

PERFORMANCE OF BREAST SELF-EXAMINATION AND
HEALTH LOCUS OF CONTROL

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To the Provost of the Graduate School:

I am submitting herewith a thesis written by Janet L. Heilman entitled "Performance of Breast Self-Examination and Health Locus of Control." I have examined the final copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Nursing.

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ABSTRACT

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A descriptive correlational study was undertaken to examine the relationship between BSE performance and health locus of control orientation. A convenience sample of 46 women previously given BSE instruction completed a demographic sheet and the Multidimensional Health Locus of Control (MHLC) instrument. Data were analyzed by using modes, means, standard deviations, Spearman coefficient of correlation, and Kruska-Wallis chi-square test. Analysis of data revealed no significant relationship between internality and chance externality and performance of BSE. A positive relationship was found between powerful others externality and BSE performance.

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CHAPTER 1

INTRODUCTION

Cancer, a large group of diseases characterized by uncontrolled growth and spread of abnormal cells, will strike approximately 885,000 people per year (American Cancer Society, 1982). In the early 1900s very few cancer patients had any hope for long-term survival and in the 1930s less than one in five survived five years after treatment. Today, three out of eight cancer patients, or about 320,000 Americans, will be alive five years after diagnosis (American Cancer Society, 1982). Despite the continual increase in survival over the past years, some 145,000 people with cancer died in 1983 who might have been saved by earlier diagnosis and prompt treatment (American Cancer Society, 1982).

Breast cancer is a major cause of death among both white and non-white women in the Western world (Cole & Austin, 1981). Approximately 1 out of every 11 women will develop breast cancer in her lifetime; however, if breast cancer is found early, 85% to 90% of the patients are cancer-free after five years (American Cancer Society, 1982). The chances of curing breast cancer are excellent if the disease is diagnosed and treated while it is in an early

stage. Breast self-examination (BSE) is recognized as one aspect of an early detection program. Approximately 90% of women with breast cancer discover the lesion themselves, thus early detection is largely the responsibility of women themselves (Edwards, 1980). With regular breast examinations, women are more likely to discover the lesion earlier and treatment can be instituted.

Preventive health behavior has been defined as "any activity undertaken by a person who believes himself to be healthy for the purpose of preventing disease or detecting disease in an asymptomatic state" (Kasl & Cobb, 1966, p. 247). A variety of health behaviors can appropriately be called preventive. Primary preventive behaviors, such as partaking in regular exercise and a balanced diet, as well as secondary preventive behaviors, such as using screening tests and breast self-examination, fit into the category of preventive health behaviors. The nursing profession has been and continues to be involved in the teaching of health promoting skills and reinforcing the value of preventive health behaviors. Further knowledge regarding the practice of these behaviors will assist the nurse in this endeavor to increase performance of these behaviors. Studies have been undertaken to determine why an individual or what type of individual will partake in preventive health behaviors

(Wallston & Wallston, 1978). An individual's health locus of control has been one aspect that has been examined as playing a role in health promoting behaviors (Wallston & Wallston, 1978). Additional research is needed to identify the relationship between health locus of control orientation and performance of preventive health behaviors.

Problem of Study

The problem of study examined the following question: Is there a relationship between an individual's locus of control and the performance of breast self-examination?

Justification of the Problem

In recent years, physicians, health personnel, and the mass media have encouraged women to perform breast self-examination (BSE) to aid in the early detection of breast cancer. Although the prognosis of breast cancer varies with tumor type and host resistance, breast cancer lesions 1 cm or less have a better prognosis than larger lesions (Kelly, 1979). Regular breast self-examination has been encouraged to increase the chances of women finding the cancer while it is small. Approximately 90% of all breast masses are detected by women themselves (Edwards, 1980), thus with regular breast examination, earlier discovery of the lesion is more likely.

Foster et al. (1978) evaluated the relationship between the performance of BSE and breast cancer stage. They reported that women performing BSE tended to identify smaller sized tumors and exhibit fewer positive axillary nodes. Greenwald et al. (1978) also found that tumors discovered through BSE as opposed to accidental discovery were at an earlier stage.

Breast self-examination has many advantages as a cancer detection behavior. It is free, requires no special equipment and relatively little time, and can be done by women in the privacy of their own home. Unfortunately, despite the widespread publicity about the value of early detection and the aforementioned advantages, BSE is not practiced regularly by the majority of women in the country (Schlueter, 1982). The Gallup Poll (1973) reported that 18% of the 1,000 women questioned examined their breasts once a month and 30% never did so. Hirshfield-Bartek (1982) reported that a follow-up study in 1979 by the National Institutes of Health again reported a 39% practice rate of BSE.

Various studies have been done to determine reasons and factors influencing the practice of breast self-examination. The value of BSE has not been repudiated. Locus of control has shown some validity in predicting and explaining specific health-related behaviors (Wallston & Wallston, 1978).

Several studies have shown that individuals with an internal control belief are more likely to engage in behaviors that facilitate physical well-being (Wallston & Wallston, 1978). The concept of internal-external locus of control can provide direction for health education programs and a means of assessing whether or not the programs are accomplishing what they have been set out to do (Wallston & Wallston, 1978). This study was designed to investigate the role of health locus of control orientation and preventive health behaviors, specifically BSE. The intent of this study was to provide insight into BSE behaviors and provide some ideas or guidelines for breast self-examination education and follow-up, as well as suggestions for further research by nurses.

Theoretical Framework

Social learning theory, developed by Rotter (1954), is a theory of personality that attempts to integrate two diverse trends in American psychology--the stimulus response theories and the cognitive, or field, theories (Rotter, 1975). The social learning theory was developed as an attempt to account for behavior in relatively complex social situations (Rotter, Chance, & Phares, 1972).

Rotter et al. (1972) outlined several principles of the social learning theory. The first principle states that in

the study of personality, the primary unit of investigation would be the interaction of the individual and his meaningful environment. Social learning theory is focused on learned behavior, and Rotter et al. noted that it is necessary to investigate past events to understand or explain behavior. The second principle indicates that an individual's behavior, when described by personality dimensions, would take place in space and time. The third principle states that both an individual's experiences and/or interactions within the meaningful environment influence each other. Personality has unity and each individual is thought of as possessing a core unit which largely determines his behavior (Rotter et al., 1972). The fourth principle states that behavior has a directional aspect or may be said to be goal-directed. Human behavior is motivated and an individual seeks to maximize his positive reinforcements in any situation (Rotter et al., 1972). The final principle in social learning theory states that the occurrence of an individual's behavior will be determined not only by the nature or importance of goals or reinforcements, but also by the individual's anticipation or expectancy that these goals will occur (Rotter et al., 1972).

Social learning theory incorporates four basic concepts in the prediction of behavior (Rotter et al., 1972). These

four concepts are behavior potential, expectancy, reinforcements, and the psychological situation. The basic formula for an individual's behavior is that the potential for a behavior to occur in any specific psychological situation is a function of the expectancy that the behavior will lead to a particular reinforcement and of the value of that reinforcement (Rotter, 1975). Behavior potential is defined as the potentiality of any behaviors occurring in any given situation or situations as calculated in relation to any single reinforcement or set of reinforcements (Rotter et al., 1972). Expectancy refers to the probability held by the individual that a particular reinforcement will occur as a function of a specific behavior on his part in a specific situation or situations (Rotter et al., 1972). Reinforcement value is defined as the degree of the individual's preference for that reinforcement to occur if possibilities of occurrence of all alternatives were equal (Rotter et al., 1972). The psychological situation refers to the internal and external environment in which an individual is continuously interacting (Rotter et al., 1972).

Rotter (1966) further expanded his theory with the locus of control construct. The role of reinforcement, reward, or gratification is universally recognized as a crucial one in the acquisition and performance of skills and

knowledge (Rotter, 1966). However, an event regarded by some individuals as a reward or reinforcement may be perceived differently by others. One of the determinants of this reaction is the degree to which the individual perceives the reward as a function of his own behavior, efforts, or characteristics as opposed to external forces and may occur independently of his own actions (Rotter, 1966). When a reinforcement is perceived by the individual as under outside control or one that is perceived as the result of luck, chance, or fate, that perception is labeled as a belief in external control (Rotter, 1966). If the individual perceives that the existing situation is contingent upon his own behavior or characteristics, this belief is termed as a belief in internal control.

Rotter (1966) hypothesized the construct of locus of control is of major significance in understanding the learning processes in different kinds of learning situations. He also noted that individual differences exist among individuals as to the degree to which they are likely to attribute personal control to reward in the same situation. If an individual perceives a reinforcement as contingent upon his own behavior, then the occurrence of either a positive or negative reinforcement will strengthen or weaken potential for that behavior to occur in the same or similar

situation (Rotter, 1966). If the individual sees the reinforcement as being outside of his control, then the preceding behavior is less likely to be strengthened or weakened (Rotter, 1966). A learning situation in which the experimenter arbitrarily determines the right response for whether a reward is given, regardless of the behavior of the subject, will produce a different kind of learning than one where the subject believes his behavior determines the occurrence of the reward (Rotter, 1966). Thus, Rotter's social learning theory will form the framework in which to study the relationship between an individual's locus of control and the performance of breast self-examination.

Assumptions

Based on the theoretical framework and for the purposes of this study, the following assumptions are made:

1. An individual's behavior is goal-directed (Rotter, 1954, 1966, 1975; Rotter et al., 1972).
2. An individual's behavior is influenced by reinforcement or rewards (Rotter, 1954, 1966, 1975; Rotter et al., 1972).
3. An individual holds an internal or external locus of control belief that can be measured (Rotter, 1954, 1966, 1975; Rotter et al., 1972).

Research Question

The following research question was addressed in this study:

Is there a relationship between health locus of control and performance of breast self-examination in women who have received breast self-examination instructions?

Definition of Terms

The following terms were defined for use in this study:

1. Breast self-examination (BSE)--the examination of both breasts by a woman in a systematic manner for the purpose of detecting an abnormality.
2. BSE instruction--demonstration and instruction of how to examine the breast and information on breast cancer (signs, symptoms, prognosis, mortality, risk factors) by a representative of the American Cancer Society.
3. Performance--examination of both breasts once a month in a systematic manner as instructed by American Cancer Society certified nurses.
4. Health locus of control--the degree to which an individual perceives that she has control over the rewards/reinforcers that occur relative to her behavior, as measured by the Multidimensional Health Locus of Control instrument (Wallston, Wallston, & DeVellis, 1978). The instrument yields three scores on three

independent dimensions of health locus of control beliefs (Wallston et al., 1983):

Health internality--the extent to which a person believes health is a function of her behavior, as measured by the Internal Health Locus of Control Scale (IHLC)(Wallston et al., 1983).

Chance externality--the degree to which a person believes that her health is unpredictable; a matter of fate, luck, or chance, as measured by the Chance Health Locus of Control Scale (CHLC)(Wallston et al., 1983).

Powerful others externaltiy--the degree to which a person believes that her health is largely determined by the actions of powerful others, either family members, friends, or health professionals, as measured by the Powerful Others Health Locus of Control Scale (PHLC) (Wallston et al., 1983).

Limitations

The following limitations were considered in this study:

1. A convenience type of sampling was used; therefore generalization beyond the sample cannot be done.
2. The participants may fail to accurately recall past performance of breast self-examination behavior.
3. A cause and effect conclusion cannot be made due to the nonexperimental design of the study.

Summary

Cancer strikes thousands of people each year, and breast cancer is a major cause of death among women. Early detection of breast cancer has increased survival and cure rates considerably. BSE is recognized as one aspect of an early detection program. Although BSE is an easy, painless, and cost-free procedure, few women perform the procedure regularly. Based on Rotter's social learning theory, the frequency of performance of BSE and perceptions of health locus of control by women given previous BSE instructions were examined in this study.

CHAPTER 2

REVIEW OF LITERATURE

This study was focused on the performance of BSE and individual health locus of control orientation. Review of the literature pertinent to this study was directed to those studies which examined the relationship between (1) practice of BSE and influencing factors; (2) practice of BSE and method of instruction; and (3) locus of control and practice of preventive health behaviors.

Factors Influencing BSE Practice

Factors influencing the practice of BSE have been addressed in studies which endeavored to identify who and why individuals practice BSE. The Gallup Organization (1973) conducted a nationwide survey for the American Cancer Society. A national sample of 1,007 women 18 years and older were personally interviewed with interviews averaging one hour in length. The interviewers sought information regarding the individual's knowledge of breast cancer, breast examination practices, factors influencing BSE performance, and the role of physicians in increasing performance of BSE. Results of the survey concluded that American women grossly over-estimate breast cancer

prevalence. Fifty-six percent estimated 100 women out of 1,000 would develop breast cancer, while only 8% gave an accurate answer of 50. Thirty-eight percent believed that half or more of all breast lumps are malignant, while in reality only 20% are malignant. Twenty-four percent of the sample had not had their breast examined by a physician in the past 5 years and another 26% had fewer than five examinations. Non-examination was particularly high among older women, the poorly educated, low income women, and blacks.

Seventy-seven percent of the women surveyed (Gallup, Organization, 1973) had heard of BSE, but only 18% of the women did monthly BSE during the prior year. Three factors were identified that accounted for the failure of women to practice BSE. According to the Gallup Organization, only 12% of all the women realized the importance of monthly breast examination. Of the aware nonpractitioners, 28% gave their reason for not doing self-examination as the fact that their breasts are examined by a doctor. Fear and anxiety were identified as a second factor with 46% of the women feeling that monthly examinations would make them worry unnecessarily. Lack of knowledge about BSE and confidence in how to do it comprised the third factor. Physicians played the most important role in getting women to practice BSE; 32% of the women became aware of BSE through a

physician. According to the Gallup Organization, personal instruction on how to do BSE increased compliance with 92% practicing BSE after instruction.

Stillman (1977) investigated women's health beliefs about breast cancer and BSE and the extent of BSE practice among a convenience sample of 122 women in a selected suburban community. A 5-part questionnaire, designed by the investigator, was administered to elicit information about the participants' factual knowledge of breast cancer, perceived susceptibility and perceived benefit beliefs, BSE practices and knowledge, and demographic data. Data were analyzed by use of descriptive statistics. Results regarding knowledge of breast cancer revealed that 12% of the sample were correct in identifying prevalence, 96% were correct in the belief that most breast lumps are not malignant, and 78% were aware of the relationship between occurrence of breast cancer and affected relatives. Ninety-seven percent scored high in perceived benefits of BSE in reducing the threat of breast cancer, and 87% scored high in perceived susceptibility to breast cancer. Fifty-eight percent practiced BSE monthly and had moderate to high perceived susceptibility scores, but over 20% had high beliefs in the benefit of BSE and were nonpractitioners. Sixty-eight percent of the sample were unsure of their ability to detect

abnormalities. The author stated that it was difficult to conclude that high beliefs in perceived benefits and/or perceived susceptibility cause BSE practice. Only 40% of the sample performed BSE despite high scores in perceived benefit of BSE and perceived susceptibility of breast cancer. The researcher recommendations included replication of the study, and further research on effects of educational programs on beliefs and behavior, cues which stimulate BSE practice and reasons of nurses for teaching or not teaching BSE in their practice.

Magarey, Todd, and Blizzard (1977) examined psychosocial factors influencing delay in reporting breast cancer symptoms and BSE practice in 90 women who were to undergo breast biopsy. The participants were interviewed and asked to complete the Spielberger State-Trait Anxiety Inventory, Millimet's Manifest Anxiety-Defensiveness Scale and the depression scale of the Minnesota Multiphasic Personality Inventory. One quarter of the participants had delayed more than 4 months and half had never examined their own breasts. Five of the psychological variables tested were found to correlate highly with the length of delay, including the use of the ego defenses of denial and suppression, the use of intellectualization-isolation, and self-reports of anxiety and observation of nonverbal anxiety during the interview.

A multiple regression analysis showed these to account for 43.4% of the total variance in delay; the correlation was $r = 0.659$ ($p \leq .05$). The factors of age, education, knowledge about cancer, and fear of death were not related to the length of delay nor to the practice of BSE. The authors recommended that attention be directed towards non-rational unconscious factors in order to achieve objectives of public cancer education programs.

Turnbull (1978) conducted a graduate research study investigating BSE practices of 160 women studying for master's degrees, 90 in a nursing program and 70 in programs outside the health disciplines. The research design was comparative and nonexperimental, and the convenience sampling method was used. A questionnaire, designed by the researcher, gathered information about (1) the relationship between practice of six basic preventive health measures and practice of BSE, and (2) changes which occurred in women's practices of BSE subsequent to the October, 1974, mass media coverage of Mrs. Betty Ford's mastectomy.

The gamma statistic was used by Turnbull (1978) to measure the association between preventative health practices in relation to the practice of BSE. For all women over age 35, the resulting gamma coefficient was -0.1, which indicated a weak negative relationship between the practice

of preventive health measures and the practice of BSE. For women 35 and under, the gamma coefficient was 0.3 for nursing participants and 0.5 for non-health oriented participants. Thus, among the 35 and under participants, the practice of BSE was related to overall positive health practices. Chi square was used to determine significance of changes in women's increased practice of BSE following mass media coverage about Mrs. Ford's surgery. Eighteen percent of the 90 health oriented women and 39% of the non-health oriented women indicated more frequent practice of BSE as a direct or indirect result of the mass media communication. A significant chi square distribution was obtained ($\chi^2 = 5.16$; $p \leq .05$) which indicated that practice changes were not related to chance in the women studied. Turnbull suggested further research in the areas of knowledge clarification and identification of women's misconceptions, as well as identification of cues which stimulate BSE practice.

A study was conducted by Kelly (1979) to investigate who performs BSE and why. A convenience sample of 158 women visiting an ambulatory care center with current breast complaints were interviewed. The in-depth semi-structured interview sought information regarding BSE practice as well as demographic data. Descriptive statistics were used for analysis of data. Of the sample, 66% practiced BSE to some

degree: 80% of these practiced BSE at least once a month or more and 60% had been examiners for more than 2 years.

Examiners had two primary reasons for starting and continuing BSE: (1) an awareness that it is desirable to detect breast cancer early, and (2) an awareness that they themselves could get breast cancer, while nonexaminers tended to deny this possibility. Kelly emphasized the importance of informing women about their breast cancer risk.

Trotta (1980) designed a study to investigate how frequently and thoroughly women practice BSE, how they learn about BSE, and what influences their compliance. Questionnaires were distributed to a convenience sample of 1,500 women employed by a large insurance company and 446 women responded. The questionnaire, designed by the investigator, contained 50 questions regarding compliance behaviors, conditions of learning BSE, health beliefs, knowledge about breast cancer, and demographic characteristics. Results indicated that only 12% of the subjects had practiced BSE at least six times in the past 6 months, but 50% had practiced at least three times. Thoroughness of practice as measured against the American Cancer Society's recommended procedure was not high. The most frequently reported sources of information about BSE were individual physician instruction and pamphlets. Participants who had been given

person-to-person instruction tended to practice the most frequently, but those who had experienced group teaching tended to be more thorough. Multiple regression analysis revealed that of all study variables, number of perceived barriers (embarrassment, fear, difficulty remembering, inadequate knowledge, laziness) had the most significant influence on compliance. Women with high barrier scores tended to be low on compliance. Recommendations of the author for BSE instruction to be more effective included individualized personal interaction and strategies to overcome barriers to regular performance.

Reeder, Berkanovic, and Marcus (1980) conducted a household survey of a randomly selected sample of 540 women living in Los Angeles County to determine BSE behaviors. The telephone interviews requested information on frequency of BSE, whether they had ever received instruction on BSE, and demographic facts. Participants were also questioned regarding their cancer risk, knowledge, occurrence of friend or relative with breast cancer, and likelihood of self in finding a lump. Of the women in the sample, 61% reported BSE practice, but only 37% performed the procedure monthly or more frequently. Of those performing BSE monthly or more often, 90% stated they had been instructed in the procedure. Nearly 70% were instructed by a health professional. Few

differences were observed among sociodemographic subgroups in the frequency of BSE performance. The only significant difference involved race; more black than Hispanic or white women said they practiced BSE monthly. Correlations ($p \leq .05$) were run between the above listed variables and performance of BSE monthly. The only significant relationship involved the knowledge index--more knowledge about breast cancer tended to be associated with receiving BSE instruction and practicing BSE monthly or more often.

A survey study collecting data on sociodemographic variables, health care variables (health status, source, use of early detection techniques, "preventive orientation" of physician, satisfaction with care) and other health attitudes and beliefs was conducted by McCusker and Morrow (1980). The convenience sample, consisting of 543 teachers and administrators in two suburban Rochester school districts, completed questionnaires adapted from other instruments measuring health beliefs, concerns, and attitudes.

Respondents in McCusker and Morrow's (1980) study were predominantly white, female, and married with a median age in the 30s, and almost all had personal physicians. Of the sample, 56% reported checkups at least annually and 40% of the women practiced BSE at least monthly. Chi square and

multiple regression analysis were used in data treatment. Both frequency of checkups and BSE practice were related to the "preventative orientation" of the physician, the satisfaction with care, and to the perceived benefit of checkups. Increased frequency of BSE was also related to greater health concern and the greater faith in the ability of women to detect lumps. The 5% level of statistical significance was used in treatment of data. The results, according to the authors, suggested that an important determinant of the use of early detection techniques for cancer may be the quality of the physician-patient relationships including demonstration of physician's concern with the importance of early detection.

Huguley and Brown (1981) conducted a study of 2,092 newly diagnosed breast cancer women in 14 hospitals in Georgia during the period from June, 1975, through February, 1979. Data regarding BSE practices, source of knowledge of BSE, BSE technique, methods of detection, and stage of disease were collected via chart information and patient interviews. The interview nurses were trained in the technique for the specific data required and in BSE technique. The statistical treatment of data was not specified.

Of the participants in Huguley and Brown's (1981) study, 67% reported that they practiced BSE (34% once a

month, 7% every two months, 12% three to five times a year, 13% once or twice a year, and 33% never). Of the 586 women under 50 years of age, 76% practiced BSE; of the 1,115 women 60-69 years old, 68% practiced BSE; and of the 391 women 70 years and over, 50% practiced BSE. The higher the education level, the higher the percentage who practiced BSE: 42% for elementary school, 67% for high school, 80% for college and graduate school. A higher percentage (73% versus 51%) of white women than black practiced BSE. The professional and salaried nonprofessional groups had a higher percentage (77% versus 45%) of BSE practice than the hourly wage earner, homemaker, and unemployed groups.

Additionally, personal experience with breast cancer was associated with an increase in the practice of BSE (75% versus 60%; $p < .001$) by the women in Huguley and Brown's (1981) study. Women who were taught BSE by a physician or nurse were more likely to practice BSE than if the knowledge came from another source (60% versus 46%; $p < .001$). Competence of BSE technique, as judged by the nurse, was satisfactory in 57% of the participants. Those scored as competent were more likely to do BSE every month (70.4% versus 26.5%; $p < .001$). Sixty-eight percent of the breast cancers were discovered by the participants (57% accidentally; 21% by BSE), 17% by physicians, 4% by mammography,

and 1% by other means. Eighty percent of the women who practiced BSE had breast cancers in Stages 0, I, or II versus 64% who did not practice BSE ($p < .001$). The authors concluded that a correlation does exist between the performance of BSE and early discovery of breast cancer, and they advocated BSE as a significant step toward breast cancer diagnosis.

Examination of BSE practices among 142 high risk women was conducted by Laughter et al. (1981) at a large cancer center. The volunteer participants were interviewed regarding BSE practices and factors affecting BSE behavior as well as asked to demonstrate BSE to a trained nurse. Of the sample, 61% reported BSE practice at some time. Correct performance of BSE rated on a 13-step scale had a mean of 3.9 steps performed. Of the factors influencing women to begin BSE, educational programs influenced only 14%, while 31% were influenced by cancer occurrence in self, family, or friends. Negligence was cited by 35% of the participants as the reason for never performing BSE, and inadequate knowledge on performance was cited by 21%. The researchers did note that 74% of the women who discovered a breast problem reported seeing a physician within a month of its discovery. The authors recommended continual efforts at developing and improving BSE educational programs as well as research in BSE behavior.

An exploratory study, examining the high risk patient's personal perceptions regarding breast cancer and BSE, was conducted by Hirshfield-Bartek (1982). A 32-item questionnaire, adapted from Stillman (1977) and Trotta (1980), was administered to 25 breast cancer patients during follow-up examinations. The volunteer sample consisted of women, ages 29 to 76, who had received radiation therapy for Stage I or II breast cancer. Chi square analyses were computed to determine the influence of perceived susceptibility to recurrence of breast cancer, perceived benefit from monthly BSE, and barriers which inhibit BSE or the frequency of BSE. Perceived susceptibility to recurrence of breast cancer was related to frequency of BSE performance ($p < .05$).

Hirshfield-Bartek (1982) reported that results of this study indicated a tendency for women to practice BSE more frequently when they perceived themselves as more susceptible to breast cancer recurrence. Participants viewed a high benefit in monthly BSE and believed that frequent BSE facilitated earlier detection of breast lumps. Barriers such as fear, anxiety, embarrassment, laziness, and lack of confidence on how to do BSE were found to be related to BSE frequency. Women who had lower barrier scores reported more frequent practice of BSE.

According to Hirshfield-Bartek (1982), data from this study did not support findings by Stillman (1977) who found

a low practice rate among 27% of her sample who scored high in perceived benefits. Contrary to findings by Stillman, lack of confidence in one's ability to detect lumps was not found to be a major barrier in this study. Fear and anxiety were found to be inhibiting factors. Difficulty remembering to do BSE was the most often cited barrier for this study as well as for the study conducted by Trotta (1980).

Hirshfield-Bartek stated that understanding the patient's health beliefs is important in promoting routine BSE. Her recommendations included validation of the instrument and refinement of health belief variables for greater depth in measurement of health belief components.

Styrd (1982) reported on a program undertaken to promote awareness as to the importance of performing routine BSE, to teach proper BSE technique, and to increase frequency of BSE among those already practicing BSE. More than 90 instructional sessions, based on American Cancer Society guidelines, were offered to Upjohn Company employees over a 4-month period. The 1,667 volunteer subjects were given a questionnaire asking about the employees' BSE behavior prior to the program, 3 months later, and 1 year after the program. Friedman two-way analysis of variance was used on the percentage of women answering yes to the practice of BSE at each of the three measurement times.

Prior to the program, 73% had indicated a positive response for BSE practice. Three months after the program, 97% gave a positive response, significantly increasing the percentage ($p < .025$). The practice of BSE one year after the presentation was highly dependent on age. The older employees continued BSE practices, whereas the practice of younger employees dropped in frequency from 92% to 34% ($p < .01$). Frequency of BSE was also examined since monthly BSE was stressed during the program. The author stated that the proportion of employees who indicated monthly BSE increased significantly following the program ($p < .001$). The author concluded that occupational health nurses are in an ideal setting to promote BSE practice and educate employees in proper technique of BSE. She believed long-term behavior change was achieved with the employees in this study.

Women's knowledge about breast cancer and their beliefs about susceptibility to breast cancer and the benefits of BSE to the frequency of BSE were investigated by Schlueter (1982). The study occurred in a Midwestern, metropolitan area and potential subjects were recruited from sorority alumnae groups, athletic clubs, and YMCA groups. A self-report questionnaire, adapted from the studies of Stillman (1977) and Turnbull (1978), was administered to 263 women who volunteered to participate. Participants were grouped

according to levels of physical exercise (high, moderate, or none), and they were compared on knowledge and beliefs about breast cancer and BSE, and practice of BSE. Descriptive statistics and chi-square analysis were used to analyze data ($p < .05$). Results showed women overestimated breast cancer prevalence but were correctly aware that most breast lumps were benign. Most of the subjects were uninformed of the risk factors of breast cancer, except for a positive family history (75.8% correctly identified). The majority (71.9-75%, depending on group) perceived themselves as susceptible to breast cancer. Almost all (99.1%-94.2%) of the women perceived BSE as beneficial in reducing the threat of breast cancer fatality. Only 37% of the sample practiced BSE regularly. No significant relationship existed between knowledge or beliefs and frequency of BSE performance. There was also no significant relationship between the exercisers and nonexercisers and BSE practice. Schlueter concluded that knowledge and beliefs about breast cancer and BSE or engaging in regular physical exercises do not affect the practice of BSE.

Data regarding BSE practice were collected by Roach and O'Fallon (1983) from a random sample of 328 women in the Upper Midwest. Telephone interviews were conducted and the Chi-square statistic was used to analyze data. Of the

sample, 49% reported no BSE practice or BSE practice of less than once a month. Findings indicated no significant association between reported frequency of BSE and age, awareness of the American Cancer Society or Cancer Information Service as sources of cancer information, and prior contact with breast cancer. Educational level was found to be significantly related to BSE performance ($p < .05$). Performance of BSE monthly increased with prior contact with cancer of any kind as well. Roach and O'Fallon concluded that a large percentage of women continue to ignore the need to do monthly BSE, and they suggested more research to identify variables affecting BSE performance.

Bennett, Lawrence, Fleischman, Gifford, and Slack (1983) conducted a study to explore factors that influence women's habits in the practice of BSE. By use of an interactive computer program, 616 women who volunteered were interviewed. Data were obtained on demographic factors, sexual practices, factors related to the individual's self-reliance, health practices, and beliefs and knowledge about breast cancer. Chi square was used to analyze the differences among the categories as well as frequency of BSE practice ($p < .05$). Seventy-eight percent reported BSE practice with 36% doing so at least monthly. The authors' findings demonstrated that women living with their sexual

partner, women with a maternal history of breast disease, and women given BSE instruction who were confident in their technique were more likely to practice BSE. Education level and performance of other preventative behaviors were not associated with BSE practice. The authors suggested that BSE instruction and reinforcement of an individual's confidence in BSE technique would increase BSE practice.

A descriptive study, analyzing the relationships between knowledge about breast cancer and demographic characteristics to levels of BSE practice was conducted by Hallal (1983). A purposive sample of 217 women from the metropolitan area of a large Eastern city completed two self-administered questionnaires, adapted from Stillman (1977). Factual knowledge about breast cancer and demographic data were requested. The author reported that findings showed nonpracticers (27%) to have less accurate knowledge about breast cancer than regular or intermittent Practicers. Demographic characteristics associated with nonpractice of BSE included age (18-25 years and over 65 years), low income level of under \$10,000/year, and having less than a high school education. The author found that regular practicers had more confidence in their ability to perform BSE correctly, however more than one-half of the Practicers performed at least two portions of the

examination incorrectly. The researcher suggested that women need clarification regarding breast cancer facts and proper BSE performance.

Shelley (1983) reported on a study undertaken to examine BSE practices of 290 randomly selected women in New Orleans. The telephone interview format contained primarily forced-choice items covering such areas as BSE frequency, breast cancer knowledge, correct examination time, and correct examination method. Thirty-nine percent of the sample reported monthly BSE and 28% reported at least yearly examination. Only 54% of the sample and 58% of the monthly examiners identified more than six of the cancer risk situations. Only 21% of the sample possessed knowledge of both correct time and method of self-examination. Coefficient of contingency ($p < .05$), to measure association between knowledge of proper time and BSE method and BSE frequency, found that only 10% of the women performed BSE monthly and efficaciously. The author concluded that breast cancer self-technology is not easily transferred to women and researchers should address the degree to which women can assimilate this technology.

A telephone survey of 308 randomly selected Baltimore, Maryland women was conducted by Celentano and Holtzman (1983) to collect information on history and practice of

BSE; how and from whom BSE was learned; perceived confidence in performing BSE; and a description of the specific steps used in performing BSE. Of the subjects, 76% reported BSE practice during the last year with only 35% reporting monthly BSE. The chi-square statistic was used for analysis of data on BSE performance and social-demographic factors, and BSE instruction factors and BSE frequency ($p < .05$). Older age was associated with less frequent BSE performance. Blacks reported performing BSE monthly more often than whites, and more affluent women reported more frequent BSE performance. Instruction in BSE technique was related to more frequent BSE, as well as being asked to demonstrate proficiency to the instructor. Knowledge of the procedure necessary to correctly perform BSE was low among the sample. The authors concluded that women are not correctly performing BSE although many women perceive that they are correctly performing BSE. The authors also suggested further research in BSE instruction.

Cole and Gorman (1984) conducted a survey of 93 registered nurses to identify factors that may influence compliance with BSE. The convenience sample was given a questionnaire, designed by the authors, to survey practice of BSE and personal experience, as well as knowledge and attitudes towards breast cancer, and to collect demographic

data. Subjects were divided into two groups: compliers, those who practiced BSE monthly, and noncompliers, those who practiced less than monthly or not at all or those who used incorrect technique. The compliers (30.1%) were younger and had more nursing education. Noncompliers were over 35 years and were more likely to be educated at the associate degree or diploma level. The younger age group of the compliers supported Foster's (1978) and Turnbull's (1978) studies. The most frequent reason (50% of the group) noncompliers gave for not doing monthly BSE was forgetfulness. A significant number (26.1%) of noncompliers had a maternal family history of breast cancer and had more experience with breast cancer patients. It was statistically significant ($p=.005$) that the complier group was more likely to think of the possibility of developing breast cancer themselves than were the noncomplier group. The researchers recommended further study of factors that influence BSE practice, and they concluded that expecting nurses to behave differently regarding BSE practice may be unrealistic.

BSE and Method of Instruction

Several authors have sought to identify a relationship between BSE performance and method of instruction as well as effectiveness of BSE instruction. Jones (1978) designed a study to determine effectiveness of an instructional program

on cancer prevention for teenage girls. The volunteer sample of 525 girls was obtained from seven schools. The participants were given a pretest and attended a program on breast and uterine cancer. A posttest was given immediately following the program. A telephone follow-up interview was conducted one year later, with 20% of the sample interviewed. Percentages were given of the participants who answered knowledge questions correctly or indicated positive behaviors. All differences between pre and post scores were significant. There was a high level of correct knowledge and a high incidence of preventive behaviors being employed following the program. The follow-up results indicated that a high level of learning was retained. Due to the high level of success, the researcher recommended replication in schools across the country.

Breast self-examination instruction was presented to 130 women attending cancer screening clinics in Utah (Edwards, 1980). Four instructional methods were used: modeling alone, modeling plus guided practice, modeling plus self-monitoring, and modeling plus peer support. The women were randomly assigned to experimental or control status; the modeling alone method served as the control and the other methods served as experimental status. Follow-up data were collected at 3- and 6-month intervals. Data analyses,

using 2x4 factorial analysis of variance, revealed that the study population as a whole made statistically significant ($p < .05$) changes in BSE behavior. However, no significant outcomes were related to the dependent variable of frequency and knowledge of BSE and confidence in BSE ability between subjects in the control group and subjects in the experimental group. The researcher concluded that the modeling method is effective in changing BSE behavior and should be incorporated into the instructional plans.

A study was undertaken by Howe (1981) to compare the effectiveness of two different messages describing how to do BSE. The experimental message, developed by the researcher, described BSE in four concise sentences. The American Cancer Society's pamphlet How to Examine Your Breasts served as the control message. Women from two comparable geographic areas in western New York were used as the two study samples. Pretest telephone interviews were conducted with both the experimental and control groups and each subject was sent their respective pamphlet five times over a 2-month period. Multivariate linear regression was used to analyze the effectiveness of each BSE message. The experimental message proved more successful in persuading women to adopt BSE practice than the comparison message. The experimental group's posttest mean score showed a significant increase

($p < .05$) in BSE frequency as compared with its pretest score. The researcher suggested that although the American Cancer Society's message has succeeded in motivating some individuals in BSE practice, that number has not increased, and possibly a new, more persuasive message is needed.

Boyle, Michalek, Bersani, Nemoto, and Mettlin (1981) developed a BSE educational program to educate women regarding cancer facts and proper performance of BSE and to motivate them to adopt BSE as a monthly habit. The two-tier educational program was first directed at nursing personnel who were encouraged to transmit the information to the community. The 3-hour course on breast diseases and BSE was aimed at women in the rural areas of Western New York. The sample for this study was not specified. The program was divided into two parts. The first part, presented to the nurses, consisted of a review of breast anatomy and physiology, information on breast disease, and an overview of breast cancer and treatment. The second part, presented to both nurses and lay audiences, focused on BSE practice and related information. Pre- and posttesting of nursing personnel demonstrated a significant increase in the nurses' knowledge. Mean score on the posttest was found to be 87.1 ($SD = 3.7$), which represented a 21% increase in the nurses' knowledge (t -test, $p < .05$). Follow-up information was

collected on both nurses and lay individuals. Preliminary data on a sample of 110 nurses indicated 97% reported practicing BSE 3 months after the program with 85% of them doing BSE monthly. Three-month follow-up data for lay audiences (N=305) revealed 82% reporting regular practice with 90% performing BSE at least once since the program. The authors concluded that women can be motivated to practice BSE although long-term establishment of BSE practice is yet to be determined.

Marty, McDermott, and Gold (1983) conducted a study to assess the effect of three alternative educational programs about breast disease and BSE on participant knowledge, attitudes on the benefits of BSE and frequency of BSE practice. The convenience sample consisted of 219 women from a large health science course at a university. The participants were randomly assigned to one of three educational programs. The three educational programs were: (1) an educational program which exposed participants to American Cancer Society pamphlets containing information about breast disease and BSE practice (comparison group), (2) an education program conducted by a facilitator in which breast disease was discussed and BSE modeled for participants (modeling only group); and (3) an educational program which exposed participants to the features of the modeling

program with the added feature of individualized guided practice (modeling and guided practice group). After the programs, a post-test, modified from one used by the American Cancer Society, was given to assess selected attitudes toward breast cancer, BSE, and educational program delivery. A 25-item posttest assessing knowledge about breast disease and BSE was also administered. A follow-up assessment on BSE frequency was also done through a mailed questionnaire six months after the program.

Data analysis in Marty et al.'s (1983) study included ANOVA to determine differences among groups in knowledge retention and chi square to examine attitudinal differences. Differences in the practice of BSE at the follow-up were determined through the use of Student's t -test. None of the programs emerged as superior in knowledge retention ($F = .701$; n.s.). Participants in the modeling and guided practice group were more likely to indicate that BSE had great benefit than were those patients in the modeling alone group ($p < .02$) or in the pamphlets alone group ($p < .01$). Separate t -tests revealed that participants in the modeling and guided practice group were more likely to have performed BSE at least once during the 6-month interval ($p < .05$). The researchers recommended further study to examine the relative effects of pamphlets, modeling, and modeling with

guided practice in one-to-one counseling, rather than group settings. The authors also concluded that while the results encouraged the use of modeling and guided practice in BSE programs, further investigation of this method is needed.

Locus of Control and Preventive Health Behaviors

The health locus of control construct has been examined for its relationship to health behaviors. Several studies have endeavored to describe the relationship between an individual's health locus of control orientation and the performance of preventive health behaviors.

James, Woodruff, and Werner (1965) examined the relationship of locus of control and changes in smoking behavior. A brief questionnaire requesting information of their smoking habits and attitudes toward the Surgeon General's Report on the effects of smoking was given to 457 undergraduate students. Five weeks prior to this, they had completed the Internal-External (I-E) scale (Phares, 1957; Rotter, 1954). One-tailed tests of significance were used in data analyses. Both female and male smokers scored significantly higher (more external) than non-smokers. There was no significant relationship between I-E score and degree of smoking (heavy versus light). There was significance between belief in the credibility of the government report and the I-E scores with the female subjects only. Among the

male participants, a significant relationship existed between stop smoking behavior and lower I-E scores. The researchers concluded that although the relationship of the I-E factor to smoking behavior is not pronounced, it should be included among the many psychosocial factors involved in studying smoking behaviors.

The relationship of the Health Locus of Control Scale to preventive behaviors for cancer was explored by McCusker and Morrow (1979). The sample including of 404 teachers and administrators was selected from two suburban school districts in the Rochester area. A questionnaire, consisting of sociodemographic, health care, and health belief variables based on the Health Belief Model and the original Health Locus of Control Scale, was completed by the participants. One month later, the participants were informed of their cancer risk and advised of the appropriate preventive behaviors. Three months later, the participants were mailed follow-up questionnaires requesting what specific health-related behaviors they had begun since the program and the health-value scale as modified by Wallston (1978) from Rokeach (1973). Treatment of data was not specified. Results of the study indicated no significant relationship between the HLC score and age, sex, marital status, or income in the population. There was also no significant

relationship between the HLC scale used either alone or combined with health value, and any of the previous preventive health behaviors. Some relationships were found between HLC score and health beliefs in the areas of vulnerability to cancer and other diseases, efficacy of preventive behaviors, and anxiety about cancer. The researchers concluded that continued research is needed to evaluate the relationship of HLC to preventive behaviors.

A study investigating maintenance of smoking cessation and its relationship to health locus of control was conducted by Shipley (1981). A sample of 43 subjects answering newspaper advertisements was given a smoking cessation treatment and completed the Multidimensional Health Locus of Control Scale (MHLC) (Wallston, Wallston, & DeVellis, 1978). An experimental group, randomly selected, were given supportive letters during the follow-up weeks after the treatment. Follow-ups of the subjects were conducted at 3 months and 6 months. Treatment of the data included analyses of variance and chi-square. The basic treatment, which was applied to all participants, produced an initial abstinence in 93% of all the participants. The letter manipulation had no maintenance effect by itself. High scorers on the internal scale were more often abstinent than low scorers (47% versus 17% at 3 months, $p < .05$; 40% versus

13% at 6 months, $p < .10$). Similarly, participants low in chance HLC beliefs were more often abstinent than high believers (47% versus 17% at 3 months, $p < .10$; 45% versus 9% at 6 months, $p < .05$). Higher scorers on powerful others HLC beliefs showed no significant relationship. The researcher concluded that internal and low chance HLC subjects benefited most from treatment.

A descriptive-correlational study was conducted in order to determine if there were differences in the health beliefs, health locus of control, and self-concept of women who practice BSE as compared to those women who do not (Hallal, 1982). A purposive sample of 207 women from the greater metropolitan area of a large eastern city were administered four questionnaires. The four questionnaires included the Health Beliefs Instrument (Stillman, 1977), the Multidimensional Health Locus of Control (MHLC) (Wallston et al., 1978), the Tennessee Self Concept Scale (Fitts, 1965), and a background information form. Data were analyzed using means, standard deviation, point biserial correlations, multiple regression, and Pearson product-moment correlations. Level of significance was $p < .05$. The analysis of data revealed that being a practitioner of BSE was correlated with higher levels of health beliefs and higher self-concept levels. BSE practitioners tended to be less inclined

to have a health locus of control that depended upon a powerful other but did not have a higher score on internality. The researcher recommended that appropriate educational strategies be developed to change perceptions and attitudes in order to promote BSE practice.

Gierszewski (1983) conducted a study to investigate the relationship between weight loss, locus of control, and social support. A convenience sample of 46 employee participants of a large company's nutrition and weight control program were followed over a 6-month period. At the end of the time period, the subjects were given the Multidimensional Health Locus of Control Scale (Form A) (Wallston et al., 1978) and a modified version of Saltzer's (1978) Weight Locus of Control Scale, as well as a social support scale developed by the investigator. Data were analyzed using t-tests and Pearson product-moment correlation coefficient. Analysis revealed that internals demonstrated less weight loss/more weight gain than either externals/powerful others or externals/chance. There were no significant findings between social support scores and successful weight reduction. A significant negative relationship was found between social support and weight reduction in internal individuals. The investigator recommended combining a variety of variables, such as value of weight loss, locus of control, social

support, and elements of the Health Belief Model to enhance predictions. Also suggested was a sample selected from settings other than weight reduction groups.

A BSE teaching program was offered to a patient population and a follow-up survey was conducted to determine differences between participants and refusers (Grady, Kegeles, Lund, Wolk, & Farber, 1983). Twenty-five percent of the 1,590 women patients of a family practice group consented to participate in this study. A random sample of 100 women who refused to participate were contacted by telephone for an interview. Data collected from the participants included prior knowledge and experience with BSE, history of breast problems and cancers, health and health care, health beliefs, health locus of control scales, and socio-demographic variables.

Grady et al. (1983) used discriminant analysis to analyze the data. Level of significance ranged from $p < .001$ to $p < .05$. Several major differences were found between the participants and the refusers. The participants reported less practice of BSE in the 6 months prior to the program and the refusers had a higher level of confidence in their BSE technique. There was no difference between participants and refusers in their perceived susceptibility for breast cancer, however, refusers reported more visits to their

physicians. Participants had higher scores on the internal health locus of control scale and lower scores on the powerful other health locus of control scale than the refusers. There were no differences on Chance Health Locus of Control scores. The authors recommended further research by health educators on how individuals choose health behaviors they are willing to adopt and which lifestyle changes they are willing to make.

An exploratory study was conducted to investigate the relationship among individuals' health locus of control, health values, and their health-promotion activities (Brown, Muhlenkamp, Fox, & Osborn, 1983). A convenience sample of 63 adults, selected from a church social group, and university and law offices, were given a 4-part questionnaire. The questionnaire consisted of a demographic sheet, the Multidimensional Health Locus of Control Scale, an adaptation of Rokeach's Value Survey, and Personal Lifestyle Activities Questionnaire, developed by the researchers. Multiple regression analysis and correlation coefficients were used in the analysis of data. Level of significance ranged from $p < .01$ to $p < .05$. This study found no relationship between internality and high health value and health-related information-seeking behavior. However, a negative correlation was found between chance externality and total

health promotion activity. Health value was not found to be significantly related to any of the other variables. Several implications were stated by the researchers: (1) locus of control may be useful in evaluating health education programs; and (2) it may be advantageous to screen individuals using health locus of control scales.

Laffrey and Isenberg (1983) conducted a study to examine the relationship of internal locus of control, value placed on health, perceived importance of exercise, and participation in physical activity during leisure. A convenience sample of 70 women recruited from adult education classes in three Midwest cities completed a questionnaire. The questionnaire requested demographic data as well as information regarding physical activity during leisure, locus of control orientation, health value, and perceived importance of physical exercise. Instruments used included the Physical Activity Recall Record (Reiff et al., 1967), the Minnesota Leisure Time Activity Questionnaire (Taylor et al., 1978), the Internal Health Locus of Control Scale (Wallston et al., 1978), and an adaptation from Rokeach's (1973) health value scale.

Pearson product-moment correlation and multiple regression analysis were used by Laffrey and Isenberg (1983) in data analysis. The relationships between amount of

physical activity during leisure and internal control and health value were not significant at $p < .05$. The relationship between amount of physical activity during leisure and perceived importance of physical exercise did show significance ($p < .001$). Individuals who perceived greater importance of physical exercise engaged in more physical activity during leisure. All three of the variables, internality, perceived importance, and health value, taken together did not show a relationship to the amount of physical activity. The authors concluded that although literature suggests that variables such as health value and internality play a role in an individual's undertaking of health promoting activities, these variables had little effect in this study. These researchers recommended further investigation of the relationships between perceived importance of health related behaviors and the practice of those behaviors.

Summary

Research endeavoring to examine the relationship of BSE behavior and factors affecting its compliance, as well as to evaluate different teaching methods and identify the role of locus of control was reviewed. In the literature, several variables that may affect BSE performance, such as age, education, and previous exposure to cancer, were found.

Alternative teaching programs have been explored in order to increase BSE compliance. An individual's locus of control orientation has shown some promise in predicting preventive health behaviors.

CHAPTER 3

PROCEDURE FOR COLLECTION AND TREATMENT OF DATA

This study of performance of breast self-examination and health locus of control was an ex post facto descriptive correlational study. Polit and Hungler (1978) identified ex post facto research as those studies in which the independent variable is not directly manipulated by the researcher. Ex post factor research has been conducted after the variations in the independent variable have occurred in the natural course of events. A descriptive correlational study is a type of ex post facto research which aims to describe the relationship among variables (Polit & Hungler, 1978). This study examined the relationship between an individual's health locus of control orientation and performance of breast self-examination. Participants in this study were previously given instruction on breast self-examination and were given the Multidimensional Health Locus of Control Scales (Wallston, Wallston, & DeVellis, 1978) to determine health locus of control orientation.

Setting

The setting was a major metropolitan area with a population of approximately 2.7 million located in southeast

Texas. The research was conducted through a mail-out questionnaire to women who had been given BSE instruction by the American Cancer Society within a specified time period.

Population and Sample

The population used for this research included women given BSE instruction by nurses certified by the American Cancer Society. The BSE instruction occurred during March, 1985. The convenience sampling method was used. Questionnaires were mailed to 150 of those women given BSE instruction during the specified time period. The sample was comprised of 46 women who returned usable questionnaires.

Protection of Human Subjects

Written permission from the American Cancer Society was obtained prior to beginning the research (Appendix A). Although this study was exempt from Texas Woman's University Human Subjects Review Committee review, nonetheless their guidelines were followed. Participants were assured of their anonymity in the cover letter accompanying the questionnaire (Appendix B). It was not anticipated that any anxiety would occur among the participants when completing the questionnaire. No compensation, monetary or otherwise, was received by the participants. Return of the questionnaire was voluntary on the part of the participants and

completion and return of the questionnaires constituted informed consent to participate in this study.

Instruments

Two instruments, a questionnaire requesting demographic data and breast self-examination information and the Multidimensional Health Locus of Control Scales (Wallston et al., 1978) were used in this study (Appendix B). The questionnaire requested demographic variables of age and education as well as the frequency of breast self-examination.

The instrument, the Multidimensional Health Locus of Control Scales (Wallston & Wallston, 1978), was developed to provide specific information about the relationship between an individual's health behaviors and his belief about the health locus of control. Permission to use the questionnaire was obtained (Appendix C). The variable assessed by the MHLC Scales is the type and extent of control an individual believes he has over his own state of health. The scales measure an individual's belief that the source of reinforcements for health related behaviors is primarily internal, a matter of chance, or under the control of powerful others.

The Multidimensional Health Locus of Control Scales is a self-administered instrument which is comprised of two forms, A and B, either of which may be used. Form A was

used with this study. Both forms use a Likert-type scale response format and include 18 statements. The 6-point Likert-type scale uses the following responses: strongly disagree, moderately disagree, slightly disagree, slightly agree, moderately agree, and strongly agree. The 18-item tool reflects the three dimensions of health locus of control beliefs: internality (IHLC); powerful others (PHLC); and chance (CHLC) externality. Internal items or statements are those numbered 1, 6, 8, 12, 13, 17; chance items are 2, 4, 9, 11, 15, 16; and powerful others items are numbered 3, 5, 7, 10, 14, 18 (Wallston et al., 1978).

The formation of the tool and the selection of the items or statements were based on the following criteria (Wallston et al., 1978): (a) item mean close to 3.5, the midpoint; (b) wide distribution of response alternatives on the item; (c) significant item-to-a priori scale (minus the item) correlation; (d) low correlation with the measure of social desirability; and (e) item wording. Alpha reliabilities for the MHLC scales varied from .673 to .767; on Form A, the IHLC was .767, the PHLC was .673, and the CHLC was .753 (Wallston et al., 1978). High positive correlations with Levenson's scale on locus of control, according to Wallston and Wallston (1981), represented construct validity.

Data Collection

Prospective participants were selected from attendance sheets of BSE classes. Of those women who received BSE instruction during March, 1985, 150 were selected to participate in this study. Each individual was mailed a packet containing a letter describing the study and requesting her participation, a questionnaire about breast self-examination practices, the multidimensional tool, and a stamped, self-addressed envelope. No follow-up was necessary.

Treatment of Data

Demographic data were presented using percentages in each category to describe the sample. Scoring of the Multidimensional Health Locus of Control Scales yielded three scores: IHLC assessed internality and the two separate aspects of externality were assessed by PHLC and CHLC. Descriptive statistics utilized with these data were the mean and standard deviation of each of the three scores. Inferential statistics included the coefficient of correlation, Spearman's rho, to determine the relationship between performance and health locus of control belief. Spearman's rho is the appropriate correlational procedure when ordinal level data are involved (Polit & Hungler, 1978).

Additionally, the Kruskal-Wallis chi-square test was also used. A significance level of $p \leq .05$ was used in this study.

CHAPTER 4

ANALYSIS OF DATA

The purpose of this ex post facto descriptive correlational study was to examine the relationship between an individual's health locus of control orientation and performance of breast self-examination (BSE). This chapter presents the results of the study including a description of the sample and significant findings.

Description of Sample

The sample for the study consisted of 46 women who had received BSE instruction by a representative of the American Cancer Society. Age and educational level were the demographic variables collected (Table 1). Women in this sample varied in age from 21 years to over 60 years. Fourteen (30.4%) women were within the 21-30 year age range, and four (8.7%) were over 65 years of age. The mode for the sample's age was the 21-30 year group. The highest educational levels attained reported by the 46 participants varied from grade school to post graduate. The majority (30; 65.2%) reported some college or college graduate levels. Only one (2.2%) woman reported grade school and only two (4.3%) women reported post graduate level. The educational level of this

sample was bi-modal: college graduate and some college education levels.

Table 1

Frequency and Percentage of Age Ranges and Educational Levels Reported by 46 Women

Variable	Frequency	Percentage
<u>Age Range (Years)</u>		
21-30	14	30.4
31-40	12	26.1
41-50	11	23.9
51-60	5	10.9
Over 60	<u>4</u>	<u>8.7</u>
Total	46	100.0
<u>Highest Educational Level Attained</u>		
Grade School	1	2.2
Some High School	4	8.7
High School Graduate	9	19.6
Some College	15	32.6
College Graduate	15	32.6
Post Graduate	<u>2</u>	<u>4.3</u>
Total	46	100.0

Frequency of BSE for 5 months after instruction varied between never to more than five times (Table 2). An equal number of women (8; 17.4%) responded that they had performed BSE once, twice, three times, and five times,

respectively. The mean number of times performing BSE for the group was 3.261 with a standard deviation of 1.855.

Table 2

Frequency and Percentage of BSE Performance During 5 Months After Instruction Reported by 46 Women

Number of Times	Frequency	Percentage
Never	2	4.3
Once	8	17.4
Twice	8	17.4
Three Times	8	17.4
Four Times	5	10.9
Five Times	8	17.4
>Five Times	<u>7</u>	<u>15.2</u>
Total	46	100.0

The specified time of the BSE performance was reported by the majority (25; 54.4%) of the participants to be sporadically, and 2 (4.3%) respondents reported they had never performed BSE since they received instruction (Table 3). The mode for this data was the sporadic performance of BSE.

Findings

The research question in this study was: Is there a relationship between health locus of control and performance of breast self-examination in women who have received breast self-examination instructions?

Table 3

Frequency and Percentage of Distribution of Specified Time
of BSE Performance Reported by 46 Women

Specified Time of Performance	Frequency	Percentage
Never	2	4.3
Once a Month	11	23.9
2 or More Times a Month	8	17.4
Sporadically	<u>25</u>	<u>54.4</u>
Total	46	100.0

Data analyzed for this study included the participant's practice of BSE during the 5 months after the instruction and the completed Multidimensional Health Locus of Control Scales (MHLC) by each participant.

Scoring of the MHLC Scales yielded three scores on three dimensions of health locus of control beliefs: an internal control score, an external chance score, and an external powerful others score. Scoring of each dimension could yield a minimum score of 6 to a maximum score of 36. Results indicated that the majority (34; 73.9%) of the participants scored highest on the internal scale. Seven (15.2%) of the participants scored highest on the external chance scale, and 5 (10.9%) scored highest on the external powerful other scale.

The internal control scores had a range of 21, with a minimum score of 15 and a maximum score of 36. The mean was 25.348 with a standard deviation of 4.672. Table 4 summarizes the frequency and percentages of the internal control scores.

Table 4

Frequency and Percentage of Distribution of Internal Scores of 46 Women

Internal Score	Frequency	Percentage
15-16	2	4.4
17-18	1	2.2
19-20	2	4.4
21-22	9	19.6
23-24	5	10.8
25-26	8	17.4
27-28	6	13.0
29-30	6	13.0
31-32	6	13.0
33-34	0	0.0
35-36	<u>1</u>	<u>2.2</u>
Total	46	100.0
Mean	25.348	
Standard Deviation	4.672	

The external chance scores yielded a range of 20, with a minimum score of 6 and a maximum score of 26. The mean for the chance external scores was 16.130 with a standard

deviation of 5.496. Table 5 summarizes the external chance scores with the corresponding frequency and percentage.

Table 5

Frequency and Percentage of Distribution of External Chance Scores of 46 Women

External Chance Score	Frequency	Percentage
6-7	4	8.6
8-9	3	6.5
10-11	2	4.4
12-13	5	10.8
14-15	7	15.2
16-17	8	17.4
18-19	2	4.4
20-21	7	15.2
22-23	4	8.7
24-25	2	4.4
26-27	2	4.4
Total	46	100.0
Mean	16.130	
Standard Deviation	5.496	

The external powerful others scores had a range of 28, with a minimum score of 6 and a maximum score of 34. The mean for these scores was 17.109 and the standard deviation was 6.332. Table 6 summarizes the frequency and percentages of the external powerful others scores.

The statistical measures used to test the relationship between health locus of control orientation and frequency of

Table 6

Frequency and Percentage of Distribution of External
Powerful Others Scores of 46 Women

External Powerful Others Score	Frequency	Percentage
6-7	3	6.5
8-9	3	6.5
10-11	2	4.4
12-13	5	10.8
14-15	8	17.5
16-17	5	10.8
18-19	3	6.5
20-21	7	15.2
22-23	3	6.5
24-25	2	4.4
26-27	1	2.2
28-29	3	6.5
30-31	0	0.0
32-33	0	0.0
34-35	<u>1</u>	<u>2.2</u>
Total	46	100.0
Mean	17.109	
Standard Deviation	6.332	

BSE was the Spearman correlation coefficient. There was no significant relationship between the internal control and external chance scores and BSE performance ($p \leq .05$). A positive relationship existed between the external powerful other scores and BSE performance ($p < .022$). Participants with more frequent BSE performance had higher scores on the external powerful others dimension.

The Kruskal-Wallis test was also used in the analysis of data and was found to be not significant. Chi square was not significant at $p \leq .05$ ($X^2 = 2.0813$; $p = .3532$).

Summary of Findings

This chapter presented a description of the sample and the findings of the analyzed data. The majority of the participants were between the ages of 21 and 30 and had some college education or were college graduates. Frequency of BSE performance indicated that 28 of the participants had practiced BSE three or more times during the five months following instruction. The majority, or 54.4%, performed BSE sporadically, and 23.9% practiced BSE monthly. The Spearman correlation coefficient revealed a positive relationship between external powerful others scores and BSE practice. No relationship existed between internal control scores and external chance scores and BSE performance. The Kruskal-Wallis test was not significant.

CHAPTER 5

SUMMARY OF THE STUDY

The research question for this study examined the relationship of breast self-examination (BSE) behavior in women previously given BSE instruction and their health locus of control orientation. This chapter includes a summary of the study, a discussion of the findings, conclusions and implications based on these findings, and recommendations for further research.

Summary

This ex post facto descriptive correlational study investigated BSE practice and its relationship to health locus of control. Social learning theory, developed by Rotter (1954), provided the theoretical framework for this study. A primary focus in this theory is the concept of locus of control, or the degree to which an individual perceives that he has control over the rewards/reinforcers that occur relative to his behavior. Two degrees were identified: (1) internal--the individual perceives the rewards or reinforcers are a function of his behavior, and (2) external--the individual perceives the rewards or reinforcers are the result of luck, chance, or fate.

Of the women who had been instructed about BSE techniques in March, 1985, by a representative of the American Cancer Society, a convenience sample of 46 living in a major metropolitan area located in southeast Texas chose to complete and return the mailed questionnaire packet. A demographic data sheet requesting information on the variables of age, education, and BSE practices and the Multidimensional Health Locus of Control Scale (MHLC) were contained in the packet. The MHLC yielded three scores on the three aspects of health locus of control orientation: internality, chance externality, and powerful others externality.

Descriptive statistics were used to describe the sample and analyze BSE practices. The largest group (30.4%) in the sample were between the ages of 21 and 30 years and had some college education or were college graduates. Analysis of BSE practices revealed that 60.9% practiced BSE three or more times within the 5 months from the time of instruction to collection of data, although only 17.4% practiced BSE the recommended five times. Monthly BSE practice was conducted by 23.9% of the sample.

Data were analyzed by descriptive statistics, Spearman correlation coefficient, and the Kruskal-Wallis test. Level of significance was $p \leq .05$. No significant relationship was

found between BSE performance and internal control and external chance scores. However, a positive relationship existed between external powerful others scores' and BSE practice. The Kruskal-Wallis test was not significant.

Discussion of Findings

Discussion of the findings of this study is focused on BSE practices of the sample as well as the relationship of BSE practice to health locus of control orientation. The findings of this study indicated that locus of control and BSE performance were positively related in individuals with higher scores on the external powerful others scale. No significant relationship existed between internal control and external chance scores and BSE practice. These findings are contrary to that predicted by Social Learning Theory (Rotter, 1954) and those cited by other researchers. Social learning theory (Rotter, 1954) supports the prediction that internally controlled individuals (those who believe that reinforcement is contingent upon the individual's behavior) are more likely to engage in behaviors that facilitate physical well-being.

Wallston and Wallston (1978) reported that locus of control has shown some indication in predicting and explaining specific health related behaviors. Their studies have

shown that an individual with an internal control belief are more likely to engage in preventive health behaviors.

James, Woodruff, and Werner (1965) reported that smokers with high internal control scores were more likely to quit smoking. Hallal (1982) reported that BSE practitioners were less inclined to have an external powerful others orientation. A negative relationship was found between chance externality and health promotion activity (Brown, Muhlenkamp, Fox, & Osborn, 1983).

The findings of this study, however, did support several other findings from the literature. McCusker and Morrow (1979) found no significant relationship between locus of control and practice of preventive health behaviors. Hallal (1982) did not find BSE practitioners to have a higher score on internality. A study on locus of control and weight loss revealed that internals demonstrated more weight gain than externals (Gierszewski, 1983). Brown et al. (1983) reported no relationship between internality and health-related information-seeking behaviors.

Other findings relating to BSE practices of the sample in this study indicated that a majority were not performing monthly BSE. This finding was consistent with that reported by the Gallup organization (1974), which reported an 18%

practice rate among the population. These findings, however, were contrary to many reported in the literature. Studies by Stillman (1977), Kelly (1979), and McCusker and Morrow (1960) reported monthly BSE practice rates of 48%, 80%, and 40%, respectively. Reeder, Berkanovic, and Marcus (1980), Huguley and Brown (1981), and Shelley (1983) reported BSE monthly practice rates of 37%, 34%, and 39% of their samples. Authors (Edwards, 1980; Jones, 1978; Boyle, Michalek, Bersani, Nemoto, & Mettlin, 1981) investigating the effectiveness of BSE instruction also reported a much higher rate of BSE monthly performance after instruction.

Conclusions and Implications

The following conclusions were drawn by the investigator:

1. A substantial percentage of this sample do not practice monthly BSE.
2. The results of this study did not support predictions of social learning theory (i.e., internally controlled individuals are more likely to participate in health preventive behaviors)(Rotter, 1954; Wallston & Wallston, 1978) and findings by other researchers.

Several implications for nursing practice and nursing research were derived from this study. In nursing practice, follow-up of client educational programs is necessary to

evaluate teaching effectiveness. New approaches may be necessary to promote health promoting behaviors and emphasize their importance.

Nursing researchers must continue to investigate the construct of locus of control and its relationship to practice of preventive health behaviors. Alternate instructional techniques should be explored as to their effectiveness in individuals with different locus of control orientations. Further research is needed to examine other factors that influence an individual's practice of preventive health behaviors.

Recommendations for Further Study

The following recommendations for further research are suggested:

1. The study should be replicated with a larger sample and in another geographical area.
2. A study incorporating measurement of health value and locus of control with practice of BSE should be done.
3. A study investigating the relationship of several preventive health behaviors and locus of control should be undertaken.
4. A longitudinal study should be done to compare BSE practice prior to BSE instruction and BSE practice after the instruction.

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APPENDIX A
AGENCY APPROVAL

TEXAS WOMAN'S UNIVERSITY
COLLEGE OF NURSING
DENTON, TEXAS 76204

DALLAS CENTER
1810 INWOOD ROAD
DALLAS, TEXAS 75235

HOUSTON CENTER
1130 M. D. ANDERSON BLVD.
HOUSTON, TEXAS 77030

AGENCY PERMISSION FOR CONDUCTING STUDY*

THE American Cancer Society

GRANTS TO Janet L. Heilmann

a student enrolled in a program of nursing leading to a Master's Degree at Texas Woman's University, the privilege of its facilities in order to study the following problem:

Performance of Breast Self-Examination and Health
Locus of Control

The conditions mutually agreed upon are as follows:

1. The agency (may) (may not) be identified in the final report.
2. The names of consultative or administrative personnel in the agency (may) (may not) be identified in the final report.
3. The agency (wants) (does not want) a conference with the student when the report is completed.
4. The agency is (willing) (unwilling) to allow the completed report to be circulated through interlibrary loan.
5. Other _____

Date: 7/22/85

Janet L. Heilmann
Signature of Student

Edward (Heilmann)
Signature of Agency Personnel
Langene S. D. D.
Signature of Faculty Advisor

* Fill out and sign three copies to be distributed as follows: Original-Student;
First copy - agency; Second copy - TWU College of Nursing.

abc

APPENDIX B
QUESTIONNAIRE PACKET

April 20, 1985

Dear Participant:

I am a graduate student in nursing at Texas Woman's University and am presently completing degree requirements. Part of these requirements involves completing and analyzing a research study. My study will focus on the practice of breast self-examination and an individual's health beliefs. You were chosen to participate in this study because of your earlier participation in the breast self-examination program given by the American Cancer Society.

Enclosed you will find a questionnaire comprised of two parts. The first part deals with your breast self-examination practices since attending the breast self-examination program. The second part includes a tool focusing on health beliefs. The total time to complete both components should take approximately 10 minutes. Please return both parts of the questionnaire in the enclosed self-addressed, stamped envelope. For purposes of follow-up, if you choose not to participate in this study, please return the unanswered questionnaire in the enclosed envelope.

Your name is not to be included on the enclosed questionnaire and will in no way be included in the research paper. The results of this study will be given in group format only with no reference to any individual.

YOUR COMPLETION AND RETURN OF THE QUESTIONNAIRE CONSTITUTES YOUR CONSENT TO PARTICIPATE IN THIS STUDY.

If you have any questions regarding this study or completion of the questionnaire, please contact me at 277-3172 after 5 p.m. If you desire information regarding the results of this study, please contact me at the listed number in the Fall of 1985.

Thank you for your time and consideration.

Sincerely,

Janet L. Heilman, RN

Janet L. Heilman, RN

JLH/rb

QUESTIONNAIRE

Directions: Please fill in the spaces or place a ✓ in the appropriate blank in the following questions.

1. Age

- ☐ a. 20 years or under
- ☐ b. 21-30 years
- ☐ c. 31-40 years
- ☐ d. 41-50 years
- ☐ e. 51-60 years
- ☐ f. Over 60 years

2. Education (check highest level attained)

- ☐ a. Grade school
- ☐ b. Some high school
- ☐ c. High school graduate/GED
- ☐ d. Some college
- ☐ e. College graduate
- ☐ f. Post graduate

3. During the past five months, have you performed breast self-examination (please check one):

- ☐ a. Never
- ☐ b. Once
- ☐ c. Twice
- ☐ d. Three times
- ☐ e. Four times
- ☐ f. Five times
- ☐ g. More than five

4. These/this time(s) were/was performed (please check one unless a. Never was checked above)

- ☐ a. Once a month
- ☐ b. Two or more times in a month
- ☐ c. Sporadically (whenever I remembered)

MHLC Form A

This is a questionnaire designed to determine the way in which different people view certain important health-related issues. Each item is a belief statement with which you may agree or disagree. Beside each statement is a scale which ranges from strongly disagree (1) to strongly agree (6). For each item we would like you to circle the number that represents the extent to which you disagree or agree with the statement. The more strongly you agree with a statement, then the higher will be the number you circle. The more strongly you disagree with a statement, then the lower will be the number you circle. Please make sure that you answer every item and that you circle only one number per item. This is a measure of your personal beliefs; obviously, there are no right or wrong answers.

Please answer these items carefully, but do not spend too much time on any one item. As much as you can, try to respond to each item independently. When making your choice, do not be influenced by your previous choices. It is important that you respond according to your actual beliefs and not according to how you feel you should believe or how you think we want you to believe.

	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1. If I get sick, it is my own behavior which determines how soon I get well again.	1	2	3	4	5	6
2. No matter what I do, if I am going to get sick, I will get sick.	1	2	3	4	5	6
3. Having regular contact with my physician is the best way for me to avoid illness.	1	2	3	4	5	6
4. Most things that affect my health happen to me by accident.	1	2	3	4	5	6
5. Whenever I don't feel well, I should consult a medically trained professional.	1	2	3	4	5	6
6. I am in control of my health.	1	2	3	4	5	6
7. My family has a lot to do with my becoming sick or staying healthy.	1	2	3	4	5	6
8. When I get sick, I am to blame.	1	2	3	4	5	6
9. Luck plays a big part in determining how soon I will recover from an illness.	1	2	3	4	5	6
10. Health professionals control my health.	1	2	3	4	5	6
11. My good health is largely a matter of good fortune.	1	2	3	4	5	6
12. The main thing which affects my health is what I myself do.	1	2	3	4	5	6
13. If I take care of myself, I can avoid illness.	1	2	3	4	5	6
14. When I recover from an illness, it's usually because other people (for example, doctors, nurses, family, friends) have been taking good care of me.	1	2	3	4	5	6
15. No matter what I do, I'm likely to get sick.	1	2	3	4	5	6
16. If it's meant to be, I will stay healthy.	1	2	3	4	5	6
17. If I take the right actions, I can stay healthy.	1	2	3	4	5	6
18. Regarding my health, I can only do what my doctor tells me to do.	1	2	3	4	5	6

APPENDIX C
AUTHOR'S PERMISSION

VANDERBILT UNIVERSITY



NASHVILLE, TENNESSEE 37240

TELEPHONE (615) 322-7311

Health Care Research Project • School of Nursing • Direct phone 322-2320

Dear Colleague:

Thank you for your interest in our Health Locus of Control Scales. Please excuse this form response, but we have so many inquiries requiring similar replies that we have found this to be an efficient means of disseminating information.

You have our permission to utilize the scales in any health related research you are doing. Our only request is that you keep us informed of any results you obtain using the scales. In that way we hope to continue to serve as a clearinghouse for information about the scales.

We recommend using the more recently developed Multidimensional Health Locus of Control Scales (Health Education Monographs, 6, Spring, 1978, pp. 160-170) over the earlier, unidimensional HLC Scale (Journal of Consulting and Clinical Psychology, 1976, 44, 580-585), since the newer measures are psychometrically superior and potentially more useful.

If you wish to be added to our mailing list or want us to send you additional material, please complete the enclosed interest questionnaire. We hope to periodically send additional material related to use of these scales as it becomes available.

If you have more specific questions, don't hesitate to contact us. Please remember to send us information on any use you make of our scales. We have included a usage questionnaire to facilitate your doing so. We look forward to hearing from you.

Sincerely,

Kenneth A. Wallston, Ph.D.
Professor of Psychology
in Nursing
School of Nursing
Vanderbilt University
Nashville, TN 37240
(615) 322-2813

Barbara Strudler Wallston, Ph.D.
Professor of Psychology
George Peabody College
of Vanderbilt University
Nashville, TN 37203
(615) 322-8220

February 2, 1985

Kenneth A. Wallston, Ph.D.
School of Nursing
Vanderbilt University
Nashville, Tenn. 37240

Dear Dr. Wallston:

I am a graduate student at Texas Woman's University in Houston, Texas. I have completed course requirements for the Master of Science degree and am currently working on thesis requirements. My thesis committee includes Dr. Lorraine Wolf, Chairman, Dr. Elizabeth Anderson, and Dr. Carol Adamson.

My thesis topic is concerned with the relationship of locus of control and performance of breast self-examination. The study will be a nonexperimental correlation design and will utilize a population of women previously taught BSE by the American Cancer Society. I wish to utilize your tool, Multidimensional Health Locus of Control Scale, as the instrument in measuring the participant's belief about the locus of health control. I request your permission to use your instrument in this study and would appreciate any information as to its development, reliability and validity. Thank you.

Sincerely,

Janet Heilman RN, BSN

Janet Heilman, RN, BSN