or six variables, in combination, would be the best

predictors of the two categories of preventive behaviour. Of the 15 variables included, six (support from friends, belief in personal control, education, marital status, support from relatives, and employment) explained about 15% of the variance found in health procedures and five (education, marital status, support from relatives, employment, and salience of lifestyle) explained about 10% of those observed in health practices. The authors note that the 'belief in personal control' was more closely associated with carrying out procedures, whereas a greater awareness of the relevance of lifestyle choices to health was connected to performing more health practices.

When all the behaviours, for both practices and procedures, were combined, the analysis revealed four variables (level of education, employment status, perceived support from relatives, and belief in personal control) that accounted for 16% of the total variance (inclusion of the remaining 11 only increased the percentage to 18%). The authors concluded that the following factors are associated with preventive behaviour in working class women: a) education, b) work, c) perception of support from other people, and d) belief that one's actions will affect outcomes. However, it should be noted that about 80% of the variance was unexplained and consequently it is questionable whether much weight should be given to these results.

The authors suggest that, whilst socio-demographic variables may underlie the carrying out of a number of behaviours, specific beliefs and attitudes should be considered when attempting to identify factors which will best predict performance of a particular behaviour. However, they stress that, if the focus is

on variables connected with performing a diverse range of preventive behaviour, then socio-demographic factors are of considerable importance (age, sex, education, and the like). However, on the basis of a review of the existing literature, Gatchel & Baum (1983, p. 175) conclude that there are very few studies showing relationships between demographic variables and compliance.

It was determined that women most likely not to practice preventive health behaviour were women with three or more dependent children at home, who were significantly less likely to be employed, had less education, and were less likely to believe that their actions would influence outcomes. This finding is similar to that of Calnan's (1985) conclusions where a specific group of women who did not carry out preventive health behaviour was distinguished - namely unemployed older women who left school before the age of 15 and who tended to be socially isolated.

In the study done by Pill & Stott (1987a) it is noteworthy to mention that only a small proportion (one-fifth) of the overall population studied (lower social class women) fell into this category indicating that there are other variables to be considered. Although the chances of any woman in this bottom one-fifth to perform more than the average number of preventive behaviours was lower than for the rest of the sample, some did perform higher suggesting that women in this group are capable of practising preventive health behaviour.

Owens, Heron, & Leinster (1987) assessed psychological and social characteristics of 406 women aged 15-76 that attended for

breast screening; 183 women were consecutive attenders at a regional breast screening unit; 182 were consecutive attenders at a hospital breast clinic; and 41 were consecutive attenders at an out-patient clinic but not suffering from breast symptoms. The women were approached and asked to fill in questionnaires to obtain the following information: 1) demographic factors (6 items); 2) knowledge of breast cancer (11 items); 3) health beliefs (50 items). In addition subjects were asked about their attitudes and beliefs regarding BSE. The average age of women in the screening group was significantly higher than that of women The average age of women from the from the breast clinic. control group was not significantly higher than that of the breast clinic mean age. It should also be noted that women from the screening unit were more likely to be from affluent social classes than the women from the clinic. No differences were mentioned for the control group.

As a whole, 36.5% of the women practised BSE at least once monthly and 25.3% rarely or never did BSE. Comparing the separate groups revealed a significant association between group and BSE practice with women from the clinic claiming to use BSE significantly more frequently than women from the screening unit or control groups. Regarding the importance of BSE however there were no significant differences between groups. Women from the breast clinic delayed up to one month before seeking medical treatment and 12.4% waited for more than three months. Regarding effect of prior knowledge of treatment for breast cancer avoiding mastectomy 49% said that such knowledge would prompt early presentation of symptoms. However

analysis regarding assessment of awareness of alternatives showed no relationship between correctness of response and delay.

With the exception of perceived efficacy there were no significant differences between groups regarding health beliefs. Perceived efficacy, vulnerability and seriousness significantly intercorrelated and correlated with knowledge and BSE results giving rise to the possibility that health beliefs may have little effect on attendance for screening but relate to selfscreening by BSE.

The results suggest that screening is failing to reach the target population (only 18% of the women from the screening unit were over 55 years of age). Also the high proportion of women who rarely or never use BSE corresponds to results found by other studies (Hallal, 1982) as does the proportion that regularly practised BSE (Duffy & Owens, 1984). Results of this questionnaire indicate few differences in health beliefs between groups with the exception of perceived efficacy.

A recent study on social class differences involving sexual behaviour and cervical cancer of 370 women aged 25 to 49 years was done by Mant, Vessey, & Loudon (1988). Data revealed that women of lower social class (measured by occupation and education) experienced sexual intercourse at an earlier age but accumulated fewer sexual partners than women of higher social class. These results are inconsistent with the idea that social class differences in cervical cancer incidence and mortality can be attributed to more promiscuous sexual

behaviour in women of lower class. In addition, data from a previous study by Harris, et al. (1984) were presented. These data showed that within the control group, working-class women (particularly younger women) had started sexual relations at an earlier age than their middle-class peers, but that social class had no obvious impact on the number of sexual partners for women of any age. Thus, it was concluded that the observed social class differences in the incidence of cervical cancer could not be explained by social class differences in female promiscuity.

Based on numerous studies that have demonstrated planned health education and health promotion interventions are not particularly successful in bringing about behavioural change, a new model has been proposed by Hunt and Martin (1988). The authors suggest that the reason for unsuccessful intervention strategies is due to false theoretical assumptions and the failure to place sufficient emphasis on the context in which health-related behaviours occur. Most studies in the field of social psychology have focussed on attitudes, beliefs, values, social norms and social influence as the vehicles of behavioural The authors argue that, apart from the problem that such change. studies pay little attention to economic, political and structural constraints, they form an inadequate basis for health education strategies for other reasons, which are mainly theoretical and methodological in nature.

At the theoretical level, Hunt and Martin argue that many of

the studies of attitudes and behaviour demonstrate that the relationship between the concept of attitude as a hypothetical construct and observable action is uncertain. Based on this, practical attempts in health education have been based upon two assumptions: 1) that there is something known as an attitude which can be measured, and 2) that there exist certain combinations of key words and actions which will trigger a change in attitude amongst members of the public. In fact, they stress that there is little agreement upon the definition of attitude and that it is often seen as a global term for a combination of behaviour, emotion and cognition.

After reviewing the literature, the authors contended that results of many studies have been inconclusive and that effects on behaviour are largely unpredictable both in direction and duration. Specifically, they site the HBM (Janz & Becker, 1984), a similar model by Green, Kreuter, Deeds, & Partridge (1980), and a model by Ajzen & Fishbein (1980) which focused on beliefs, defined as basic determinants of behaviour, rather than attitudes. (Although there is no complete agreement on the definition of attitude, most social psychologist define attitude as a global term that includes behaviour, emotion, and cognition.) They concluded that all these models involve the questionable assumption that action is based upon a reasoned process, but their major drawback is the failure to deal with the fact that behaviours may be health-related but are not necessarily carried out because of their health implications.

The authors also reviewed studies of self-initiated

behaviour change which suggest that the antecedents of change are often events or processes which bring a previous routine and unmarked behaviour into new focus. For example, research on modification or cessation of alcohol use has found that change is usually preceded by some personal crisis which brings the drinking into sharp focus (Ross, 1980). Saunders & Kershaw (1979) found that a change in drinking habits was often sustained by the forming of new relationships, change of job, marriage or the onset of ill-health. Studies of spontaneous smoking cessation suggest that those who stop smoking on their own initiative go through a series of stages which begin with a gradual tendency to evaluate smoking and its effects (Prochaska & Di Clemente, 1983). Once in this "contemplation" phase smokers become more open to information and education about smoking and individuals report thinking more about themselves as smokers.

Based on evidence from the wide variety of studies reviewed, the authors determined that self-initiated behavioural change would occur when the behaviour is brought into focus for a prolonged time period and it becomes salient or problematic for the individual. For example, this condition often occurs in conjunction with a change in context in which the behaviour in question is being carried out, such as a smoker going to live with a nonsmoker. It is argued that the actions of the former behaviour (habit) are now subject to cognitive appraisal. That is, the smoker is now in a situation where information about smoking impinges on perceptual processes and which was quite likely previously filtered out. The authors also argue that the presence and interest of significant others provides

reinforcement and helps keep the behaviour in question salient. There is evidence from psychophysiology that "routine" behaviours are consigned to lower levels of cognitive functioning (Luria, 1973). Thus, the authors argues that training in some new skill may be one means by which routine activities are raised into cognitive focus and individuals become aware of them in a new way and selective attention alters.

To test their behavioural model, the authors conducted a survey on the buying high fibre foods and a pilot study of a daily health diary. Two groups of individuals were selected from neighbouring communities in Scotland. The main hypothesis was that the experimental group would exhibit significant changes towards the use of more high fibre foods in comparison to the control group. From respondents to a newspaper advertisement for temporary work, 24 people (Group A) were selected to conduct interviews in their community for one month after attending a training session. A second group of 18 people (Group B) were similarly contacted but were told they would be helping with a research project. Group B were asked to be "guinea pigs" in the interview training of the other group. After the initial training, Group A conducted interviews within their community, and Group B completed a daily health diary. At the end of a month all the surveys and diaries were completed and participants paid. Three months later the procedure was repeated, but with Group B trained to carry out the interviews and Group A to complete the health diaries. For this study there were 17 people in Group A, and 13 in Group B primarily due to individuals

acquiring full-time employment. This time Group A acted as "guinea pigs" for Group B's training interview. Since Group A now had considerable experience with interviewing they were asked not to give advice to members of Group B during the interview.

Three types of analyses on six key questions about fibre in the diet were done. Based on the pre-test questionnaires the only significant difference between the groups was that Group B contained a higher proportion of people who reported that they ate brown or wholemeal bread more than once a week. Comparison of the post-test responses of Groups A and B showed a higher proportion of individuals in Group A now eating wholemeal or brown bread. In addition, there was a significant difference in the number of individuals reporting a change in eating habits in relation fibre; only one out of nine reported this in Group B whereas nine out of 18 reported so in Group A. Finally, a comparison of the same groups on the pre- and post-test questionnaire showed no significant differences between first and second responses for Group B, but for Group A there were significant changes from first to second completion of the interview schedule on the number of people who reported an increase in the amount of brown/wholemeal bread eaten.

In spite of the small population sample, the authors contend that the results provide some support for the proposed model of behavioural change although they stress that more studies are needed. Consequently, the model of health-related behavioural change proposed draws together empirical findings and theoretical speculations from several disciplines. Subsequent to alterations in awareness and perception the model will depend on several

other factors: a) the climate of opinion, that is that change could be desirable; b) the opportunities and support for carrying out alternative behaviour; c) the length of time the behaviour in question remains in focus; d) the role of the behaviour itself in the coping strategies of the adaptation process; and e) the adaptation pressures to which the individual is already subjected and the degree to which coping strategies are already taxed. For example, in circumstances where the adaptational processes impose a great deal of strain, such attempts will be firmly rejected or may tax adaptational processes beyond the limit. Thus, the authors argue that this model would explain why people in the lowest socioeconomic status are the least susceptible to health education messages as they are already taxed to the limit of the coping capacity. The authors contend that the basic elements for behavioural change are: 1) prolonged exposure to a particular issue, motivation, learning in a meaningful context, opportunities to fit the knowledge gained into existing schemes, opportunities to apply the knowledge in familiar social context and the discussion of implications with significant others. They note that it seems reasonable to assume that change growing out of some "natural" cognitive reorganisation on the part of the individual will be longer lasting than that which is imposed "artificially from without, so to speak.

The implications for health education and promotion is that whilst they provide a climate which influences the direction and content of behavioural changes, it is the individual's involvement in a tangential, but meaningfully related activity

which triggers awareness of the climate and makes it personally salient. They argue that one of the reasons people appear impervious to direct health messages may be that they are reluctant to relinquish customary behaviours and small pleasures now in order to avoid an event which may or may not occur at some unknown future data. They suggest that strategies need to utilise naturally occurring cognitive and social phenomena to encourage self-initiated change are likely to be more efficacious. In other words, the individual changes because he or she wants to and in this way the behaviour is likely to be lasting.

A recent survey concerning attitudes, experience, and knowledge of cervical screening was administered to women in various locations of Tower Hamlets, England (Schwartz, Savage, George, & Emohare, 1989). Women attending selected medical and surgical wards, a small sample of 35 active elderly women (over age 65) attending a day centre, and a random sample drawn from general practioners' records were interviewed. The active elderly and the random sample (of which 93% of those asked participated) were interviewed at home. A total of 600 women completed a structured questionnaire (200 in outpatient departments, 100 in general practioner surgeries, 100 inpatients and 200 from the random sample). With the exception of the active elderly group (whose knowledge and experience of cervical cytology was minimal), there were no significant differences between the responses of women interviewed in the different places so they were considered as one group. (The women ranged in age from under 24 to over 65 and were fairly

evenly distributed from all social classes). Women's comments and suggestions about cervical screening were also recorded and analyzed separately.

In response to a question about the purpose of the CST 86% of the 600 participants said that they knew what a smear test was, and 77% had had one done. Of the active elderly group, 60% knew what the test was for but only 11% had had one performed; when asked why a smear test is taken, only three of these women knew that the purpose of the smear test was to detect cell changes at an early stage. Whereas, in the under 65 group, 71% of the women thought that it was a test to detect cancer and 10% indicated they did not know what the test was for.

As regards knowledge of how a smear test is done, only 20% of the 600 women could fully describe the procedure and 20% had no idea of how it was done. Over half of the 461 women who had had a smear test said the test was no bother and was worth having; only one percent thought it was a waste of time. Under half the women (205) responded to a separate question about test experience: 10% indicated it was painful, 44% said it was uncomfortable and the remaining 46% had had no discomfort but were embarrassed.

Regarding test results, 44% of the 452 women who had had a test and could recall how they had been informed of the results, indicated that they were always told the results, 9% said sometimes, and 19%, never. Some (28%) were told that if they heard nothing, they could assume the result was negative. When asked how results were given to them, 29% of the 255 women who

could remember details said the results had been posted to them, 19% by telephone (the majority of these women had initiated the call), 12% went to their doctor specifically for the result, and 40% were told only at their next appointment with the doctor who had done the test.

Negative results were given to 79% of the women, 15% were told there were signs of infection, 2% that there were abnormal cells, and 1% were asked to repeat the test due to technical reasons, and the remaining 3% gave various other reports.

A noteworthy finding showed that one woman out of five was not reassured by the result of her smear. Most of those women would have had to have the test repeated, due to infection or inadequate sampling.

More than one-third of the women who had not had a repeat test gave no reason but some commented that they thought one test was sufficient. Twenty-two percent of the women indicated that they had had a hysterectomy, 6% reported that they had not been recalled, 8% said no one had advised them to have another test many of these women commented that surely their doctor would have told them if it was necessary 3% indicated that the clinic they had been attending had closed or gave other reasons such as, illhealth, dislike of test, social problems or the fact that they were no longer having sexual relations.

When asked how the uptake of the service could be improved, only 4% had no suggestions. The other 570 women who responded indicated that more publicity (27%) would help, ability to see a woman doctor (25%), encouragement by health professionals (15%), use of mobile services (9%), flexible opening hours (6%), nearer

facilities (4%), and 14% said prompt results and a recall system. The women were also asked if they would be willing to pay for the service if it were not available from the National Health Service and 75% indicated that they would; however, 61% were not prepared to pay very much.

Concerning the time period the women had to wait to receive the results of the test, 58% had waited for over two weeks but only 18% thought that it was reasonable to wait so long. Fortyseven percent suggested that a week was long enough but only 15% had received their results that quickly. A small percentage (4%) of these said they had received their results immediately from a walk-in private clinic.

Most of the women (70%) had had their first smear test before the age of 35, However, one-fifth of the women screened had only had one smear. and 144 women had not had a smear test for over five years (the officially recommended period for screening in Britain. The reasons given for the delay in having a repeat smear included: not recalled (6%), no facilities (3%), not advised that it was necessary (8%), hysterectomy (22%), no reason (34%), and other (28%).

In conclusion, the survey revealed that over 70% of the women interviewed were mistaken about the purpose of the CST; only 10% knew that it is a test to prevent cancer rather than to detect it. Studies concerning attitudes towards cancer have shown that many people fear cancer and that the word provokes feelings of anxiety (Easson, 1969; van den Heuvel, 1978). Considering the high percentage of women who felt discomfort or

pain during a CST (54%), the authors suggest this could be the result of either poor technique by the doctor or anxiety in the patient (preventing her from relaxing so that the test is needlessly painful). Considering the high percentage of women who found it embarrassing (46%), they authors suggest having the availability of a woman doctor or nurse to perform the test. Other studies have shown that the availability of a female nurse practioner or a health visitor was preferred to a male doctor (Standing & Mercer, 1984; Hudson, Jansz, & Gordon, 1983). The authors also contend that women's knowledge and understanding of the CST is poor and that a concerted effort needs to be made by all health practioners to provide clear and complete information regarding the test. Other specific recommendations were also given, such as the need for an organized and centralized record system, the availability of clinics in which results could be made available immediately, and an effective publicity campaign aimed specifically at women over 35 and with special emphasis on those over 50.

A comparison of Roger's (1983) protection motivation theory (PMT) and the HBM (Becker, 1974) was undertaken in an attempt to determine which model best predicts preventive health behaviour (Seydel, Taal, & Wiegman, 1990). In both models risk-appraisal depends on perceived severity and perceived susceptibility to a disease. The individual's expectancy that carrying out recommendations can remove the threat (outcome expectancy), is also included in both models but the PMT further includes the concept of self-efficacy expectancy, taken from the sociallearning theory of Bandura (1977). Self-efficacy expectancy

refers to an individual's belief that he is capable of executing recommended courses of action successfully (Bandura, 1977, 1986). For example, an individual may be convinced that non-smoking behaviour considerably reduces the chance of contracting lung cancer (high outcome expectancy), but does not consider himself capable of stopping smoking (low-efficacy expectancy).

Self-efficacy expectancy has been shown to influence the quality and nature of decisions related to health, such as attempting to stop or reduce alcohol abuse and cigarette smoking (Strecher, Becker, Kirscht, Eraker, & Graham-Tomasi, 1985), and in compliance with medical recommendations (Klepac, Dowling, & Hange, 1982). A high self-efficacy expectancy results in adequate coping behaviour and leads to a reduction in anxiety during unpleasant medical procedures. It appears that recovery from a physical trauma or a serious disease is quicker in individuals with a high self-efficacy expectancy than in

The first study done by the authors used the HBM with respect to behavioural intentions and reported behaviour towards cancer prevention. A postal survey was sent to 358 Dutch women ranging in age from 25 to 82 who had applied to take part in a health education class on cancer. Behavioural intentions were measured on five point scales and concerned five topics: going to see the doctor, breast self-examination, lifestyle, eating habits, and participation in mass screening. Where relevant, individuals were also asked about actual behaviour, such as regular BSE. Risk-appraisal concerned the individual's perceived

susceptibility to and severity of cancer. Outcome expectancy was measured with regard to the five described topics.

A multiple regression analysis was used to determine which combination of independent variables had the highest predictive value for the dependent variable. The results showed that only outcome expectancies contributed significantly to the prediction of behavioural intentions with the exception of participation in a mass screening for which perceived severity and susceptibility contributed significantly. Outcome expectancy and perceived severity correlated positively with the behavioural intention to participate in a mass screening and perceived susceptibility was negatively correlated to behavioural intention. In other words, individuals who ascribed themselves as being more susceptible to contracting cancer were less likely to take part in a mass screening. For the reported behaviour, both outcome expectancy and severity contributed significantly to the particular The authors noted that none of the health belief behaviour. variables had predictive value for the reported participation in a mass screening. Of the 234 women who in the past received an invitation to take part in a mass screening 88% actually participated, which is a high participation rate compared with an average of 70-80% usually considered successful (BMA, 1986; Day, 1984; Draper & Cook, 1983; Schwartz, Savage, George, & Emohare, 1989). On the other hand, the health belief variables did prove to be good predictors of the intention to take part in a mass screening.

The second study attempted to determine the predictive value of the dimensions from the PMT. Another postal survey was sent

to 266 men and women who had applied to participate in a study which was described in a newspaper ad as a study on the most effective way to produce an educational television programme. In the experimental groups the participants were exposed to information on cancer whereas the control group saw a programme on an unrelated topic. Data on behavioural intentions and reported behaviour were measured in the postal survey held before the exposure to the programmes. All participants completed the In order to determine actual behaviour all questionnaire. participants were given the opportunity to order either one or two information leaflets, "The seven warning signs" and Breast self-examination", from the Dutch Cancer Society (DCS). The behavioural measurement consisted of determining which individuals, on the basis of the order forms received by the DCS, had actually ordered the leaflets.

Behavioural intentions concerned questions about four preventive behaviours: going to see the doctor, breast selfexamination, observation of own body, and pap test (CST). Due to relatively low correlation coefficients obtained in the first study, the intentions were formulated more specifically by using seven-point scales. Measurement of actual behaviour was the ordering of the leaflets offered by the DCS. Risk appraisal was measured by two questions on the seriousness of cancer and two questions on perceived susceptibility to the disease. Outcome expectancies were formulated in the same way as in the first study and questions on self-efficacy expectancies were added.

Multiple regression analysis was also used in this study

with the correlation coefficients considerably higher than those in the first study. The authors attribute this to making the questions more specific. As in the first study, the riskcomponents were not adequate predictors of behavioural intentions. An exception to this was the assessment of severity by women, in relation to going to see the doctor in time and in relation to BSE. There were no negative relations between riskcomponents and behavioural intentions as in the first study. For reported behaviour, the outcome and self-efficacy expectancy also had good predictive value with the exception of the CST for which assessment of severity and susceptibility accounted for a considerable proportion of the variance. The authors found the negative correlation (r = -0.13) between perceived severity and having a CST remarkable in that women who considered cancer to be a serious illness had had a CST least often. However, a significance test about this <u>r</u> using Fischer's formula with an N=125 (Seydel, Taal, & Wiegman, 1990, p. 105) shows that r is nonsignificant. Thus, the author's conclusions are not warranted.

The authors argue that the predictive value of PMT is best answered on the basis of actual behaviour - that of ordering leaflets from the DCS. As mentioned previously, the protection motivation factors were measured before the class began. An extra factor included in the analysis was the exposure to the health education message. For women, outcome expectancy was an important predictor for ordering the leaflet, "The seven warning signs," whereas for men, self-efficacy was a good predictor. The remaining variables made no further contribution. As for the leaflet on BSE, it appeared that not only outcome and self-

efficacy expectancy, but also the assessment of severity, made a significant contribution to requesting this leaflet. The factor health education made no contribution in this respect.

The results indicate that with respect to PMT, riskappraisal is an insufficient predictor of behavioural intentions, reported behaviour and actual behaviour. The authors suggest that the PMT contributes more to prediction of behavioural intentions as well as actual behaviour than the HBM.

In sum, the authors note that health education campaigns often consider risk-appraisal as a factor that can be influenced. That is, that modification of beliefs relating to some particular risk will contribute to preventive behaviour. However, they argue that in both studies risk-appraisal was not a sufficient predictor of behavioural intentions, reported and actual behaviour and that inclusion of self-efficacy and outcome expectancy led to a better prediction. These findings have also been indicated in other studies (Janz & Becker, 1984; Kegeles & Lund, 1982). In the first study the correlation coefficients were rather low as compared to the second study which appears to support the assumption that components of the self-efficacy approach are related to beliefs about specific behaviour to be exhibited under strictly specified conditions (Bandura, 1977, 1986). In the first study, the HBM better predicted the intention to participate in a mass screening than actual participation. The authors suggest this could be due to the fact that in the Netherlands mass screenings have a long tradition of participation, so that almost everyone takes part presumably due

to a long established routine. Also, the general public opinion is that individuals should participate in such screenings. Thus, the authors argue that in reference to intentions people may produce reasons why they may or may not be motivated to participate which would explain why factors from the HBM have some influence on intentions but not on actual behaviour.

In conclusion the authors argue that the PMT is able to provide a better prediction of behavioural intention and actual behaviour than the HBM for preventive behaviour related to cancer. However, they stress that without an idea of a certain severity or susceptibility, an individual would not necessarily proceed to seek possibilities for reducing or removing the threat but that risk-appraisal in itself is an insufficient motivator for preventive behaviour and that health education should also seek to increase outcome and self-efficacy expectancy.

It is known that if cervical screening is to be effective, a large majority of women need to be convinced of the value of having a smear test. Therefore, the letter of invitation is central to the achievement of a high attendance rate and its content is critical (Eardley, Elkind, & Thompson, 1990). Recently, Eardley et al. (1990) assessed the computerized invitations for cervical screening in 178 health districts in England.

A rating system, based on the guidelines issued by the DHSS (1989), was developed for the three types of letters used: call, recall, and combined (used for both call and recall). The DHSS guidelines cover three broad issues: first, the reason for the test and why women are being invited; second, the screening

procedure itself; and third, additional information needs. From these a 15 point scoring system was developed, therefore the overall score calculation was based on whether each of these 15 requirements was met in the contents of each letter. A total of 244 letters were analyzed with overall scores ranging from four to eleven, with a mean score of 7.5. Recall letters had a slightly lower score on average of 7.1 compared with 7.5 for combined letters and 7.7 for call letters.

During the analysis, other important issues were noted by the authors, the first being overall style and appearance of the Most letters had been produced by a computer and of letters. these some were clear to read with well-spaced typing whilst others were cramped, with poor quality and faint printing. The second issue involved the signatory of the letter, which is not addressed in the guidelines but which the authors note may have some influence on women's decisions to attend. In only 58% of the districts were letters signed by the physician or had his or her name printed on the bottom. In over a third the signatory was an institutional representative, such as the district medical In the case of physicians who did not take tests, officer. letters with an institutional signature were used in 81% of the districts.

The results showed that three-quarters of all letters gave reasons why women were being invited. However, a third of women being invited for the first time were given no explanation as to why they were being selected for invitation. Another threequarters of the letters gave some explanation of the prupose of

the smear test, but in 15% the test was described as a 'cancer test' or its purpose was to detect cancer. A third of the letters were not accompanied by a health education leaflet. A Health Education Authority survey showed that women like the idea of receiving a leaflet with their invitation as the combination of two items "appeared to convey an effective mix of authority and personal concern," (Bluck, 1975).

Regarding the screening procedure, only two-thirds of the letters offered a choice of having the test taken by a general practitioner or at a clinic, but 81% offered a choice of clinics and included a list of addresses. Nine out of ten letters made it clear whether or not general practitioners took tests, but only eight percent mentioned the availability of female staff. Less than half of the letters gave information about how results might be obtained. Although in most of these cases the procedure itself was described, some letters advised women to obtain this information. In the case of recall letters, almost two-thirds failed to provide this information which is an important omission for women who have not previously had a test.

Finally, issues relating to further information needs were addressed by only a minority of letters. One third of the letters gave some information about who to contact for further information, although only eight percent provided a specific contact number.

The authors stress the importance of answering the question, "Why me?". Women need to know why they have been chosen for screening, since many think it is not necessary for them to have the test (Eardley, Spencer, Haran, Hobbs, & McGuiness, 1988).

The authors conclude that there is a clear need for the expertise of health promotion personnel to advise on the production of any material designed for the general public in terms of both content and presentation.

CHAPTER 4

CONSIDERATION OF CONTRADICTING RESULTS OF RESEARCH

The review of literature has drawn heavily upon American research as well as more recent British studies, particularly those regarding the use of specific preventive health care services. Many of the results of this research are contradictory.

For example, in most studies the main factors believed to influence the use of preventive services (apart from the accessibility and availability of these services) have been socioeconomic status, health beliefs, education, and social participation (Anderson, Davis, Kickbush, McQueen, & Turner, 1988). Calnan (1985) determined that the main factor that distinguishes between participation and non-participation in various forms of preventive health behaviour was social class, with the exception of the CST. In fact, Calnan (1985) and Stott & Pill (1985, 1987) found some evidence suggesting that older women in lower social classes who tended to be socially isolated were not likely to practice preventive health. Coulter & Baldwin (1987) distinguished a similar group of women who were the least likely to have a CST.

Another seeming contradiction is in the concept of health behaviour itself. There have been many efforts to define this concept. Sometimes, health behaviour is seen as determined by factors specific to health, and sometimes as depending on factors that determine also other kinds of related behaviours (Anderson
et al. 1988). For example, Harris & Guten (1979) concluded that people who have preventive examinations are not any more likely to perform other types of protective health behaviour than are people who do not have these examinations. Whereas Langlie (1979) and Maclean, Sinfield, Klein, & Harnden (1984) found that the use of preventive health services was associated with some health practices and not with others. Similarly, Maclean et al. (1984) found that attenders at a breast screening clinic followed other preventive practices in comparison to non-attenders. While, Stott & Pill (1983, 1987) found some positive association between participation in preventive procedures and health practices, but not with much consistency. Calnan (1985) concluded that women who carry out one type of preventive health behaviour have a low probability of carrying out another.

The literature seems to indicate that health behaviour is multidimensional in nature. However, how the dimensions cluster appears to be a function of which activities have been examined and how they have been measured (Anderson et al. 1988). Tapp & Goldenthal (1982) used factor analysis to study the interrelationships of health behaviours and found three factors or dimensions: health promotion activities, avoidance of health risks, and an awareness of good health practices. Harris & Guten (1979) identified five factors: health practices, safety practices, preventive health care, environmental hazard avoidance, and harmful substance avoidance.

In contradiction with the supposed multidimensional nature of health behaviour, few consistent patterns of interrelated

health behaviours have been found. Exercise and not smoking seem to be associated (Mechanic, 1979; Rimpela, 1980) but there is little evidence of associations between other health promoting behaviours. Anderson et al. (1988) suggests that this is because health-damaging behaviours have received more sophisticated attention and consequently there is stronger evidence of some consistent clustering. Kok, Matroos, Van Den Ban, & Hautvast (1982) looked for the simultaneous occurrence of smoking, obesity, inadequate nutrition, and physical inactivity in a random sample of Dutch adults. They reported that there was no systematic clustering of these behaviours, but also that these behaviours were not independent from one another. They compared adults with several risk factors and no risk factors and found with low education and low occupation were that men disproportionately in the former group.

Although there are doubts about the unidimensionality of health behaviour, researchers have devised cumulative scores of health practices, the best known is that of the Alameda study which appears to have predictive validity (Wiley & Camacho, 1980). More recently, Harris et al. (1984) determined a Prevention Index from a national survey showing that the practice of 'key preventive habits' was more common among women, those with higher incomes, in professional and managerial occupations, among those describing their health as better and among those who say they have 'a greater control deal of control' over their future health.

There has been a consistent search for those attitudes, beliefs, and/or modifiable conditions which are associated with

patterns of health behaviour. Again, the major variables considered have been socio-demographic (education, employment, marital status), attitudes to health (beliefs, values, responsibility, control) and social involvement (participation in clubs, church membership, networks, social support). The most certain conclusion seems to be that social networks, attitudes to health, and socio-demographic characteristics all exert some influence on health behaviour, that they interact, and that no single factor accounts for any major part of the variance (Anderson et al., 1988). Stott & Pill (1983) argue that it is quite likely the variables are not consistent in the importance of their influence on the different dimensions of health behaviour.

There are also contradicting ideas about the importance of self-esteem as a variable affecting health behaviour. These conflicting views are typified by Vermost's (1978) finding that self-esteem influences the decision to participate in screening programmes, and Calnan's (1984, 1985) finding of no significant statistical relationship between self-esteem and preventive health behaviour. Kasl & Cobb (1966) have suggested that selfesteem is plausibly related to the perceived support of significant others. Calnan (1984, 1985) showed that the presence of a network of social support was related to preventive health behaviour and, even though he concluded self-esteem was not a determinant, his results were based on only one question and so, the possibility that self-esteem affects health behaviour cannot be dismissed. Hill, Gardner, & Rassaby (1985) and Maclean et al.

(1984) reported a moderate effect of social support or family influences. Thus, it seems likely that positive support is associated with higher self-esteem.

Self-esteem, social support, emotional variables like fear, worry, or embarrassment, and health related behaviour seem to be interrelated. A number of researchers have reported a connection between affective variables and health related behaviour. Sansom, MacInerney, Oliver, & Wakefield (1975) asked women who were invited for a CST about other women's reasons for not having Over 90% said it was fear of the result and a test. embarrassment that kept other women from having a repeat smear. This finding confirmed the results of a pilot study by Davidson & Clements (1971). By asking direct questions about women's intentions to have a CST, Hill, Gardner, & Rassaby (1985) extracted a number of variables which referred specifically to These were reassurance about cancer, sense of affective states. relief to find nothing amiss, embarrassment with doctor or indignity of examination, worry until test results are known, and These variables correlated with the intention fear of results. to have a CST, with the exception of "worry" which seemed to have low psychological relevance.

Previous research has established a relationship between perceived susceptibility and preventive health behaviour, two concepts derived from the HBM. Hochbaum (1956, 1958) found that people who believed they were susceptible to tuberculosis were more likely to participate in X-ray screening programmes. Early studies by Kegeles (1961, 1963a, 1963b) showed that perceived susceptibility to dental disease motivated people to seek

preventive dental care. Failure to have immunizations reflected beliefs by respondents that they were not susceptible to influenza (Glasser, 1958; Leventhal, Rosenstock Hochbaum, & Carriger, 1960).

Research on the association between attitude and smoking cessation revealed a sequential order of variables starting with arousal of a feeling of susceptibility (Ben-Sira, 1977). A study by West, Graham, Swanson, & Wilkinson (1977) found modified smoking behaviour in individuals who viewed cigarette smoking as a health threat. Susceptibility to coronary heart disease was researched by Campbell (1974) who concluded that men with the strongest beliefs regarding their susceptibility took more preventive actions. In a genetic screening programme (Becker, Kaback, Rosenstock, & Ruth, 1975) perceived susceptibility was found to be a significant factor influencing participation. Suchman (1967) determined that belief in personal susceptibility to accidents was a factor influencing acceptance of preventive measures by sugarcane workers.

Conflicting results regarding perceived susceptibility to breast cancer and BSE practice have also been found. Stillman (1977) could not conclude that beliefs about breast cancer and BSE practice were connected. Howe (1981b) concluded that perceived breast cancer risk was not associated with BSE frequency. Windsor, Kronenfeld, Ory, & Kilgo (1980) found a significant difference for only one health belief item, perceived seriousness of a lump.

In contrast, Hallal (1982) found significant correlations

between the practice of BSE and high scores on health beliefs. Olenn (1981) determined that women who perceived themselves at high risk performed BSE more regularly. Massey (1986) reported that women who practice BSE more frequently perceived themselves to be more susceptible to breast cancer than their counterparts and that also age, education, and race were significantly related to perceived susceptibility. Feldman, Carter, Nicastri, & Hosat (1981) and Huguley & Brown (1981) found that age, education, and race were related to frequency of BSE practice but did not consider the variable of perceived susceptibility. Awareness of breast disease may be a significant variable affecting the practice of BSE. Turnbull (1978) demonstrated that BSE practice significantly increased following mass media coverage of the mastectomy of Betty Ford, wife of former President of the United States, Gerald Ford.

While susceptibility and severity have been shown to predict preventive behaviour, Rogers (1983) argues that in addition to these two variables an individual must also have a high selfefficacy expectancy. It is questionable whether susceptibility and severity (high risk-appraisal) are sufficient in themselves for positive behavioural change and, in fact, may also predict undesirable behaviour. A correlation between risk-appraisal and undesirable behaviour has been reported by Beck (1981), Ben-Sira & Padeh (1978), Kegeles (1980), and Kegeles & Lund (1982). In fact, Ben-Sira & Padeh (1978) found that those who engaged more than others in preventive behaviour apparently perceived themselves least susceptible. This finding seems to contradict the results of Ben-Sira's (1977) earlier study on smoking

cessation, in which susceptibility was a key factor. Janz & Becker (1984) have also stressed the predictive value of the efficacy component. Further, Hochbaum proposed to modify the HBM by pointing out the central role of the efficacy dimension in preventive behaviour (Hochbaum, 1983). Seydel, Taal, & Wiegman (1990) tested both the HBM and the PMT and found self-efficacy to be a primary component in predicting preventive behaviour with respect to cancer. In fact, he and his colleagues also found a negative correlation between perceived susceptibility and the intention to participate in a mass screening for cancer and, in a second study, between perceived severity and having a CST. A possible explanation for some of these negative correlations could be that people who describe themselves as highly susceptible to contracting a disease, for example cancer, and consider cancer as severe may be more anxious about having cancer and so adopt psychological defence mechanisms.

Finally, on changing patterns of health behaviour, there is a great deal of information (primarily derived from government surveys) about trends in some behaviours, particularly smoking, diet, and exercise. However, there is little agreement about why some people change and others do not (McDermott, 1980). There is some indication from a retrospective study that younger people and those in higher social classes are more likely to change behaviour with the intention of improving their health (Berkanovic, 1982); but another study, over a longer time period, found no such differences (Anderson, 1983). Anderson et al. (1988) attributes these contrasts to possibly reflecting a

difference in the pace of health changes in the United States and Britain. Research on the diffusion of health behaviours and understanding the processes of change over time are not well developed (Anderson et al., 1988) and understanding these processes is clearly of great importance for optimal health promotion.

CHAPTER 5

THE SEMANTIC DIFFERENTIAL

A. <u>Description of the Semantic Differential</u>

The semantic differential is a method of observing and measuring the psychological meaning of concepts. Although everyone sees things a bit differently, sometimes very differently, it seems reasonable that there is some common core of meaning in all concepts. Any concept has a common cultural meaning as well as other meanings, some are shared by different groups of people, and some are more or less idiosyncratic (Capozza, 1977; Kerlinger, 1973). That is, individuals communicate with one another through the shared meanings of words. For example, a nurse and a patient share the meaning of the word "clinic," even though each has a different perception of the concept.

Osgood and his colleagues developed the semantic differential to measure the connotative meanings of concepts as points in what is termed "semantic space" (Osgood, Suci, & Tannenbaum, 1957).

The following is an illustration of the notion of semantic space. Imagine there is a room with three sticks at right angles to each other, meeting in the centre of the room and touching the walls, the floor, and the ceiling. These sticks are labelled X,

Y, and Z, and are called axes or coordinates. Now imagine there are points scattered throughout the room (the three-dimensional space) with some of the points clustered near each other and near the X axis, others near the Y axis, and others near the Z axis. Some points will be situated in the spaces between the axes. These points are labelled (in any order) with small letters (a, b, ... and so on). If the axes are marked off in an equalinterval number system, then any point in the space can be unambiguously identified or "defined" by using the numbers on the three axes. (The centre of the room, where the three axes meet, is labelled 0 and the numbers on either side of 0 are plus or minus). Consequently, each point has three numbers attached to it. For example, the point "f" might be +5 units on X, +2 units on Y, and -1 unit on Z.

If some general meanings for the axes X, Y, and Z have been determined through research, then the meaning of each point would be some combination of the meanings of X, Y, and Z. For example, it could be said that "a" is an X-type and "c" a Z-type. Also it should be noted that if a point, "m", has no coordinates {0,0,0}, then "m" has no meaning; or, in other words is meaningless in this circumstance.

B. Method and Application

The procedure for the measurement of the affective components of concepts by means of the semantic differential is relatively simple. A concept, symbolized by a word (or a

picture), is rated by an individual on a number of bipolar scales (adjective pairs). Figure 5.1 gives an example of the concept "my father" as well as of the ratings on three bipolar scales.

MY FATHER

good : X : : : : : : bad
large : : X : : : : : small
active : : : : : X : : : : passive

Figure 5.1

Example of scales for the semantic differential.

As can be seen in Figure 5.1, the scales consist of seven points and are defined by a pair of adjectives that are opposite in meaning. The subject is told to place a mark on the scale as close to "good" (or "large", and so on) as he thinks the concept "my father" is good (or large, and so on). If he thinks the concept is not good (or large, and so on) at all, then a mark has to be placed as close to "bad" (or "small", and so on) as he thinks the concept is bad (or small, and so on). If the subject thinks that the concept is neither good nor bad (or neither large nor small, and so on) then he has to place a mark on the fourth step in the middle of the scale which is considered neutral. That is, if an individual checks the adjective pair good-bad between, for example, the first and second set of dots at the left, a 2 is assigned. (In this instance the smaller the number

the more positive the rating.) Other checked points are assigned to the other numbers between one and seven. Each scale measures one, sometimes two, of the basic dimensions (or factors) that Osgood and his colleagues have found to be behind the scales: Evaluation, Potency, and Activity. These dimensions may be called clusters of adjectives.

The use of bipolar adjectives as ends of a 7-step scale reflects the hypothesis that concepts are formed on the basis of a system of semantic oppositions. Although three, five, or even nine-point scales can be used, Osgood has found the seven-point rating scale to be effective for adult subjects (Osgood, Suci, & Tannenbaum, 1957). (For children a five-step scale would probably be more suitable.) Using active-passive as an example of ends of a bipolar scale, the ratings for the 7 steps in a scale are: extremely active (1), quite active (2), slightly active (3), neither active nor passive, or both (4), slightly passive (5), quite passive (6), and extremely passive (7). Each point can be expressed numerically from 1 to 7, or from +3 to -3 (or vice versa), if the expression of positive and negative evaluation of a concept with algebraic signs is desired.

When the semantic differential was initially developed there were some critical reactions to it (Osgood, Suci, & Tannenbaum, 1957). First of all, the label "meaning" which is given to the measured variable (for example, the concepts "my father" or "clinic") is not necessarily acceptable. Why define the "meaning" as the personal and affective experiences and opinions that are connected with a stimulus such as a word or a picture? These

reactions to the use of the word "meaning" came from linguists and language students in general who argued that the measured variable could not be connected with either the concept of denotation nor of connotation of verbal stimuli.

Consequently, the semantic differential is usually seen as being restricted to the measurement of the emotional influences that define the affective meaning. Osgood, Suci, & Tannenbaum (1957) believed that the meaning of words could be described as having many characteristics or attributes. They hypothesized that a single bipolar scale did not measure all semantic attributes of a word, but that groups of these scales might express a single attribute and subsequently there would be significant correlations between them. This hypothesis could adequately be tested by means of factor analysis as such a procedure allows for the discovery of a limited number of underlying variables from a large number of measurements on a large number of scales chosen arbitrarily. The underlying variables are the semantic attributes or factors of the concepts rated on the scales.

The first studies of the semantic differential (Osgood, 1952; Osgood, Suci, & Tannenbaum, 1957) used 50 scales and 20 concepts ("lady", "boulder", "sin", "father", "lake", "symphony", "Russian", "feather", "me", "fire", "baby", "fraud", "God", "patriot", "tornado", "sword", "mother", "statue", "cop", and "America").

The scales were taken from a previous study where 40 words from the Kent-Rosanoff list of stimulus words for free association were used as stimuli to which subjects had to associate an adjective. The most frequently used adjectives and

their opposites are listed in Table 5.1. Although other adjective pairs can also be used, these have been empirically tested and used in numerous studies.

The semantic differential yields a surprising amount of data allowing for a number of possible analyses. There are three main sources of variance; scales, subjects, and concepts. That is, the scores can be analyzed for differences between concepts, between scales, between subjects, or any combination thereof. The semantic differential data is unique in that data of one individual can be analyzed, as well as data of groups of individuals. Figure 5.2 is an example of a three-dimensional raw score data matrix.



Figure 5.2

Example of a 3-D raw score data matrix.

Osgood's goal was to determine how many and what dimensions or factors were present in the judgments made with

ROTATED	FACTOR	MATRIX	(FROM	OSGOOD	ET	AL.,	1957,	Р.	37)
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		Loadings							
Ααјθ	ective pairs	F1	F2	F3	F4				
1.	good-bad	.88	.05	09	.09	.79			
2.	large-small	.06	.62	.34	.04	.51			
з.	beautiful-ugly	.86	.09	.01	.26	.82			
4.	yellow-blue	33	14	.12	.17	.17			
5.	hard-soft	48	.55	.16	.21	.60			
6.	sweet-sour	.83	14	09	.02	.72			
7.	strong-weak	.19	.62	.20	03	.46			
8.	clean-dirty	.82	05	.03	.02	.68			
9.	high-low	.59	.21	.08	.04	.40			
10.	calm-agitated	.61	.00	36	05	.50			
11.	tasty distasteful	.77	.05	11	.00	.61			
12.	valuable-worthless	.79	.04	.13	.00	.64			
13.	red-green	33	08	.35	.22	.28			
14.	young-old	.31	30	.32	.01	.29			
15.	kind-cruel	.82	10	18	.13	.73			
16.	loud-soft	39	.44	.23	.22	.45			
17.	deep-shallow	.27	.46	.14	25	.37			
18.	pleasant-unpleasant	.82	05	.28	12	.77			
19.	black-white	64	.31	.01	03	.51			
20.	bitter-sweet	80	.11	.20	.03	.69			
21.	happy-sad	.76	11	.00	.03	.59			
22.	sharp-dull	.23	.07	.52	10	.34			
23.	empty-full	57	26	03	.18	.43			
24.	ferocious-peaceful	69	.17	.41	.02	.67			
25.	heavy-light	- 36	.62	11	.06	.53			
26	wet-dry	.08	.07	03	14	.03			
27	sacred-profane	.00	.07	10	.01	.67			
29	relaxed-tonged	55	12	- 37	11	.47			
20.	brave-cowardly		. 1 2	12	.03	.64			
29.	brave cowardly	.00	• • • •	13	- 23	23			
30.	rong-short	.20	. 34	.15	- 18	40			
31.	rich-poor	.00	.10	.00	- 16	. 10			
32.	clear-hazy	.59	.03	. 10	10	. 30			
33.	not-cold	04	06	.40	.07	. 44			
34.	thick-thin	06	.44	06	11	. 4 1			
35.	nice-awful	.87	08	.19	.15	.04			
36.	bright-dark	.69	13	.26	.00	• 20			
37.	treble-bass	.33	47	.06	02	. 33			
38.	angular-rounded	17	.08	.43	.12	.23			
39.	fragrant-foul	.84	04	11	.05	.72			
40.	honest-dishonest	.85	.07	02	.16	.75			
41.	active-passive	.14	.04	.59	02	. 37			
42.	rough-smooth	46	.36	.29	.10	.44			
43.	fresh-stale	.68	.01	.22	11	.52			
44.	fast-slow	.01	.00	.70	12	.50			

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Table 5.1 (continued on the next page)

fair-unfair	.83	.08	07	.11	.71
rugged-delicate	42	.60	.26	.27	.68
near-far	.41	.13	.11	05	.20
pungent-blund	30	.12	.26	.05	.17
healthy-sick	.69	.17	.09	.02	.59
wide-narrow	.26	.41	07	11	.25
f total variance	33.78	7.62	6.24	1.52	.492
f common variance	68.55	15.46	12.66	3.08	.998
	fair-unfair rugged-delicate near-far pungent-blund healthy-sick wide-narrow f total variance f common variance	fair-unfair.83rugged-delicate42near-far.41pungent-blund30healthy-sick.69wide-narrow.26ftotalvariancefcommonvariance68.55	fair-unfair.83.08rugged-delicate42.60near-far.41.13pungent-blund30.12healthy-sick.69.17wide-narrow.26.41ftotalvariance33.787.62fcommonvariance68.5515.46	fair-unfair .83 .08 07 rugged-delicate 42 .60 .26 near-far .41 .13 .11 pungent-blund 30 .12 .26 healthy-sick .69 .17 .09 wide-narrow .26 .41 07 f total variance 33.78 7.62 6.24 f common variance 68.55 15.46 12.66	fair-unfair .83 .08 07 .11 rugged-delicate 42 .60 .26 .27 near-far .41 .13 .11 05 pungent-blund 30 .12 .26 .05 healthy-sick .69 .17 .09 .02 wide-narrow .26 .41 07 11 f total variance 33.78 7.62 6.24 1.52 f common variance 68.55 15.46 12.66 3.08

(Table 5.1 continued)

the 50 bipolar adjectives. A factor analysis of the intercorrelation matrix of bipolar adjectives was done using the Centroid extraction method and the graphic orthogonal rotation of the extracted factors.

Table 5.1 shows the resulting rotated factor matrix. Osgood has found that the adjective pairs fall into clusters which represent basic factors or dimensions. The first factor (F1) is the most important in that it explains approximately 70% of the extracted variance. It is defined by bipolar adjectives such as "good-bad", "beautiful-ugly", "clean-dirty", and seems to consist of adjectives that are evaluative in nature. It appears to distinguish what is gratifying from what is not, what induces a positive attitude from what instead is rejected. Osgood defined it as the factor of <u>Evaluation</u>.

A second important factor (F2) explains about 15% of the extracted variance and refers to a restricted number of bipolar adjectives such as "large-small", "strong-weak", "heavy-light". This clustering of adjectives seems to share strength or potency ideas and is called the <u>Potency</u> factor. There is a tendency for some scales representing this factor to have a fairly high

loading on the first factor as well, such as the adjective pairs "hard-soft" and "deep-shallow".

A third important factor (F3) also explains about 15% of the extracted variance. It is represented by scales such as "fastslow", "active-passive", and "hot-cold". This factor is called <u>Activity</u> because its adjectives seem to express motion and action. As with F2, it also has a number of scales that have a fairly high loading on evaluation such as, "red-green" and "young-old".

As has been described, these three primary factors (that were identified by highly loaded bipolar adjectives) were extracted through factor analysis that used a great variety of concepts rated on the 50 bipolar scales. In such analysis, the correlations between the bipolar scales were therefore mainly determined by the immediate emotional or affective reactions to the concepts. These reactions are the basic elements that often link an adjective with a concept in the metaphorical pairing (of the bipolar adjective with the concept). These three factors represent the way in which such reactions interact. Osgood interprets them as emotional tones that may be connected both to verbal stimuli and to stimuli of another nature. It should be noted that there are also other factors that emerge from factor analysis. However, these factors usually do not have high loadings and therefore are usually discarded on consideration of apriori criteria.

C. Concept Selection

Selection of the concepts is of primary importance for research studies using the semantic differential. They need to be relevant to the problem and should elicit varied responses from the subjects. For example, if a researcher wanted to measure social attitudes, he should carefully select concepts that are likely to trigger attitudes and, that would cover a large part of the semantic space. In other words, concepts need to elicit varied responses from different individuals and they should take up a good portion of the semantic space.

The second most important consideration involves the scales, which are selected on a basis of representativeness of the factors (evaluation, potency, and activity) and relevance to the concepts used in a particular study. In order to represent the three factors, the number of scales should be proportional to the part of variance explained by each of them, but they can also be the same as in the example to follow. It also possible for a researcher to use scales of factors other than the three main ones or a researcher may need only the scales of one factor, most probably, the evaluative factor. Generally, however, the evaluation, activity, and potency dimensions have been wellsubstantiated and are suitable for most purposes. Three or four bipolar scales are sufficient to determine reliable composite factor scores when the number of subjects is great, for example about 100 (Osgood, Suci, & Tannenbaum, 1957, p. 138). In some studies, a researcher may decide to include scales whose identity

factor is unknown. However, Osgood's original list (Osgood, Suci, & Tannenbaum, 1957, p. 138) is adequate for most research projects (Kerlinger, 1973).

As previously mentioned, when selecting the scales in the factorial matrices, it is best to use adjectives that are relevant to the concepts. It should be noted however, that meanings are complex and, even though certain adjective pairs may seem irrelevant to particular concepts judged, they may turn out to be relevant. In general, it is best to select adjective pairs that are relevant to the concepts and to use others sparingly. As stated by Osgood, Suci, & Tannenbaum (1957, p. 80): "... although there are, we believe, standard factors of judgment, the particular scales which may, in any given research problem, best represent these factors, are variable and must be carefully selected by the experimenter to suit his purpose."

D. Example of an Application of the Semantic Differential. A Case Study of Multiple Personality.

An interesting study of multiple personality serves as a good example of an application of the semantic differential. Osgood & Luria (1954) demonstrated the validity of the semantic differential through a blind analysis of a case of a woman with three personalities. Thigpen & Cleckley (1954) had a patient who was a young married woman with one daughter and who displayed three personalities which were well-defined and distinct from one another. The semantic differential was administered to each

personality twice within a period of two months. From the results of the application of the semantic differential, Osgood and Luria were able to describe the three personalities and consequently interpret the case. The descriptions and interpretations were made without having any prior information available about the therapists' analysis.

First, the characteristics of the semantic differential used in this particular case need to be considered. The concepts used were words which designate meaningful events and people in everyone's life and which are particularly valid for patients undergoing psychoanalysis therapy. The concepts were: "love", "child", "my doctor", "me", "my mother", "peace of mind", "fraud", "confusion", "sex", "self-control", "my father", "my spouse", "hatred", "mental sickness", and "my job". Ten bipolar scales were used, nine of which were highly loaded on one of the three factors: evaluation, potency, or activity. The scales used were "valuable-worthless", "clean-dirty", and "tasty-distasteful" for the first factor; "fast-slow", "active-passive", and "hotcold" for the second; and, "large-small", "strong-weak", and "deep-shallow" for the third. The tenth bipolar scale, "tenserelaxed", was highly loaded by two factors (evaluation and activity) but it was used anyway as it seemed important for clinical purposes. The three personalities were called Eve White, Eve Black, and Jane (presumably so named by the therapists). Each of the personalities judged the concepts on the 10 scales two different times within a two-month period in order to detect any changes produced by therapy. The mean ratings on seven-point bipolar scales obtained from both applications of the semantic

MEAN CONCEPT RATINGS BY EVA WHITE, EVA BLACK, AND JANE (FROM OSGOOD & LURIA, 1954, PP. 582-583)

	Love					Son			My doctor		
	W	в	J		W	в	J		W	В	J
cold-hot valuable-worthless tensed-relaxed small-large fast-slow dirty-clean weak-strong tasty-distasteful deep-shallow active-passive	5.5 1.0 2.5 6.0 4.5 7.0 5.0 2.0 2.0 2.5	1.0 7.0 1.0 1.0 2.0 1.0 7.0 7.0 7.0	6.0 1.0 7.0 6.5 7.0 7.0 1.0 1.0 1.5		6.0 1.0 7.0 2.0 7.0 1.0 1.0 1.0 1.0	1.0 6.0 1.5 1.0 3.5 3.0 1.5 6.0 2.5 7.0	6.5 1.0 5.0 6.5 1.5 7.0 6.0 1.0 2.0 1.0		5.0 1.0 7.0 2.0 7.0 7.0 1.0 1.5 1.0	7.0 1.0 7.0 1.0 7.0 7.0 1.0 1.0 1.0	6.5 1.0 7.0 2.0 7.0 7.0 1.0 1.5 1.0
		Me			Му	joł)	M	ental	. sic	kness
	W	в	J		W	в	J		W	В	J
cold-hot valuable-worthless tensed-relaxed small-large fast-slow dirty-clean weak-strong tasty-distasteful deep-shallow active-passive	3.5 6.0 1.0 2.0 6.0 1.0 5.5 4.0 5.0	7.0 1.0 7.0 2.0 7.0 7.0 1.0 1.0	5.5 2.0 1.0 4.5 2.0 7.0 4.0 2.0 3.0 1.5		$\begin{array}{c} 4.0\\ 1.0\\ 2.0\\ 6.5\\ 4.0\\ 7.0\\ 6.0\\ 1.5\\ 2.5\\ 4.0 \end{array}$	1.0 7.0 1.0 1.0 7.0 1.0 7.0 7.0 7.0	6.0 1.0 2.0 6.5 7.0 7.0 6.5 2.0 1.5 2.0		5.0 4.0 1.0 6.5 6.0 6.5 3.0 5.0 1.0 1.0	1.0 7.0 1.0 1.0 1.0 1.0 7.0 7.0 7.0	4.0 2.0 1.0 6.5 6.0 7.0 5.0 4.0 1.5 1.0
	Му	mot	ner	I	Peace	of	mind]	rauc	1
	W	В	J	-	W	В	J		W	В	J
cold-hot valuable-worthless tensed-relaxed small-large fast-slow dirty-clean weak-strong tasty-distasteful deep-shallow active-passive	4.0 1.0 3.5 7.0 2.0 7.0 6.5 1.0 1.5 1.0	5.5 3.0 2.0 4.5 1.0 4.0 7.0 5.5 1.5 1.0	6.5 1.0 2.0 6.5 2.0 7.0 6.0 1.0 2.0 1.0 1.0		1.0 7.0 6.5 7.0 6.0 7.0 7.0 1.0 1.0 3.5	6.0 2.0 6.5 5.5 1.0 6.0 1.5 2.0 1.0	2.0 7.0 7.0 7.0 6.0 7.0 7.0 1.0 1.5 2.5		2.5 3.5 1.0 2.0 1.0 1.0 7.0 1.0 2.0	$ \begin{array}{c} 1.0\\ 7.0\\ 6.0\\ 6.5\\ 1.5\\ 6.0\\ 2.0\\ 2.0\\ 1.5\\ \end{array} $	6.0 1.0 2.0 1.5 2.0 2.0 2.0 7.0 2.0 4.5

Table 5.2 (continued on the next page)

1

ľ

(Table 5.2 continued)

	My spouse			Self-	cont	rol	Hatred		
	W	в	J	W	В	J	Ŵ	в	J
cold-hot valuable-worthless tensed-relaxed small-large fast-slow dirty-clean weak-strong tasty-distasteful deep-shallow active-passive	2.5 3.5 5.5 4.0 4.5 3.5 3.5 4.5	1.0 7.0 2.0 1.0 6.5 1.0 1.0 7.0 7.0 7.0	6.0 1.0 7.0 2.5 7.0 7.0 1.0 2.0 1.0	5.0 1.0 3.0 6.5 6.0 6.5 6.0 1.5 2.0 2.0	2.0 4.5 2.0 4.5 4.5 5.0 4.5 1.5 4.0	6.0 1.0 6.5 7.0 6.0 7.0 7.0 1.0 1.5 2.0	1.07.01.51.03.01.01.07.01.02.0	6.0 2.0 5.0 6.0 1.5 6.5 6.0 2.0 2.0 1.5	1.5 7.0 1.5 2.0 4.0 2.0 2.0 7.0 2.0 2.0 2.0
	My father		Confusion Sex						
>	W	в	J	W	в	J	W	в	J
cold-hot valuable-worthless tensed-relaxed small-large fast-slow dirty-clean weak-strong tasty-distasteful deep-shallow active-passive	5.0 1.0 6.0 7.0 2.0 7.0 7.0 7.0 1.0 2.0 1.0	6.5 1.0 2.0 4.0 1.5 7.0 4.0 1.0 2.0 1.0	6.5 1.0 2.0 7.0 2.0 7.0 7.0 1.0 1.5 1.0	4.0 5.5 1.0 5.0 2.0 6.0 1.5 7.0 1.0	1.0 7.0 1.0 1.5 1.0 1.0 7.0 4.0 7.0	4.5 4.0 1.5 4.0 2.0 4.0 4.0 5.5 1.5 2.5	2.0 4.5 2.5 4.0 3.0 2.5 5.5 3.5 5.0	1.07.01.05.51.01.07.07.07.0	6.5 1.0 7.0 4.0 7.0 6.5 1.0 1.0 1.5

differential are shown in Table 5.2. These mean ratings were the averages of the scores of the concepts on the scales that represented a given factor. From these data some interesting implications were drawn.

Each diagram represents the mean ratings made by the patient and shows the emotional dynamics of each personality. Each diagram is represented in a three-dimensional space defined by





Illustration of concepts in the semantic space for three personalities on two occasions during treatment.

(Continued on the next page)



Figure 5.3 (continued)

the three axes (x, y, and z) corresponding to the three semantic dimensions: evaluation, potency, and activity. In this <u>semantic space</u> the meaning of a concept is equivalent to a point and is represented by the centre of a sphere (Osgood, Suci, & Tannenbaum, 1957). The three coordinates of a point correspond to the means of the ratings on the three groups of scales that measure one of the three factors. In the diagrams in Figure 5.3, the segments represent the distance between the concepts, and between each concept and the point of affective neutrality (the centre of the black sphere). These distances show the degree of divergence between judgments of concepts. The following is an example of how these distances are computed.

	Usin	αa	Scale		Usin	q a Scale
	Fro	m 1	to 7		From	-3 to +3
				- 3		
2	Me	Му	Mother		Me	My Mother
valuable-worthless	6.0	Ē	1.0		-2.0	3.0
dirty-clean	6.0		7.0		2.0	3.0
tastv-distasteful	5.5		1.0		-1.5	3.0
	515		2.0		2.0	••••
small-large	2.0		7.0		-2.0	3.0
weak-strong	1.0		6.5		-3.0	2.5
deep-superficial	4.0		1.5		0.0	2.5
.						
cold-hot	3.5		6.0		-0.5	2.0
fast-slow	6.0		2.0	1	-2.0	2.0
active-passive	5.0		1.0		-1.0	3.0
	5.0		1.0			5.0
tense-relaxed	1.0		3.5			

EXAMPLE OF CONCEPT RATINGS ON DIFFERENT SCALES

ma	h	٦.	0	5		2
ra	D.	л.	e	2	٠	5

First, the same number (1 or 7) is assigned to the positive polarity of each scale. (For example, if the scales are "fastslow" and "strong-weak", the positive polarities are "fast" and "strong".); with algebraic signs the polarity would -3 or +3 (or vice versa). Table 5.3 shows an example of the personality of Eve White for the concepts "me" and "my mother".

After obtaining these scores the mean of the scores for each factor was then computed. The following are the means using the scale from -3 to +3:

	Me	My mother	à
evaluation	-0.50	3.00)
potency	-1.66	2.66	
activity	-1.16	2.33	

The distance between any two concepts is given by the following formula (Osgood, Suci, & Tannenbaum, 1957):

$$\text{Dij} = \sqrt{\sum_{r=1}^{3} d_{ij}^2}$$

where Dij is the linear distance in the semantic space between the point that represents the concept \underline{i} (for example, "me") and the point that represents the concept \underline{j} (for example, "my mother"), dij is the difference between the scores of concepts \underline{i} and \underline{j} in one of the factors (for example, evaluation) that define the semantic space, and \underline{r} is the number of dimensions of the space (which is the number of factors, that is, 3).

The following is a numerical example of the computation of the distance between the concepts "me" and "my mother" (referring to Table 5.3):

> $Dij = \sqrt{(-0.50 - 3.00) + (-1.66 - 2.66) + (-1.16 - 2.33)}$ $Dij = \sqrt{43.09 = 6.56}.$

In analyzing the geometric models in Figure 5.3 (Osgood & Luria, 1954), some interesting data appear from the diagram of Eve White. She initially shows a negative self-concept as well as after two months. For example, the concept "me" is considered a little bad, a little passive, and quite weak. However, she appears to have a "normal" view of life, is well-socialized (for example, she perceives the concepts "my doctor", "my father", "love", "self-control", "peace of mind", and "my mother" favourably - good and strong; and, "fraud" and "hatred" negatively.) The concept "love" appears to be good and strong but she expresses no significant reactions to the concepts "my spouse" or "sex". Also, the distance between love and sex is extreme. In the interval between testing, "me" and "sex" become more passive and bad and "love" and "sex" have moved further apart.

The reactions of Eve Black are guite different. She accepts herself unconditionally and in fact evaluated "me" quite positively and close in the semantic space to the male figures, "father" and "doctor", and also to "peace of mind". At the same time, she places herself close to "fraud" and "hatred" which must also be considered positive values. These concepts are close and form a very positive but abnormal cluster. "Love" and "sex" are both bad, weak, and passive. Eve Black then expresses an evaluation of "mother" and "self-control" as relatively meaningless (these concepts fall close to the neutral point). She judges "love", "child", "my job", "sex", and "my spouse" negatively and perceives them as weak and passive (usually considered positive values for most people). Eve Black, who appears secure within herself seems to revaluate with respect to Eve White through a series of mechanisms such as the refusal of conventional judgments ("hatred" and "fraud" are positive so she probably feels strong hostility and is prone to deception); the removal of the maternal figure and of the conflicts connected to

it, the denial of figures and events that are connected to failure, while the father figure stays good but shifts from strong (in Eve White) to weak.

On the basis of these data Osgood and Luria hypothesized the presence of the "Electra complex". This is shown by the identification with the parent figure and the removal of conflicts connected with the concept of "mother" in Eve Black and the sexual problems Eve White displays. Two forces then acted on this woman as a consequence of the unsolved complex. One pushes towards identifying with the father and towards the affirmation of the self, and so favours the manifestation of Eve Black. The other pushes towards identifying with the mother and the consequent devaluation of the self, and so favours the manifestation of Eve White.

The final personality is that of Jane, who is more difficult to interpret. She appears to have a healthy personality with a positive concept of herself, significant others and parent figures ("my mother", "my father", "my child", and "my doctor" are all good, strong, and active) without conflicts in the sexual sphere, and also well-adapted socially ("love", "self-control", "my job", and "peace of mind" are seen as equally good and strong but somewhat passive -- as though accepted without stress). "hatred" and "fraud" are both viewed in a normal way as socially unacceptable. There is a close identification of "me" (not strong but not weak) with "mental illness" which is <u>not</u> an unfavourable concept to her. Her attitude towards her husband ("my spouse") is for the first time meaningful (good, strong, and active). "Love"

and "sex" are close in the semantic space and both are favourable. The second time around this became even stronger. However, she gives judgments that are guite rigid. (In effect, the set of ratings appears along a single axis especially in the second application of the semantic differential. An axis that goes from good, strong, and active to bad, weak, and passive.) Also, her judgments are stereotypical and conformist in nature. Jane could be a healthy personality derived from Eve White, who she resembles, or she could be a personality who has overcome her conflicts only superficially and who is in reality unaware and has a limited vision of reality perhaps due to a removal or avoidance mechanism.

These general characterizations show distinct differences over time in the three personalities, as can be seen in Table 5.4 where the intercorrelations between the D matrices of the three personalities in tests I and II separated by a 2-month period are reported.

(FROM OSGOOD & LURIA, 1954)										
	White 1	I White II	Black I	Black II	Jane I	Jane II				
White I	_									
White II	.73	-								
Black I	06		-							
Black II	-	02	.86	- *						
Jane I	.73	-	26	-						
Jane II	-	.53	-	08	.92	-				

ORRELATIONS	OF	D-MATR	ICES	BE	ΤW	EEN	PER	SONALITIES	AND	OVER	TIME
		(FROM	OSGO	OD	&	LUR	IA,	1954)	2		

C

Table 5.4

Osgood and Luria supported the second interpretation and believed from the results they obtained that, if the therapy of the patient were in an advanced stage, Jane would be the personality that would show fewer results from the therapy. They then predicted the prevalence of Jane over Eve White and Eve Black to the point of becoming the dominant personality which would be the true one for a certain period of time, but after which they predicted the reappearance of the other personalities and the complex once again becoming acute. As it turns out, Osgood and Luria's interpretation corresponds to that of the therapists. And above all, their prediction concerning Jane's personality turned out to be accurate.

CHAPTER 6

THE STUDY

A. Self-esteem, compliance, and cervical screening

As stated previously, call and recall for cervical screening is a standard procedure in many countries. However, in spite of this, a large percentage of women (an estimated 40% in Wales; Payne, 1990) fail to respond or comply. Participation in such screening programmes can be thought of as positive health behaviour. Low level of take up of the services offered raises issues which centre on some fundamental questions about the relationships amongst a variety of psycho-social factors which are influential in forming attitudes and shaping health related behaviours.

Kasl & Cobb (1966, p. 261) argued that in general low selfesteem and loss of sense of social support could be relevant variables that influence health or illness behaviours. The present research was undertaken to verify the possible role of self-esteem in compliance to invitations for a cervical smear test (CST).

As previously mentioned, there are conflicting views about the possible influence of self-esteem on health behaviour. Vermost (1978) showed self-esteem to be a determinant of the decision to participate in a screening programme whilst Calnan

(1984, 1985) found no significant statistical relationship between self-esteem and preventive health behaviour. As with many apparent contradictions there are numerous methodology anomalies in such studies, particularly in the constructs used in operationalising concepts like self-esteem. Calnan's (1984, 1985) results regarding self-esteem were based only on the question "Are you a confident type of person?" with the possible answers "yes", "cannot say", and "no". Thus, the possibility that self-esteem affects health behaviour cannot be dismissed.

As previously stated, self-esteem, social support, emotional variables like fear, worry, or embarrassment, and health related behaviour seem to be interrelated. For example, if a person engages in health related behaviour (such as an obese person who takes up jogging) self-esteem is likely to increase. On the other hand, if a person has low self-esteem (for example, due to a poor marital relationship) then health related behaviour is likely to receive a low priority. Another example may be a person prone to worry or fear for some biochemical or experiential reason who may have lower self-esteem, due to social stigmas or values. Instead, a person with high self-esteem is more likely to control such emotional states as worry, fear, or embarrassment.

A connection between affective variables and health related behaviour has been reported by Sansom, MacInerney, Oliver, & Wakefield (1975). Women who were invited for a CST were asked about <u>other</u> women's reasons for not having a test. Over 90% of these women expressed the opinion that it was fear of the result and embarrassment that kept other women from having a repeat smear. This finding confirmed the results of a pilot study by

Davidson & Clements (1971). As stated before, Hill, Gardner, & Rassaby (1985) asked women direct questions about their intentions to have a CST. From the answers to these questions, the authors derived a number of variables which referred specifically to affective states. These were reassurance about cancer, sense of relief to find nothing amiss, embarrassment with doctor or indignity of examination, worry until test results are known, and fear of results. These variables correlated with the intention to have a CST, with the exception of "worry" which seemed to have low psychological relevance. Similar variables were found to influence breast self-examination (Maclean, Sinfield, Klein, & Harden, 1984). Since, as noted above, there is a plausible connection between emotional variables and selfesteem, these studies suggest that women who fail to comply have a lower self-esteem.

As argued by Kasl & Cobb (1966), self-esteem is plausibly also related to the perceived support of significant others. In fact, presence of a network of social support has been shown to be related to preventive health behaviour (Calnan, 1984, 1985; Langlie, 1977; Pratt, 1976). Hill et al. (1985) and Maclean et al. (1984) reported a moderate effect of social support or family influences. Positive support should then be associated with higher self-esteem.

Lytton (1977) found results suggesting that the development of compliance in children is positively correlated with the following parenting variables: consistently enforced discipline, encouragement of independence, psychological rewards, and

maternal play; and is negatively correlated with physical punishment and material rewards. These variables seem likely to affect a child's self-esteem. Lytton also found that children who comply with parents' requests have parents who also comply with their requests. That is, each person's compliance is reflected by that of the others. Differences in responders and nonresponders may well depend on past experiences with parents as well as their own child-rearing practices. Consequently, there should also be a connection between the above parenting variables and self-esteem.

In order to test if self-esteem differentiates women who comply from those who do not, the semantic differential (Osgood, Suci, & Tannenbaum, 1957) was administered to two groups of women who either responded or did not respond to invitations for a CST. The semantic differential is a method used to measure the psychological meaning of concepts, as defined by the three dimensions evaluation, potency, and activity. By measuring these dimensions, possible associations between concepts pertaining to various domains can be determined. We decided to use the concepts "me", "my usual mood", and "self-image" as indices of selfesteem. In order to test the above predicted association between affective variables and self-esteem, the semantic differential was applied to the concepts "fear", "worry", "sense of relief", "feeling embarrassed", "me", "my usual mood", and "self-image". To test the possible relation between self-esteem and perceived support of significant others, the following concepts were added: "my mother", "my father", "husband", "family", "a close friend", "clinic", and "doctor". Finally, to test the possible association between self-esteem and parenting variables, the following

concepts were included: "rewarding good behaviour with a smile", "rewarding good behaviour with money", "playing with a child", "consistent discipline", encouraging a child to be independent", and "punishing a child with a spanking".

Concepts relating to health should differentiate the responders from the nonresponders. To ascertain the capacity of the semantic differential to discriminate between the two groups the following concepts were included: "disease", "health", "cancer", "physical examination", and (always appearing last) "cervical smear test". Finally, the concept "risk-taking" was also included in the semantic differential on the assumption that CST implies a possible hazard and is therefore connected with fatalism, a variable supposed to differentiate responders from nonresponders (Maclean et al., 1984; Pill & Stott, 1985b, 1987a).

B. Pilot study

To establish content validity of the two tests a paper and To establish content validity of the two tests a paper and pencil version of the semantic differential (including all concepts used in the main study except for "cervical smear test") and the personal questionnaire was administered to 24 women on the campus of the University College of North Wales, Bangor. The subjects were University employees and mothers participating in an early childhood programme. They ranged in age from 20 to 60. Both tests took approximately 45 to 55 minutes to complete. The tests were checked for clarity, readability, understandability, and content validity. Face validity had been previously established

by qualified experts (in addition to the author) drawn from the University College of North Wales, Clwyd Health Authority and Padova University. The results of the semantic differential (Appendix A) may be compared with the corresponding diagrams from the main study that follows.

Many of the women reported that the procedure was tedious and that they had had difficulty concentrating due to the length of the test. After examining the results it was noted that several scales had been neglected or skipped by some of the subjects. For these reasons, it was decided that a computerized version of the semantic differential and personal questionnaire was essential to enhance concentration and facilitate execution.

C. Main study

C.1 Method

<u>Subjects.</u> The subjects were 100 women aged 30 to 64 throughout Clwyd, North Wales. The nonresponders to invitations for a CST were randomly selected from a computerized listing provided by Clwyd Health Authority. All but ten of these nonresponders agreed to an interview; those that agreed were individually interviewed in their homes. In order to find a responder to match with each of the nonresponders, another woman was selected randomly in the same street and interviewed. This was done to have two groups as homogeneous as possible, on the assumption that living in the same neighbourhood implies a similar socioeconomic status. (There was no control group because
all women in this region are supposed to be included in the computerized recall programme.) After the data were collected, 7 nonresponders turned out to be responders (presumably due to administrative errors, omission, and time-lag which occurs in maintaining records). Thus, a total of 57 responders and 43 nonresponders were used. For the responder group there were 22, 19, 8, and 8 subjects in their thirties, forties, fifties, and sixties, respectively. For the nonresponder group there were 13, 14, 11, and 5 subjects in each of these age ranges, respectively.

Procedure for the Semantic Differential. As stated in Section A of this chapter, the following 26 concepts, pertaining to emotional, social, parental, and health-related domains, were selected: 1) me, 2) my mother, 3) my father, 4) family, 5) doctor, 6) clinic, 7) disease, 8) health, 9) husband, 10) fear, 11) risk taking, 12) cancer, 13) my usual mood, 14) worry, 15) sense of relief, 16) rewarding good behaviour with a smile, 17) rewarding good behaviour with money, 18) playing with a child, 19) consistent discipline, 20) feeling embarrassed, 21) encouraging a child to be independent, 22) a close friend, 23) self-image, 24) physical examination, 25) punishing a child with a spanking, and 26) cervical smear test. The concepts were written in capital letters and centred 2 cm from the top of a 24 cm x 18 cm monitor screen of a Model 20 Hewlett-Packard portable computer.

Nine 7-step bipolar scales were used: good-bad, clean-dirty, and beautiful-ugly for the evaluation dimension; strong-weak,

heavy-light, and large-small for the potency dimension; and sharp-dull, fast-slow, and active-passive for the activity dimension (Osgood et al., 1957. See pp. 116-117 of this manuscript). The first adjective in these bipolar scales is positive and corresponds to step 1 of the scale. The second adjective is negative and corresponds to step 7 of the scale. The bipolar scales appeared individually, centred 5 cm from the top of the screen. The distance of the adjectives from the left and right sides of the screen was 2 cm.

Each concept appeared randomly on the screen with the exception of concept number 26 (cervical smear test) which always appeared last so as not to give any possible clue about the real purpose of the research (which was to study the relation of all previous concepts to that of cervical smear test). The bipolar scales also appeared randomly, in a different order for each concept. The positioning of the positive and negative adjectives on the left and right sides of the screen for a given scale was also randomized (good-bad or bad-good and so on). All these randomizations differed for each subject.

Participants had no prior knowledge that they were to be interviewed and they were told that anonymous information was being collected in order to improve the health services for the women of Clwyd. No hint was given about the nature or hypotheses of the research. Subjects were given the standard instructions of the semantic differential (Osgood, Suci, & Tannenbaum, 1957, p. 83) with some modifications for ease of understandability (see Appendix B). When concepts appeared on the screen the cursor was always in the middle of the 7-step scale (step 4). Subjects rated

each concept by moving the cursor along the 7-step scale using two arrow keys, one to move left and the other right. Completion of the semantic differential took approximately 25 minutes.

Procedure for the personal questionnaire. After completion of the semantic differential a personal questionnaire was completed by each participant. This questionnaire provided information about demographic, social, parenting, and the health-related variables used for the semantic differential (see Table 6.4). The completion of the personal questionnaire took approximately 10 minutes.

C.2 <u>Results</u>

C.2.1 <u>Results</u> of the <u>Semantic</u> Differential

As previously described, the semantic differential consisted of nine bipolar scales, three for each dimension: evaluation, activity, and potency. For each subject, the mean scores from each of the three scales of a given dimension were computed for each concept, and then used as individual scores. Thus, for each concept there were 57 scores for each dimension for the responding group and 43 for each dimension for the nonresponding group. The individual scores were then averaged for each concept. Table 6.1 shows the overall mean scores for each concept on each dimension, for both the responder and the nonresponder groups, together with the levels of significance of

differences between any two corresponding mean scores (t-tests). Asterisks indicate the smaller of two corresponding statistically

		M	ean Sc	ores				Level of	Signif	icance
	Res	spond	ers	Nonre	espon	ders		betwee	n Mean	Scores
Concept	Eval.	Pot.	Act.	Eval.	Pot.	Act.		Eval.	Pot.	Act.
1	2.2	3.4	2.5	2.7	3.7	3.1		.01		.05
2 .	1.6	3.0	2.5	1.6	3.6	2.9			.05	
3	2.0	2.8	2.6	2.0	3.0	2.8				
4	1.3	2.7	1.8	1.5	2.8	2.2		.05		.05
5	2.3	3.0	2.4	2.4	3.1	3.2				.01
6	2.2	3.1	3.0	2.6	3.6	3.9		.05	.05	.01
7	6.2	2.5	3.7	6.2	3.1	3.9			.05	
8	1.6	2.6	2.3	2.2	3.3	3.2		.01	.001	.01
9	1.8	2.6	2.0	2.7	3.6	3.4		.01	.001	.001
10	5.2	3.2	3.6	5.8	3.2	3.7		.05		
11	4.0	3.3	3.6	3.8	4.2	3.6			.001	
12	6.4	2.1	3.3	6.5	2.1	3.5				
13	2.2	3.4	2.6	2.6	3.7	2.9	ä	.01		
14	4.9	3.0	3.9	5.5	3.0	3.9		.05		
15	1.7	2.9	2.5	1.9	3.3	3.0				
16	1.3	2.8	1.7	1.3	2.9	1.9				
17	4.2	4.3	4.5	4.0	4.1	4.0				
18	1.2	3.0	1.8	1.4	3.0	1.9		.05		
19	3.0	3.3	3.3	3.6	3.4	4.0		.05		
20	4.5	3.7	3.5	4.9	4.1	4.3				.01
21	1.5	2.5	2.1	1.8	2.8	2.6		.05		
22	1.7	3.0	2.3	1.9	3.6	2.5			.05	
23	2.4	3.4	2.6	3.0	3.8	3.2		.01		.05
24	2.6	3.0	3.3	3.7	4.0	4.5		.001	.001	.001
25	4.5	3.8	3.7	4.3	4.1	3.5				
26	2.0	2.4	2.5	4.6	4.1	5.2		.0001	.0001	.0001

CONCEPT RATINGS FOR RESPONDERS AND NONRESPONDERS AND LEVELS OF SIGNIFICANCE OF THEIR DIFFERENCES

Table 6.1

different mean scores. (The nonresponder group was further divided into two subgroups of 21 and 22 subjects with ages ranging from 30 to 45 and 46 to 64, respectively. None of the mean scores for any concept in a subgroup differed statistically from the corresponding mean scores in the other subgroup, thus

				 			 Grou	ıp w	vith	Hig	her Dif	-
	Res	ponde	rs	Nonre	sponde	ers	fere	ent	Var	Lanc	e	
Concept	Eval.	Pot.	Act.	Eval.	Pot.	Act.	Eva	L.	Pot	t.	Act	t.
1	.08	.15	.13	 .15	.19	.23	 NR	**			NR	**
2	.14	.16	.16	.10	.18	.21	R	**				
3	.18	.16	.16	.17	.18	.21						
4	.06	.12	.13	.08	.17	.15						
5	.13	.14	.17	.15	.18	.25						
6	.11	.13	.18	.16	.17	.24						
7	.12	.12	.18	.12	.22	.26			NR	**	NR	*
8	.08	.12	.13	.20	.17	.26	NR	**			NR	**
9	.13	.13	.13	.28	.21	.28	NR	**	NR	*	NR	**
10	.17	.16	.18	.16	.23	.24						
11	.16	.13	.17	.19	.18	.19						
12	.13	.13	.18	.10	.14	.26	NR	**				
13	.07	.12	.14	.14	.18	.18	NR	**				
14	.16	.16	.17	.17	.24	.24			NR	*		1
15	.08	.14	.15	.13	.19	.22	NR	*			NR	*
16	.07	.12	.11	.07	.12	.13						
17	.19	.13	.17	.22	.17	.20						
18	.05	.15	.13	.08	.19	.14	NR	**				
19	.17	.15	.19	.21	.22	.28					NR	*
20	.16	.17	.16	.19	.23	.21						
21	.07	.11	.12	.11	.17	.19	NR	*	NR	*	NR	**
22	.11	.15	.14	.13	.21	.19						
23	.10	.14	.14	.16	.19	.21	NR	**			NR	*
24	.17	.14	.21	.22	.18	.23						
25	.18	.14	.16	.19	.17	.18						
26	.11	.12	.15	.20	.22	.23	NR	**	NR	**	NR	*

STANDARD ERRORS OF THE MEAN SCORES IN TABLE 6.1

Note: R=responder; NR=nonresponder. Levels of significance: *=.05 and **=.01.

Table 6.2

indicating that age was not influential. The same results were obtained with the responder group when it was similarly divided into subgroups.)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 1. ME 0 2. MY NOTHER 0.8 0 1. MY FATHER 0.5 0.4 0 4. FAMILY 1.3 0.8 1.0 0 5. DOCTOR 0.3 0.7 0.3 1.2 0 6. CLINIC 0.5 0.8 0.5 1.5 0.5 0 7. DISEASE 4.2 4.8 4.4 5.2 4.1 4.1 0 8. HEALTH 1.0 0.4 0.5 0.5 0.8 1.0 4.8 0 9. NUSBAND 1.0 0.7 0.6 0.5 0.8 1.2 4.7 0.3 0 10. FEAR 3.1 3.8 3.4 4.3 3.1 3.0 1.1 3.8 3.8 0 11. RISK TAKING 2.0 2.6 2.2 3.2 2.0 1.8 2.4 2.7 2.7 1.2 0 Table 12. CANCER 4.3 4.9 4.5 5.3 4.2 4.3 0.6 4.9 4.7 1.6 2.7 0 13. MY USUAL HOOD 0.0 0.7 0.5 1.3 0.3 0.4 4.2 1.0 1.0 3.1 1.9 4.3 0 14. WORRY 3.0 3.6 3.2 4.2 3.0 2.8 1.4 3.7 3.7 0.4 1.0 1.8 3.0 0 15. SENSE OF RELIEF 0.7 0.1 0.3 0.6 0.6 0.7 4.7 0.4 0.6 3.7 2.5 4.8 0.7 3.5 0 16. REWARDING GOOD BEHAVIOUR WITH & SMILE 1.3 0.8 1.1 0.2 1.2 1.6 5.3 0.7 0.6 4.3 3.2 5.3 1.3 4.2 0.8 0 17. REWARDING GOOD BEHAVIOUR WITH MONEY 2.9 3.5 3.2 4.2 3.0 2.7 2.8 3.8 3.8 1.8 1.3 3.3 2.8 1.5 3.4 4.2 0 6 18. PLAYING WITH & CHILD 1.3 0.7 1.1 0.3 1.2 1.5 5.4 0.7 0.7 4.3 3.2 5.4 1.3 4.2 0.8 0.2 4.1 0 1.1 1.6 1.3 2.3 1.1 0.8 3.3 1.9 1.9 2.2 1.0 3.6 1.0 2.0 1.5 2.4 1.9 2.3 0 . 19. CONSISTENT DISCIPLINE ua 20. FEELING EMBARRASSED 2.4 3.1 2.7 3.7 2.4 2.3 2.1 3.2 3.2 0.9 0.6 2.4 2.4 0.8 3.0 3.7 1.2 3.7 1.5 0 21. ENCOURAGING & CHILD TO BE INDEPENDENT 1.2 0.6 0.7 0.4 1.0 1.2 4.9 0.1 0.3 4.0 2.9 5.0 1.2 3.9 0.5 0.6 3.9 0.6 2.0 3.4 0 22. A CLOSE FRIEND 0.7 0.2 0.4 0.6 0.6 0.9 4.8 0.4 0.5 3.8 2.6 4.9 0.7 3.6 0.2 0.6 3.6 0.6 1.7 3.1 0.5 0 0.1 0.9 0.6 1.4 0.3 0.5 4.1 1.1 1.1 3.0 1.8 4.2 0.1 2.9 0.8 1.4 2.7 1.4 0.9 2.2 1.3 0.8 0 23. SELF-IMAGE 24. PHYSICAL EXAMINATION 0.9 1.2 0.9 1.9 0.8 0.5 3.6 1.4 1.5 2.6 1.4 3.8 0.8 2.4 1.1 2.0 2.3 2.0 0.5 1.9 1.6 1.3 0.8 0 25. PUNISHING WITH & SPANKING 2.6 3.2 2.9 3.8 2.6 2.5 2.1 3.4 3.4 0.9 0.7 2.6 2.5 0.9 3.1 3.9 0.9 3.8 1.6 0.2 3.6 3.3 2.4 2.1 0 26. CERVICAL SHEAR TEST 0.9 0.7 0.3 1.0 0.6 0.8 4.3 0.5 0.6 3.4 2.3 4.4 0.9 3.2 0.5 1.1 3.4 1.2 1.5 2.8 0.6 0.7 1.0 1.0 3.0 0

Distanc Ø matrix for responder

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		~	-	•	Š	و	1	80	31 6	=	1	2	1	5	16	5	18	19	8	12	2	5	2	×	5
1. 16	0																					6		2	2
2. HE HOTHER	1.1	•																							
3. HY FATHER	0.1	0.7	•																						
4. FAMILY	1.1	1.0	0.7	0																					
5. DOCTOR	0.7	1.0	9.0	1.3	0																				
6. CLINIC		1.1		2.1	8.0	•																			
7. DISEASE	3.6		3	2.0	9.6	9.6	0																		
8. REALTH	9.0	9.6	0.5	2	5.3	6.0		0																	
9. KUSBAND	5.0	1.2	1	8.1	9.6	5	5.5	.6	0)(
10. FEAR	1.1		5.5	5.5	2			9	0.0	0															
II. RISK TAKING	7	1.5	5.2	3.0	-		1.6 1	5	3	1-	0														
12. CUNCER	4.0	0.5	53	2.1	-			-	6.1		'n	•													
13. MY USUAL HOOD	0.2	0.1	6.0	1.5	1.1	0		9.	s.	.2 1.	·5 4.	-	0												
14. WORRT	0.0		3.7		1.1				6.9	.4 2	.1 1.														
15. SENSE OF RELIEF	0.8		5.0	6.0	5.0	-2 4	7	7	.9.	.9 2.	.2 4.	6 0.	7 3.	5											
16. REWARDING COOD BEHAVIOUR WITH A SHILE	2.0		01	5.0		.4 5	1	s.		3.	5.	4 1.	7 4.4	5 1.2	0	2									
17. REWARDING COOD BEHAVIOUR WITH HONEY	1.6	9.2	3.6	2.	0.0	.4	.4		.s	0		2 1.	1.1	2.4	3.6	0									
18. PLAYING WITH A CHILD	1.9	-	2		9.	•		s.	• 0.	.7 3.	.2 5.	3 1.	1 4.4	5 1.2	0.1	3.5	0								
19. CONSISTENT DISCIPLINE		2.2	0.2	3.5		-0	.5 1	9.	-0 2	.1 0	9 3.	1 1.	4 1.5	9 1.5	1.1	9.0	3.0	0							
0. FEELING ENBRUGUESED	2.5		2	5		-	.6 3	0		- -	2 2.	6 2.	7 1.5	2.1.3	4.4	6.0		1.4	0						
11. ENCOURAGING A CHILD TO BE INDEPENDENT	1.4 0	6-1	2.2				9.	6.	* *	.1 2.	.1 4.	7 1.	2 3.5	9.0.6	0.8	2.9	0.8	2.4	3.8	0					
2. A CLOSE FRIDED	6.0	5.5	9.6	6.0		.5	s.	-		.0 2.	2 4.		7 3.5	0.5	1.0	2.5	6.0	2.2	1.4	8.0	0				
1. SELF-IMAGE	0.3	3	3	2.0	.9 0		7	•	. 12	.9 1.		.0.8	4 2.4	1.1	2.2	2	2.1	1.1	2.2	L.J	1.2	0			
4. PHYSICAL EXAMINATION	1.7	9	9-2	2	.0	.1 2	.6 2	-	.5 2			4 1.	9 2.	1 2.4	3.6	0.5	3.5	0.7	1.2	5.5	2.6		0		
IS. PUNISHING WITH A SPANKING	1.6 2			2	-		.1 2	7	.6 1	.7 0.	4 2.	9 1.		7. 2.5	3.5	0.5	3.4	1.0	0.9	3.0	2.6	2	0.1	6	
6. CERVICAL SPEAR TEST	2.8		2	3		.4 2		-2 2	.6 2	.1 1.		2 3.	1 1.5	3.5	4.8	:	4.7	1.7	1.0	7	3.8	2.6	1		0

1

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1

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Table 6.3b

Distance matrix for nonresponders





Representation of concepts in a 2-D semantic space defined by the dimensions Potency and Evaluation, for responders.



Figure 6.1b

Representation of concepts in a 2-D semantic space defined by the dimensions Potency and Activity, for responders.



Figure 6.1c

Representation of concepts in a 2-D semantic space defined by the dimensions Activity and Evaluation, for responders.



Figure 6.2a

Representation of concepts in a 2-D semantic space defined by the dimensions Potency and Evaluation, for nonresponders.



Figure 6.2b

Representation of concepts in a 2-D semantic space defined by the dimensions Potency and Activity, for nonresponders.



Figure 6.2c

Representation of concepts in a 2-D semantic space defined by the dimensions Activity and Evaluation, for nonresponders. Table 6.2 (p. 145) shows the standard errors of the mean scores in Table 6.1. Asterisks indicate the lower of two corresponding statistically different standard errors (F-tests). Lower standard errors for the responder group are in accordance with the tendency of the same group to produce smaller mean scores. In fact, extreme ratings are less variable (John, 1969).

The mean scores for each concept in Table 6.1 are plotted in a two-dimensional semantic space for the three possible combinations of dimensions. Figures $6.1\underline{a}$, \underline{b} , and \underline{c} show the results for the responder group, and Figures $6.2\underline{a}$, \underline{b} , and \underline{c} show the results for the nonresponder group. The position of the concepts in a two-dimensional semantic space is shown in each diagram by the corresponding number. The distances between each" possible pair of concepts in the three-dimensional semantic space are shown in the distance matrix in Table 6.3 for responders $(6.3\underline{a})$ and nonresponders $(6.3\underline{b})$.

In order to test the consistency of the bipolar scales, intercorrelations amongst the 26 concepts were analyzed by the method of principal components. Since the concepts used for the semantic differential pertained to four broad conceptual categories (emotional, social, parental, and health-related), clusters of concepts pertaining to each of these four categories were expected if the scales were consistent. Six analyses were made: two groups x three dimensions. The OBLIMIN (SPSS-X) rotation method was used. The scree plot indicated the presence of four components worthy of retention, accounting for 53.2%, 54.5%, 55.3%, of the total variance respectively for the evaluation, potency, and activity dimensions for the nonresponder

		Percenta	ges
Quest	ion	Nonresponders	Responders
Occupation:	1) homemaker 2) employed 3) professional	51 42 7	49 32 19
Age:	1) 30-40 2) 41-50 3) 51-64	30 42 28	40 35 25
Marital status:	1) married 2) single 3) other	70 5 25	86 * 2 12
Children:	1) yes 2) no	84 16	96 * 4 *
First person who influenced:	1) father 2) mother 3) husband (partne 4) other	37 52 er) 2 9	35 54 7 4
Person now who may influence:	1) husband 2) child 3) parent 4) myself 5) other	44 19 10 19 8	74 ** 9 8 4 * 5
Children disciplined:	 very strict quite strict slightly strict slightly loose quite loose very loose 	5 47 42 4 2 0	9 51 37 3 0 0
Reward a child:	1) praise or hug 2) material reward	56 1 44	82 ** 18 **
Punish a child:	1) talk to or scol 2) smack 3) deny something	d 21 47 32	51 ** 18 ** 31
Play w/a child:	 very often often sometimes 	42 56 2	51 45 4

RESULTS OF THE PERSONAL QUESTIONNAIRE

Table 6.4 (continued on the next page)

Table 6.4 (continued)

Health practices:	1)	dental	49		70	*
neuren prussisses.	21	cervical smear test	0	2	100	***
	31	health products	28		96	***
	4	child immunized	88		72	*
	51	breast screen -self	47		63	
	5)	breast screen -doc	14		63	* * *
	0)	breast screendoc.	14		05	
How long since	1)	under 5 vears	14		63	***
last broast	51	over 5 years	0		0	
Tast Dieast	2)	over 5 years	86		37	***
screening:	5)	never	00		57	
Why not breast	1)	never asked	28		37	
screening:	21	no problem	7		0	*
bereening.	31	never bothered	49	ii v	0	* * *
	5)	never bothered				
Why not	1)	hysterectomy	7			
cervical smear:	21	don't want	16			°¥ ≈
cervicui Smeart	ĩí	never bother	49			
	4	too embarrassing	5			
- 4	=/	foar	19			
	5)	Tear	17			
Doctor	1)	male	13		11	
preference:	21	female	47		26	*
preference.	31	no preference	40		63	*
	5,	no preference	10			
Concerns about	1)	embarrassing	23		12	
cerv. smear test:	2)	fear of results	47		23	*
	-					
	3)	nothing	30		65	***
		-				
Info on well	1)	yes	26		37	
woman clinic:	2)	no	74		63	
					121 221	
Worry about	1)	often	12		10	
your own health:	2)	sometimes	58		74	
 A provide state of the state of	3)	never	30		18	
Prefer c.s. test:	1)	family plan	8		2	
	2)	well woman	27		30	
	3)	surgery	42		47	
	4)	home	16		0	* *
	5)	no preference	7		21	*
					• •	
Happy w/self	1)	always	60		39	*
	2)	no	7		5	
	3)	usually	33		56	*
	4.	week's down	E C		60	
Anything	T)	notning	20		20	
to change	2)	pnysical	20		10	
about yourself:	3)	psychological	10		18	
	4)	other	U			
* = or < .05; *	* <	.005; *** < .001				

group, and 48.5%, 51.5%, and 49.7% of the total variance respectively for the evaluation, potency, and activity dimensions for the responder group. This clustering of concepts indicates consistency of subject's ratings.

C.2.2 <u>Results of the guestionnaire</u>

The results of the questionnaire, reported in Table 6.4, confirmed the data from the semantic differential. A significantly higher percentage of responders (74%) indicated their husband (or significant other) as the person who could influence them as compared to 44% of nonresponders. The responders were also significantly more likely to be married (86%) and have children (96%) as compared to nonresponders (70% and 84% respectively).

As regards parenting values there was little difference in attitudes about how strictly children should be disciplined. However, there were significant differences in the methods used. In terms of what has been reported, it appears that responders were much more likely to verbally scold or talk to a child for bad behaviour (51%) as opposed to nonresponders who were more likely to smack or spank a child (47%). Responders were also significantly more likely to use praise and hugs (82%) for rewarding children as opposed to 56% of nonresponders. On the other hand, nonresponders were significantly more likely to use material rewards (44%) as compared to only 18% of responders.

FACTORS AND FACTOR LOADINGS FOR THE EVALUATION DIMENSION (RESPONDERS)

F1, Personal Health	F2, Bad State of Being
Physical Examination (.92) Cervical Smear Test (.64) Consistent Discipline (.63) Self-image (.56) Me (.44)	Disease (.88) Cancer (.76) Worry (.61) Fear (.55) Health (50) Sense of Relief (42)
F3, Family	F4, Child-Rearing
Husband (.80) Family (.74) My Usual Mood (.44)	Rewarding with Money (.80) Punishing with Spanking (.65) Feeling Embarrassed (.49)

F5, Medical care

Doctor		(.92)
Clinic		(.74)
Feeling	Embarrassed	(42)

Table 6.5

FACTORS AND FACTOR LOADINGS FOR THE EVALUATION DIMENSION (NONRESPONDERS) _____ F1, Personal Health F2, Bad State of Being (.89)Physical Examination (.85) Cancer Worry Sense of Relief (.87)(.63)Doctor (.74)(.62)Fear Feeling Embarrassed (.48) Me (.61)Self-image (.45)(.55)Disease My Usual Mood (.47)Consistent Discipline (.45) Health (.43)F4, Peer Support F3, ? (.80)Husband (.86)My Father Encouraging Independence (.55) Health (.61)A Close Friend (.53)A Close Friend (-.44) F5, Emotional Arousal Rewarding with a Smile (.77) Playing with a Child (.74)Feeling Embarrassed (.58)Self-image (.42)Family (.42)_____

Table 6.6

FACTORS AND FACTOR LOADINGS FOR THE POTENCY DIMENSION (RESPONDERS) F2, Negative Emotions F1, Self-Related Concepts (.90)Feeling Embarrassed (.80)Self-image (.72)Me (.79)Worry (.67)My Usual Mood (.64)Fear 1f Punishing with a Spanking (.49) Health (.63)Rewarding with a Smile (.60) Consistent Discipline (.60) Playing with a Child (.44)F4, Medical Care F3, Illness Clinic (.83)Disease (.85)(.54) Father Cancer (.61)Doctor (.48) F5, Self Health Physical Examination (.73) (.70) Sense Doctor (.63)(.59)Mother A close friend (.54)Table 6.7 FACTORS AND FACTOR LOADINGS FOR THE POTENCY DIMENSION (NONRESPONDERS) F1, Self-Related Concepts F2, Child rearing Rewarding with money (.70)Usual Mood (.87)Encouraging Independence (.68)Self-image (.74)Punishing with a Spanking (.66)(.55)Me Consistent Discipline (.46) Rewarding with a Smile (-.45)Health (.43)F3, Peers F4, Illness (.84)(-.80)Disease Family Cancer (.81)My Mother (-.73) Husband (-.62)Clinic (-.46)F5, Self-Health Feeling Embarrassed (.78)(.69)Fear (.69) Cervical Smear Risk Taking (.52)Physical Examination (.42)_____

Table 6.8

FACTORS AND FACTOR LOADINGS FOR THE ACTIVITY DIMENSION (RESPONDERS)

F1, Reassurance re:Disease	F2, Good State of Being
Risk Taking (.74) Disease (.64) Sense of Relief (.58) Doctor (.43) Self-image (.40)	Feeling Embarrassed(.84)Worry(.68)Punishing with a Spanking(.63)Fear(.55)
F3, Emotional Arousal	F4, Self-related Concepts
Playing with a Child(.86)Health(.75)Rewarding with a Smile(.60)My Usual Mood(.51)Encouraging Independence(.44)F5, Medical Care	Risk Taking(.82)A Close Friend(.63)Physical Examination(.63)Self-image(.59)Consistent Discipline(.40)Disease(30)
Cervical Smear Test (.68)	
Clinic (.67) Consistent Discipline (.54) Father (.49)	
Table FACTORS AND FACTOR LOADINGS (NONRES)	€ 6.9 FOR THE ACTIVITY DIMENSION PONDERS)
F1, Self-Related Concepts	F2, Bad State of Being
Self-image (.84) Me (.83) A Close Friend (.68) My Usual Mood (.62) Sense of relief (.44)	Worry(85)Cancer(82)Disease(80)Fear(76)Feeling Embarrassed(58)Consistent Discipline(58)Cervical Smear Test(49)Clinic(46)
F3, Medical-Care	F4 ?
Encouraging Independence (77) Doctor (73) Health (54) Physical Examination (52)	Family (84) Playing with a Child (55) Fear (41)
F5, Child Rearing	
My Father (.78) Rewarding with Money (.66) Risk Taking (45)	

Table 6.10

These results are interesting and in line with Lytton's hypothesis of reciprocity and compliance.

As regards following various forms of health practices and behaviours, the responders were consistently more likely to practice self-care, with the exception of reported breast selfexamination. In fact, the percentages of this reported practice did not differ statistically between the two groups (see Table 6.4). Also, when asked why they had not had a breast examination by a physician, 49% of nonresponders said they had just never bothered. It should be noted however that 37% of the responders, who indicated they had not had a breast examination, said the reason was because they had not been asked (even though they had had a CST) whilst 28% of nonresponders gave this reason.

The most important concern regarding a CST was fear of the result (23% of responders versus 47% of nonresponders). Sixtyfive percent of the responders indicated that they had no concerns about having a CST whereas 30% of nonresponders gave this response. There were few significant differences as to where the women preferred to have a CST. Interestingly, 16% of the nonresponders indicated they would like to have this test done at home while none of the responders expressed this preference.

Finally, when asked if they were happy with themselves 60% of the nonresponders said they were <u>always</u> happy as compared to 39% of the responders whereas, a significantly higher number of responders said they were <u>usually</u> happy (56% as compared to 33% of the nonresponders). This self-satisfaction seems more apparent than real (see Discussion).

Tables 6.5, 6.7, and 6.9 show the pattern factor matrices

for evaluation, potency, and activity, respectively for the responder group. Tables 6.6, 6.8, and 6.10 show the same matrices for the nonresponder group. Considering the relatively small number of concepts and subjects it seemed advisable to retain those concepts that had a loading of .40 or higher.

C.3 Discussion

In Table 6.1, differences between the responders and nonresponders with respect to a given concept can be seen. These differences can be classified as strong, medium, and mild depending on the differences in the semantic dimensions. (Clearly, the evaluative dimension is stronger than the other two - in fact, it explains about 70% of the variance extracted in a factor analysis. However, it seems reasonable that behaviours may be affected by all three dimensions independent of their absolute strength), Concepts 6 (clinic), 8 (health), 9 (husband), 24 (physical examination), and 26 (cervical smear test) differ significantly on all three semantic dimensions thus indicating a strong difference between the groups in the perception of these Concepts 1 (me), 4 (family), and 23 (self-image) concepts. differ on the evaluation and activity dimensions, thus showing a fairly strong difference. Instead, the following concepts differ on only one dimension, thus indicating mild differences between Concepts 13 (my usual mood), 14 (worry), 18 the groups: (playing with a child), 19 (consistent discipline), and 21

(encouraging a child to be independent) differ on evaluation; Concepts 2 (my mother), 7 (disease), 11 (risk taking), and 22 (a close friend), differ on potency; and, Concepts 5 (doctor), 20 (feeling embarrassed), and 10 (fear) differ on activity.

There are no significant differences on any of the semantic dimensions for Concepts 3 (my father), 12 (cancer), 15 (sense of relief), 16 (rewarding with a smile), 17 (rewarding with money), and 25 (punishing with a spanking). This means that both groups perceive these concepts in more or less the same way.

Table 6.1 shows that, as expected, the concepts "Cervical smear test" (26), "Physical examination" (24), and "Health" (8), were more positive, stronger, and more active for responders than for nonresponders. The concepts "Disease" (7) and "Cancer" (12) do not show relevant differences between the two groups, which is not surprising in that cancer is a disease. The questionnaire showed that responders had a significantly greater number of health behaviours, which seems to back up the results of the semantic differential about the perception of health and preventive screening.

Considering that the evaluation dimension is the most important dimension (since it contributes to about 70% of the variance extracted in a factor analysis; Osgood, Suci, & Tannenbaum, 1957, p. 38), the fact that "Risk taking" (11) differs only on the potency dimension seems to somewhat confirm Pill & Stott's (1985b) contention that fatalism is an irrelevant variable in influencing health behaviour. However, this is the only concept used for testing, and so fatalism cannot be ruled out completely. In the guestionnaire, nonresponders were asked

why they had not had a CST within the five last years. Fear and embarrassment were mentioned by 19% and 5% of them, respectively; 16% responded that they did not want one, and 49% that they had not bothered. Fatalist reasons were given by the small number of nonresponders who said did not want the CST.

For the concepts "Fear" (10), "Worry" (14), and "Feeling embarrassed" (20), "Fear" and "Worry" indicate slightly more negative feelings whilst "Feeling embarrassed" indicates passiveness, for the nonresponders (see Table 6.1). "Sense of relief" (15) reveals no significant differences between the two groups.

The concepts that correlate significantly (p<.05 or less) with "Fear" and "Worry" for the two groups are the following:

Nonrespo	onders	Respo	nders
Fear	Worry	Fear	Worry
Disease Health Cancer Worry Feel. Embarr. Close friend Phys. Examin. CST	Fear Disease Cancer Sense relief Feel. Embarr. Phys. Exam. CST	Disease Health Risk Tak. Cancer Worry Feel. Embarr. Pun. w/spank.	Me My father Disease Cons. Discipl. Feel. embarr. Self-image

As may be seen, "Physical examination" and "Cervical smear test" correlate with "Fear" and "Worry" only for the nonresponders, whereas "Worry" correlates with "Me" and "Self-image" only for the responders. These results indicate that "Fear" and "Worry" are barriers to having a CST (Rosenstock, 1974) for the nonresponders.

In fact, from Table 6.1 it appears that responders rated "Me" (1), "My usual mood" (13) and "Self-image" (23) significantly more positively on the evaluation dimension. "Me" and "Self-image" are also positive on the activity dimension, but slightly less active for nonresponders. These findings seem to indicate a lower self-esteem in nonresponders.

The results of the personal questionnaire conflict on this point with those of the semantic differential. The two groups of women did not differ significantly in their responses to the question "Do you worry about your health?" However, when asked if they were happy with themselves, 60% of the nonresponders said they were always happy with themselves compared with 39% of the responders (p<.05), whilst 56% of the responders compared with 33% of the nonresponders indicated they were usually happy with themselves (p<.05). Yet, when asked if there was anything they would like to change about themselves, there were no significant differences between the two groups (see Table 6.4). It seems reasonable to assume that most people are not happy all of the time and that "usually" would be the more realistic response. Also, if an individual is "always" happy then it could be argued that there should not be much that individual wants to change. The responders responses appear more consistent and credible. These contradictions could reflect the unreliability of selfreports when subjects are asked personal questions directly. It has been argued that in studies involving self-reports most individuals wish to be thought of positively, and consequently portray themselves in as positive a way as possible (Park &

Lipman, 1964; Sheiner et al., 1974). In this respect, the" semantic differential should be considered more reliable as it acquires information indirectly (Osgood & Luria, 1954).

As regards the parenting concepts (16, 17, 18, 19, 21, and 25), only "Playing with a child" (18), "Consistent discipline" (19), and "Encouraging a child to be independent" (21) showed slightly more positive ratings on the evaluation dimension for the responders. These results seem to suggest that responders have a slightly better parenting attitude. The questionnaire confirmed this conclusion. Rewarding a child with praise, hug, or a smile was preferred by 82% of responders versus 56% of nonresponders (p<.005), whilst 44% of nonresponders versus 18% of responders preferred material rewards (p<.005). Talking to or scolding a child was the preferred form of punishment for 51% of the responders versus 21% of the nonresponders (p<.005), whilst smacking or spanking a child was chosen by 47% of the nonresponders versus 18% of the responders (p<.005). The two groups showed no significant differences in disciplining or playing with a child. These results seem to confirm in part the hypothesis derived from Lytton's (1977) findings and suggest that there may be a connection between parenting variables and selfesteem.

There are significant positive correlations (p<.05 or less) of "Me", "Self-image", and "My usual mood" with "My mother" (2), "My father" (3), "Family" (4), "A close friend" (22), "Doctor" (5), and "Clinic" (6) for both responders and nonresponders, thus showing the obvious connection between self-image and social environment.

For the responders only, "Me", "Self-image", and "My usual mood" were positively correlated with "Husband" (9) (p<.005). This last result agrees with Calnan's (1985) finding that the husband is an important factor influencing health behaviour. The questionnaire confirmed this finding: 74% of responders versus 44% of nonresponders (p<.005) indicated the husband as the person who may influence them most. In fact, of the concepts "My mother", "My father", "Family", "Husband", "A close friend", "Clinic", and "Doctor", "Husband" is the one that differs most between the two groups on all three semantic dimension (positive on all dimensions for both groups, but decidedly more positive for responders). Also "Family" and "Clinic" are more positive for responders. "My mother", "My father", "A close friend", and "Doctor" seem to show mild or no differences between the two groups.

For the nonresponders only, the concepts "Me", "Self-image", " and "My usual mood" were positively correlated (p<.05 or less) with "Rewarding good behaviour with a smile" (16), "Playing with a child" (18), and "Encouraging a child to be independent" (21), thus indicating a strong identification with the immediate family, particularly with the offspring. (It should be noted that these correlations do not imply better parenting attitudes, nor that identification with the family implies a better relationship with family members.)

Tables 6.5 and 6.6 show the factors and factor loadings for Evaluation obtained by component analysis for the responders and nonresponders, respectively. The first factor, Personal Health,

reveals similarities between the two groups but could indicate a stronger sense of self direction for the responders whereas for the nonresponders a more external locus of control of personal health care seems to prevail. On the second factor, A Bad State of Being, both groups are quite similar with the exception that for the responders health and sense of relief the loadings are negative, thus indicating, as a matter of fact, a positive way of being. Factor 3 is labelled Family for the responder group but has been left unlabelled for the nonresponders. The fourth factor, Child-Rearing, for the responders is interesting because it could establish a connection between compliance and positive versus negative parent-child interaction (only in reverse order, Lytton, 1977). For the nonresponders the fourth factor is called The fifth factor for the responders is Medical Peer Support. Care and for the nonresponders Emotional Arousal.

Tables 6.7 and 6.8 show the factors and factor loadings for Potency for the two groups. Factor one, Self-Related Concepts is similar in both groups but the responders seem to have a more positive self-image and parenting attitude. Factor 2 for the responders is clearly Negative Emotions whereas for the nonresponders a factor of Child-Rearing emerges. It is" interesting to note that for the nonresponders rewarding with money and punishing with a spanking are considered positive values which is quite different from the responders (on the evaluative factor). For the responders Factor 3 is labelled Illness and for the nonresponders Peers. Factor 4 is Medical Care for the responders and Illness for the nonresponders. The fifth factor becomes Self-Health for both groups. However, for

the responders a positive grouping appears whereas, for the nonresponders a negative overtone is implied. (Cervical smear also appeared in the analysis for the responders but at .38 which is just barely below the cutoff point).

Tables 6.9 and 6.10 show the factors and factor loadings for activity. Here, Factor 1 is Reassurance Regarding Disease for the responders and Self-Related Concepts for the nonresponders. Factor 2 is a reversal for the two groups: A Good State of Being for the responders and A Bad State of Being for the nonresponders. Could this indicate a difference in positive versus negative actions? The third factor for the responders is Negative Emotions but for the nonresponders the Medical Care factor emerges. The fourth factor reveals Self-Related Concepts for the responders and is left untitled for the nonresponders. Factor 5 becomes Medical-Care for the responders and Child-Rearing for the nonresponders. Again, it is interesting to note that for the nonresponders material rewards are active and positive whereas for the responders the reverse is true.

CHAPTER 7

IMPLICATIONS FOR HEALTH PROMOTION

The results of this study show that positive self-esteem, reinforcing social support, and fear, worry, and embarrassment are all correlated with women's decisions to have a CST. Clearly, women's attitudes and/or life styles cannot be easily altered both for practical as well as ethical reasons. Research on cancer screening has shown that screening programmes often reach only that part of the population whose life style conforms to the values of the campaign (Vermost, 1978). Therefore, the main objective of a preventive screening programme should be to become an integral part of the individual's own health and illness behaviour. Health professionals and health agencies need to adapt to the individual and provide a humanistic approach to health care without being intrusive.

Some suggestions can be offered on the basis of the concepts studied in this research. The concept of cancer creates anxiety and stress for many individuals. In fact, the results of the component analysis showed a clustering of the concepts cancer, cervical smear test, fear, worry, and embarrassment, indicating that cancer and CSTs are perceived similarly by nonresponders and are associated with fear, worry, and embarrassment. Thus, plausibly for the nonresponders CSTs are thought of as indices of cancer rather than as preventive and positive health measures. Given the negative association with other concepts, it also seems

plausible that the actual name of the test, cervical smear, causes some anxiety or negative emotional reactions. In many countries the CST has another name (Pap test, cytotest) which superficially appears to avoid any direct association with cervical cancer. It seems reasonable to recommend that the same should be done in Britain.

As regards self-esteem, other studies have also indicated that self-efficacy (Janz & Becker, 1984; Kegeles & Lund, 1982; Seydel et al., 1990) and internal locus of control (Becker & Mainman, 1975; Stott & Pill, 1987) are positively correlated with the undertaking of preventive health behaviours. Bellak (1975), Ziller (1973), and Greer & Burgess (1987) found a positive correlation between internal locus of control and self-esteem. Greer & Burgess (1987) found a negative correlation between selfesteem and anxiety and depression. Therefore, it seems clear that the role of the health agency needs to be that of assisting individuals as much as possible to become active participants of their health status by involving them and allowing them to be codesigners of their preventive behaviours. Individuals should not be treated as passive recipients of health care but rather as active participants. This could be accomplished by attempting to " improve an individual's internal locus of control and selfesteem. It is not an easy task as individuals have different needs and experiences. Consequently, the role of the physician in educating patients about preventive health behaviour and treating them with consideration seems crucial. Patients need to have a clear knowledge of medical practices as well as trust in

their care provider. For example, what is involved in cervical smear screening and its benefits in order to have some locus of control in their health care which should assist in reducing fear, worry, and/or embarrassment. If a woman thinks of a CST as a positive preventive measure (that is, primarily as a test that diagnoses precancerous cell changes) rather than as a test to reveal cancer, she is likely to feel less susceptible and to have a higher self-efficacy.

Thus, health education campaigns, physicians, and health educators should also try to increase self-efficacy and outcome expectancy. Education needs to focus on raising health consciousness in a positive and an informative way. The importance of an adequate leaflet, letter of invitation, and why the woman was selected for screening is well-documented (Eardley, Elkind, & Thompson, 1990; Eardley et al., 1989). Motivational messages for persuasion to practice preventive health have been suggested as important by researchers (Antonovsky & Kats, 1970; Jill, Gardner, & Rassaby, 1985). On the basis of what has been found in the present research, perhaps the arguments for persuasion to comply with preventive health screening could focus on the concepts of self-esteem and family. For example, messages such as "You're important - do you take care of yourself as well as you should" or "Be the best mother (wife) you can be and take care of yourself - practice preventive health" could be used. Since the largest target group for persuasion appears to be women whose life primarily revolves around their family, perhaps a more direct message such as "Taking care of yourself is taking care of your family" could be effective. It could be argued that this

type of "look after yourself" promotion places too much responsibility on the individual and attempts to mould people's lives without consulting them (Draper, 1983). Obviously, the messages need to communicate positive ideas without being intrusive or causing anxiety.

Finally, many of the women interviewed for the present research were appreciative of the time and interest taken in them perhaps, as compared to an often impersonal clinic or doctor's office (surgery). Several women expressed an interest in and requested information on well-women clinics, and many stated the intention to have a CST in the near future. Others mentioned that the availability of women doctors, more flexible hours, and convenient locations for well women clinics should assist in helping women to have a CST. It would be interesting to do a follow-up study to see how many of the nonresponders had become responders primarily as a result of the interview.

APPENDIX A

The following diagrams show the mean results of the pilot group who completed a paper and pencil version of the semantic differential. These diagrams may be compared with the corresponding diagrams from the main study sample (p. 148-150).



Representation of concepts in a 2-D semantic space defined by the dimensions Potency and Evaluation, for responders (pilot study).



Representation of concepts in a 2-D semantic space defined by the dimensions Potency and Activity, for responders (pilot study).



Representation of concepts in a 2-D semantic space defined by the dimensions Activity and Evaluation, for responders (pilot study).
APPENDIX B

INSTRUCTIONS FOR THE COMPUTERIZED VERSION OF THE SEMANTIC DIFFERENTIAL

This survey concerns the meanings of certain ideas which are to be rated against a series of descriptive scales. Different words (expressing different ideas) will appear in the centre of the computer screen with a descriptive scale below. The descriptive scale consists of a pair of opposite adjectives. The cursor will always appear in the middle of the scale. You are to rate the word on each of the scales as they appear on the screen by moving the cursor left or right with the arrow keys. When you hit the return key, the next scale will appear with the cursor again in the middle of scale. Please make your judgements on the basis of what these words mean to you.

Here is how you are to use these scales: If you feel that the word in the center of the screen is very closely related to one end of the scale, you should place the cursor as follows:

good		 		 	<u> </u>	bad
			or			
good	<u></u>	 		 	() (bad

If you feel that the word is quite closely related to one or the other end of the scale (but not extremely), you should place the cursor as follows:

strong	 <u></u>			 Ministrative Contract	 weak
			or		
strong	 	5 		 _ <u>X</u>	 weak

If the word seems only slightly related to one side as opposed to the other side (but not really neutral), then you should place the cursor as follows:

active	 	 		 	passive
		or			
active	 	 1 <u>-11-11-11-11</u>	_ <u>X</u>	 	passive

The direction toward which you move the cursor, of course, depends upon which of the two ends of the scale seem most charasteristic of the idea you are rating.

If you consider the word to be neutral on the scale, both sides of the scale equally associated with the word, or if the scale is completely irrelevant, unrelated to the word, then you should leave the cursor in the middle space:

clean _____X ____ dirty

Do not try to remember how you rated previous words. Respond quickly based on your first impression, your immediate feelings associated with the item. On the other hand, please be attentive - respond quickly but carefully.

APPENDIX C

PERSONAL QUESTIONNAIRE

The following is a hard copy of the computerized version of the personal questionnaire. Each question appeared on the screen individually and the answers were entered by this researcher to facilitate speed and accuracy in recording. The results may be seen in Table 6.4 (p. 155).

Inter Occur	vie	ew number	
Date	of	Birth	nen alan dari dari dari dari dari dari dari dari

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Marital Status?
 a) Married
 b) Single
 c) Other

Have you had or do you plan to have children? a) Yes
 b) No

- 3) Who is the first person that comes to your mind that has had a strong influence on your life?
- 4) Who is the first person that comes to your mind who may now influence you?
- 5) How do you think children should be disciplined?
 - a) Very strictly b) Quite strictly c) Slightly strictly d) Slightly loose e) Quite loose f) Very loose
- 6) How would you reward a small child for good behaviour?

7) How would you punish a small child for bad behaviour?

8) How often should a mother play with a small child?

a) Very often b) Often c) Sometimes d) Occasionally

- 9) Which of the following are applicable to you?
 - a) Regular dental checkups b) Regular cervical smear tests
 - c) Use of health products d) Children immunized
 - e) Breast screening by self f) Breast screening by doctor

¹⁰⁾ Do you prefer a male or a female doctor for a physical examination?

11) What, if anything, concerns you about having a cervical smear test?

T

Have you received information on well women 12) clinics? Yes a) b) No 13) Do you worry about your health? Often b) Sometimes a) Never C) Where would you prefer to have a cervical smear test? 14) Family planning clinic b) Well woman clinic Surgery d) At home e) No preference a) C) e) No preference 15) Are you happy with yourself? a) Yes b) No C) Usually What would you like to change about yourself? 16)

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