Title
Development of a cancer specific locus of control scale

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DEVELOPMENT OF A CANCER-SPECIFIC LOCUS OF CONTROL SCALE

by

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Abstract

The need for a disease-specific locus of control (LOC) scale has been addressed in the literature. Researchers indicate that cancer patients have difficulty distinguishing between generalized illness as measured by the Multidimensional Health Locus of Control (MHLC) scale and the onset of the cancer experience. The purpose of this methodological study was two-fold: to develop a Cancer Health Locus of Control (CHLC) scale and to compare responses on this scale with responses on the currently used MHLC. The subjects were 30 cancer outpatients who were receiving chemotherapy. Both male and female patients in Weisman's Stage II of psychosocial phases of fatal disease were included in this study. In this nonrandomized sample, a comparative cross-over design was utilized. Fourteen patients received the MHLC scale at the first interview and the CHLC scale one week later. The remaining 16 patients received the CHLC scale at the first interview and the MHLC scale one week later.

The CHLC scale was derived from the MHLC scale. Items continued to measure internal-external dimensions of reinforcement. Cronbach's alpha was utilized to achieve reliability coefficients for each scale. Correlational analyses were done between each scale and the demographic data. A dual approach to determining convergent-discriminant validation was done using the multitrait-multimethod matrix. The CHLC scale did not measure Wallston et al.'s 1978 construct of LOC as well as the MHLC scale. Subjects did, however, indicate a preference for the wording of the CHLC scale.

SUMMARY

The Multidimensional Health Locus of Control (MHLC) scale has been utilized to measure generalized beliefs of sources of reinforcement for health-related behavior. Nursing researchers in the cancer setting have used the MHLC and found that patients with cancer had difficulty with the wording of some scale items. Developers of this general scale have indicated that future locus of control (LOC) research be directed toward the development of disease-specific LOC measures. The need for such a cancer-specific measure exists. This methodological study addressed the issue of tool development, specifically, a Cancer Health Locus of Control (CHLC) scale. A comparative cross-over design was utilized to determine the relationship between the subjects' MHLC and CHLC scores and to identify demographic variables which influenced the MHLC and CHLC scores. Recommendations for future research were made.

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CHAPTER I

THE STUDY PROBLEM

Introduction to the Problem

Researchers in the health care professions historically and currently have attempted to measure phenomena in patient populations using instruments developed from nonpatient populations. The completion of these instruments by patients can be awkward in that particular items (or the entire instrument) appear to not consider the "illness" experience of these patients. This is not surprising when the normative samples used to develop, test, and refine instruments have frequently been undergraduate college students. Some investigators have included specific patient samples to establish the reliability and validity data within these populations. However, the items in these instruments may or may not be altered from the normative nonpatient sample to patient samples. Furthermore, not all patient populations are directly comparable, depending on the phenomena being measured.

Nursing researchers in the cancer setting have attempted to measure locus of control (LOC) by using Wallston and Wallston's (1981) Multidimensional Health Locus of Control (MHLC) scale, a scale developed to measure generalized beliefs. The normative samples have included undergraduate college students and psychiatric outpatients. Patients with cancer encounter difficulty with this scale. They do not know if

the terms "illness" and "sickness" in the stem of the questionnaire items should be answered in a general (prior to cancer diagnosis) or in a specific (after the cancer diagnosis) manner. They report their responses would be different depending on which frame of reference they used (Dodd, 1983).

Such experiences made clear the need for further determination of the usefulness of the MHLC construct for use within the cancer patient population. This paper addresses the development of a modified version of the MHLC specifically designed for cancer patients.

Statement of the Problem

Utilizing instruments developed from nonpatient populations is confining for patients and perhaps imprecise for health care researchers.

Purpose of the Study

The purposes of this methodological study are two-fold: to develop a Cancer Health Locus of Control (CHLC) scale and to compare the responses of patients with cancer to the MHLC scale with those of the CHLC scale.

Need for the Study

Wallston and Wallston (1981) indicated that further research should be directed toward the development of disease-specific LOC measures. Rotter (1975) indicated that, in specific situations where each slight increment in predictability may have important consequences, scales measuring specific expectancies for personal control relevant to the

situation might be more useful than a generalized scale. The need for specific measures of LOC expectancies in the area of cancer exists. Such a measure would ensure increased predictability and ultimately may have practical advantages for improved health care.

Assumption Underlying the Study

There are two assumptions that underlie this study: 1) that subjects are able to differentiate conceptually between cancer-specific responses as represented in the CHLC scale from general responses to sickness and illness as represented in the MHLC scale; 2) that subjects will answer the CHLC scale differently than the MHLC scale.

Specific Aims of this Research

1. To determine the relationship between the subject's MHLC and CHLC responses.
2. To identify demographic variables which influence MHLC and CHLC responses.

Definition of Terms

In order to provide clarity, the terms frequently used in this study are defined.

Locus of Control (LOC). The psychological construct of LOC is a cognitive variable related to individual expectancies about the outcomes of actions (Lefcourt, 1976; Phares, 1976; Rotter, 1966). Internals (I) believe that their own behaviors or their own characteristics determine outcomes while externals (E) believe that outcomes are

determined by luck, fate, chance, or powerful others; together, these constitute the I-E expectancies.

Instruments Used in the Study

Multidimensional Health Locus of Control (MHLC). This instrument contains subscales which have been developed to determine beliefs that the source of reinforcements for health-related behaviors is primarily internal (IHLC), a matter of chance (CHLC), or under the control of powerful others (PHLC) external to the person (Wallston, Wallston, & Devellis, 1978). Appendix A contains Form A of the MHLC scale.

Cancer Health Locus of Control (CHLC). This scale was developed by the author. It contains subscales which have been developed to determine beliefs that the source of reinforcement is primarily internal (IHLC), a matter of chance (CHLC), or under the control of powerful others (PHLC) external to the person. It consists of personally worded items paralleling Wallston and colleagues' (1981) MHLC scale. The terms "sickness" and "wellness" in the MHLC questionnaire have been substituted with "cancer" in the CHLC questionnaire. Appendix B contains the CHLC scale.

Karnofsky Performance Scale. This scale measures the subject's perceived disability in performing activities of daily living (Karnofsky, 1952).

Psychological Phases of Cancer. Weisman (1979) defined these phases as: Stage I, primary recognition, covers the period from a patient's first awareness that something is wrong to the time of diagnosis; Stage II is the time when disease is established, initial

diagnosis to the terminal period; Stage III, final decline, begins when a patient undergoes unmistakable decline toward death. Subjects for this study were selected from Stage II.

CHAPTER II

REVIEW OF THE RELEVANT LITERATURE

Locus of control (LOC) is a construct derived from social learning theory that suggests the likelihood of behavior's occurrence is a function of the expectancy that a behavior will lead to an outcome and the reward value of the outcome (Rotter, 1966).

The internal-external (I-E) control of reinforcement dimension is an expectancy variable. The I dimension refers to the degree to which an individual perceives the events that happen to him/her as dependent on his/her own behavior. The E dimension refers to the degree to which an individual perceives the same events to be a result of luck, chance, fate, or powers beyond one's personal control and understanding (Lefcourt, 1976; Phares, 1976; Rotter, 1954; Rotter, Chance, & Phares, 1972; Strickland, 1977).

The I-E dimension is a generalized expectancy that occurs when individuals have learned that events are contingent or noncontingent on their behavior. Individuals holding internal expectancies are more likely than externals to take responsibility for their actions (Davis & Davis, 1972; Phares, Wilson, & Klyver, 1971). Research on social actions suggests that individuals who believe that events are related to their own behaviors are more likely than persons trusting fate or powers beyond their control to take steps to change aversive life situations

(Gore & Rotter, 1963; Levenson & Miller, 1976; Pawbicki & Almquist, 1973; Sanger & Alger, 1972; Strickland, 1965).

Several instruments to assess generalized I-E have been devised. Those which are most relevant to this study were developed by Rotter, Wallston and colleagues, and Levenson. Rotter's (1966) scales measured generalized I-E as one dimension, which is designed to yield a single score (the higher the score, the more external is the belief about control). The Wallstons developed a Health Locus of Control (HLC) scale, designed much like Rotter's, which also measured one dimension of I-E (Wallston, Wallston, Kaplan, & Maides, 1976). Levenson (1973) developed a scale which measured three distinct dimensions of LOC. In addition to measuring internality (I), she contended that externality consisted of at least two separate dimensions: chance (C) and powerful others (P). Levenson's success at measuring three dimensions convinced Wallston and colleagues to reconceptualize the HLC along multi-dimensional lines paralleling Levenson's work and to develop a new instrument which consisted of personally worded items, i.e. "I am in control of my health" (Wallston, Wallston, & Devellis, 1978). Subsequently Wallston and colleagues developed the MHLC.

The research relevant to this study is related to chronic disease and cancer. The following studies provide a chronological overview. Wendland's (1973) study of 80 males, 18-35 years of age, with musculoskeletal impairment demonstrated that subjects disabled for less than one and one-half years had increased externality when compared to subjects disabled three years or longer. He suggested that disabled persons have a tendency to expect increased direction from external forces during initial periods following disability.

Spinal cord injury patients perceived chance forces as controlling their lives in comparison with noninjured adult males. In the patient sample, there were no significant differences on expectations of control by self or others. The assumption held by the investigators is that the patients may have adopted a more randomly ordered view of the world in order to rationalize the cause of their injury (Shadish, Arrick, & Hickman, 1979).

Greber (1979) explored personality variables as factors in carcinogenesis. The sample consisted of 35 women with cancer and a control group of 35 women within the same age range (35-60), matched as to race, education, and socioeconomic background but without the diagnosis of cancer. Regarding the LOC, the internal subscale showed a significant difference between group means at the .05 level of significance, the cancer group being lower on the I subscale (cancer: 32.7; noncancer: 37.5). The other two subscales showed no significant difference between the two groups. Greber could not conclude that the tendency towards externality was due to the disease process. However, her data did support her hypothesis that there may be a premorbid personality profile associated with the individual who develops cancer (Levenson, 1981).

Achterberg, Lawlis, Simonton, and Matthews-Simonton (1977) administered Levenson's I, P, and C scales to 126 predominantly advanced-disease cancer patients. They studied the relationship between psychological factors and blood chemistries as predictors of disease outcome. The results showed that psychological factors did predict follow-up disease status but blood chemistries did not. Powerful other and chance oriented patients viewed their bodies as unable to fight

disease, used denial, and were dependent upon others. They were more likely to have a poor disease prognosis. In a comparison of psychological factors with blood chemistries, it is suggested that monocytic reactions are related to lower feelings of control by chance factors. These are unusual findings but an indication of the positive value of a chance oriented LOC in patients with advanced disease (Achterberg et al., 1977).

Wortman and Dunkel-Schetter (1979) noted that internal beliefs may be maladaptive for some people with cancer if there is nothing that they can do about their condition. High internals might attempt to alter the course of their condition (fly to Mexico to obtain Laetril or some other "cure") or they might refuse possibly effective treatment (chemotherapy or radiation) made available by "powerful others" (Wallston & Wallston, 1981).

Burrish and colleagues (1979) studied 29 outpatient chemotherapy patients to determine their scores on the MHLC. The group mean scores were 21.83, 19.31, and 23.93 for I, C, and P subscales respectively. This author was unable to obtain any other data because the study is unpublished (Burrish et al., 1983).

Dodd (1983) utilized the MHLC as a potential moderator variable in a study of 30 breast cancer patients, to examine its relationship to the management of side effects from chemotherapy. The MHLC scales were measured at the initial interview and on the second interview six to eight weeks later. The initial subscale scores were 26.3 for Internal, 19.5 for Chance, and 19.9 for Powerful Others. Subscale scores were found to be nonsignificant as a potential moderating variable in

measuring self-care behaviors used by patients to manage the side effects of chemotherapy.

There appear to be major consistencies in patients suffering serious diseases such as cancer and spinal cord injury. Lower perceptions of the role of powerful others in controlling outcomes are related to longer survival and better adjustment (Gore & Rotter, 1963; Levenson & Miller, 1976; Pawbiki & Almquist, 1973; Sanger & Alger, 1972; Strickland, 1965). It appears that internality is an important factor in some studies, but teaching it (e.g. visualization techniques) alone may not be particularly effective for increasing one's well-being and recovery (Carlson, 1978; Levenson, 1981; Strickland, 1978).

Conceptualizing LOC as a multidimensional rather than a unidimensional construct makes it difficult to place a person into pure internal, chance, or powerful other categories. People are simply more complex that this and their focus shifts, dependent upon the situation in which they find themselves. Also, since each dimension is statistically independent of another, it is possible that a given person can simultaneously score high on two or even three dimensions. The Wallstons have provided a typology to demonstrate this (Appendix C). What is clear is that future research must take into account the actual situational potential for control, patients' perceptions and expectancies regarding control, and the expectancies of health care providers. A study of such complex interactions will enable one to predict health behavior and, hopefully, intervene effectively to enhance health (Wallston & Wallston, 1981).

The proposed study attempted to document patients' perceptions and expectancies regarding control within the specific context of the cancer experience.

CHAPTER III

METHODOLOGY

Research Method

In this methodological study, a comparative cross-over design was used to obtain descriptive data on 30 patients with cancer. The subjects constituted a nonrandomized convenience sample. Half of the sample was given the MHLC scale on the first interview, then one week later the CHLC scale. Subsequently, the other half of the sample received the CHLC scale on the first interview, then one week later the MHLC scale (see Figure 1). The cross-over design is appropriate to limit the threat to internal validity in a test-retest study condition.

Setting

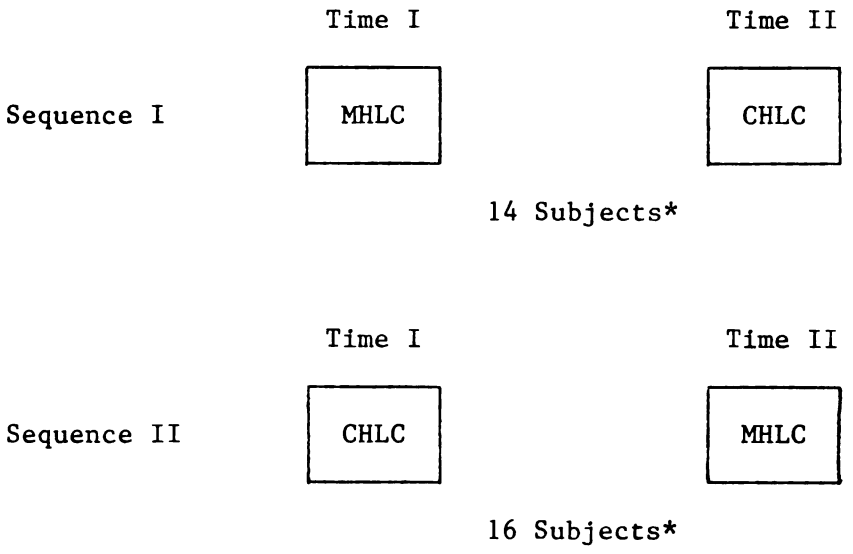
The subjects were selected from the outpatient department of a Hematology/Oncology Clinic in the greater San Francisco Bay Area. The clinic has approximately 50 patients visits per day and is associated with a major university hospital.

Sample

The first 30 subjects who met the study criteria were selected from the previously described setting. There were no subjects who did not agree to participate. Incomplete data from one subject resulted in analysis on scale items to reflect 29 subjects' responses.

FIGURE 1

Cross-Over Design for MHLC and CHLC
Scale Administration



*Note: 15 subjects were to be placed in Sequence I; however, one of the first 15 subjects refused to answer the MHLC at Time I, but consented to answering the CHLC scale, resulting in 16 having received the CHLC at Time I, Sequence II.

Criteria for sample selection. The criteria for sample selection were the following:

1. Diagnosis of cancer on medical chart
2. Mentally competent
3. Physically able to participate: Karnofsky Performance Scale at 70% or above (Karnofsky, 1952)
4. Able to read and write the English language
5. Weisman's Stage II of psychosocial phases of cancer
6. Currently receiving chemotherapy.

Human subjects assurance. In order to protect the subjects' anonymity and confidentiality, questionnaires were assigned code numbers; the code was maintained separately from the data. The investigator also emphasized that participation (or refusal to do so) would not influence the potential subject's care. The subjects were informed that they could withdraw from the study at any time. This study was reviewed and approved by the University of California, San Francisco Human Subjects Committee. Refer to Appendix D for the Explanation of the Consent Form and Appendix E for the Consent Form.

Demographic data. Personal information that was felt to be pertinent to the study was obtained from each subject. The following data were obtained from the subjects' medical records: age, sex, race, physician, medical diagnosis other than cancer, other medications (excluding chemotherapy) subject was taking, cancer diagnosis, cancer prognosis, date chemotherapy started, chemotherapy agents, other cancer treatment subject was receiving concurrent with chemotherapy, and other cancer treatment patient received previous to initiation of current chemotherapy. The following data were obtained from the subject during the initial interview: date when cancer diagnosis was told to subject, cancer prognosis, and performance status. The investigator also recorded the site of the first interview. The demographic data for the 30 subjects are summarized in Table 1. Two of the 30 subjects scored less than 70 percent on the performance scale and two subjects were not on chemotherapy, which was a violation of the study criteria. The two subjects scoring less than 70 percent on the performance scale were included in the study since they met the study criteria in every other respect and also to achieve an n close to 30 for statistical consider-

TABLE 1

Characteristics of Patients Included in the Study
to Determine Locus of Control
(n = 30)

Characteristic	n	%
Age		
20-29 years	6	19.8
30-39 years	5	16.5
40-49 years	5	16.5
50-59 years	4	13.2
60-69 years	6	19.8
70-79 years	4	13.2
Years of Education		
0-12 years	18	59.4
13-16 years	10	33.0
17-21 years	2	6.6
Sex		
Female	19	63.3
Male	11	36.7
Race		
White	27	90.0
Other	3	10.0
Occupation		
Lower Blue Collar	10	33.3
Professional	8	26.7
Homemaker	6	20.0
Retired	3	10.0
Unemployed	2	6.7
Student	1	3.3
Medical Diagnosis Other than Cancer		
None	19	63.3
Musculoskeletal	3	10.0
Cardiovascular	2	6.7
Endocrine	1	3.3
Medical Diagnosis (continued)		
Endocrine-Cardiovascular	1	3.3
Endocrine-Reproductive	1	3.3
Ear-Nose-Throat	1	3.3
Musculoskeletal-Cardiovascular	1	3.3
Vascular	1	3.3
Cancer Diagnosis		
Leukemia	7	23.3
Gastrointestinal	6	20.0
Breast	5	16.7
Gynecology	2	6.7
Lymphoma	2	6.7
Multiple Myeloma	2	6.7
Sarcoma	2	6.7
Bone	1	3.3
Lung	1	3.3
Melanoma	1	3.3
Unknown Primary	1	3.3
Time Since Cancer Diagnosis		
1 year	9	30.0
1-2 years	12	40.0
2-3 years	1	3.3
3-4 years	3	10.0
4-5 years	1	3.3
5 years	4	13.3
Stage of Disease		
Limited	21	70.0
Advanced	9	30.0
Duration of Chemotherapy		
0-7 months	15	53.5
8-36 months	13	46.5

TABLE 1 (continued)

Characteristic	n	%
Previous Cancer Treatment		
Surgery	8	26.7
Surgery and Radiation	7	23.3
Radiation	5	16.7
None	3	9.9
Chemotherapy	2	6.7
Surgery-Radiation and Immunotherapy	2	6.7
Radiation and Chemotherapy	1	3.3
Surgery and Chemotherapy	1	3.3
Surgery-Radiation and Chemotherapy	1	3.3
Performance Status at Initial Interview		
30-49	1	3.3
50-69	1	3.3
70-89	18	60.0
90-100	10	33.3

ations. The two subjects not receiving chemotherapy had recently discontinued treatment and the experience of chemotherapy was felt by the investigator to be recent enough for these subjects to participate. The remaining 28 subjects were receiving from one to six chemotherapeutic agents ($\bar{X}$ = 2.37). Fifteen subjects had received chemotherapy from 0 to 7 months, the remaining 13 subjects from 8 to 36 months. Of this sample, 53.3 percent took no other drugs besides chemotherapy, and 46.7 percent were taking from one to seven other drugs. No other disease was found in 63.3 percent of the subjects; however, 6.6 percent had two concomitant medical diagnoses, and the remaining 30.1 percent had one other medical diagnosis. Eighteen

subjects had either gastrointestinal, breast, or leukemia as the primary cancer diagnosis. Nine patients were diagnosed less than one year previous and 12 patients from one to two years previous.

Of the 30 subjects interviewed, 21 had limited disease and nine had advanced disease. Of the 28 subjects receiving chemotherapy, 23 felt that the purpose of receiving chemotherapy was to cure their disease, one did not think it was for cure, and four were unsure.

Techniques of Data Collection

Recruitment of subjects. The investigator contacted the oncologist and explained the proposed study. The oncologist asked potential subjects for permission to give their names and phone numbers to the investigator. The investigator contacted the potential subjects by phone and explained the study to them. If they agreed to participate, at the time of the first interview they received a written explanation of the consent form, a copy of their signed consent form, and the Experimental Subject's "Bill of Rights" (see Appendix F).

Compensation to subjects. As compensation for the subjects' time and inconvenience, the investigator offered to send a summary of the results of the study to each participant.

Protocol. Each subject participated in two interviews, which were approximately 15 minutes in length. All interviews were conducted by the investigator. Most of the interviews occurred at the outpatient clinic. The choice of the location depended on what was convenient for the subject. At Time I, all 30 subjects were seen at the outpatient clinic. At Time II, 26 subjects were seen in the outpatient clinic, one subject in the hospital, and three were seen in their homes. The mean

number of days between interviews was 7.5, with a range of 4 to 14 days. The first 15 subjects were assigned Sequence I (MHLC then CHLC) and the subsequent 15 subjects were assigned Sequence II (CHLC then MHLC). The data were collected from July to September 1982.

Instruments

Demographic questionnaire. A modified version of the questionnaire developed by Dodd and Mood (1981) and Dodd (1982) was used by the investigator. It consisted of 18 items requesting demographic information about each subject (Appendix G). Questions about occupation and education also were asked (Appendix H).

Multidimensional Health Locus of Control (MHLC). Wallston and Wallston (1981) developed two equivalent forms of the instrument to measure generalized MHLC. Each instrument has 18 items, six items each for the subscales of I, P, and C expectancies. It consists of personally worded items which are geared toward an eighth-grade reading level (calculated using the Dale-Chall formula, 1948). The scales were developed in the following manner. In booklet format, 81 health-related locus of control items were interspersed with Levenson's I, P, and C scales, a shortened 10-item version of the Marlowe-Crowne Social Desirability Scale, and two items tapping health status. All items utilized a six-point Likert-type format ranging from "strongly disagree" (scored 1) to "strongly agree" (scored 6). A sample of 115 people, all above age 16 and waiting at gates in a metropolitan airport, completed the questionnaire. Separate item analyses were run on the pool of IHLC, PHLC, and CHLC items. Selection of items which constitute the new MHLC scales met the following criteria: 1) item mean close to 3.5, the

midpoint; 2) wide distribution of response alternatives on the items; 3) significant item-to-a priori scale (minus the item) correlation; 4) low correlation with the measure of social desirability; and 5) item wording (i.e., did the item measure the dimension it purported to measure). This latter correlation was used for the purpose of constructing equivalent forms of the new scales (Wallston, Wallston, & Devellis, 1978).

Since the development of the tool, it has been used in at least eight research studies with a total of 2,140 adults completing Form A. Test-retest reliability was 0.688 for the Internal subscale, 0.745 for the Powerful Other subscale, and 0.687 for the Chance subscale. The instrument has concurrent validity in that there is a positive correlation between a high score on the Internal subscale and good health status (Wallston & Wallston, 1981)

The intercorrelations of the MHLC scales (Wallston & Wallston, 1981) and the I, P, and C scales (Levenson, 1981) are such that the I scale is negatively correlated with the C and P scales and the C and P scales are highly correlated with each other (Appendix I).

Cancer Health Locus of Control (CHLC). The CHLC is a parallel form of the Wallston MHLC scale; items continue to measure I, P, and C but are reworded to be cancer-specific, e.g. MHLC version: "No matter what I do, if I'm going to get sick, I will get sick"; CHLC version: "No matter what I do, if I'm going to get worse from my cancer, I'll get worse." Similar to the Wallston instrument, the CHLC has 18 items, six items each to measure the subscales of I, P, and C expectancies (Appendix J). The score on each subscale is the sum of the values

circled for each item in that subscale (Appendix K). The possible range of scores for each subscale is 6 to 36.

Validity, reliability, utility. In the original development sample, the alpha reliabilities for the MHLC scales ranged from .67 to .77 and were found to be "more or less statistically independent" (Wallston & Wallston, 1981, p. 195).

In a sample of persons with epilepsy, correlation of the MHLC scale with Levenson's I, P, and C scales were computed to investigate the concurrent and discriminant validity of the MHLC scales (Wallston & Wallston, 1981). Resulting coefficients were .43 for Internal, .37 for Powerful Others, and .59 for Chance. These were all statistically significant.

The content validity of the CHLC scale was established by having a panel of experts, including Levenson, critique the scale. They agreed that the scale has content validity and is constructed to measure the three dimensions of IHLC, PHLC, and CHLC in cancer patients. A pilot study of five subjects was conducted, and the results indicated no revisions were needed.

Limitations and Delimitations

A convenience sample which was not randomized was interviewed in this study, therefore increasing threats to internal validity.

The sample was selected from an outpatient clinic and interviewed over a certain period of time. There may have been factors present in this clinic or in that time period that influenced subjects' responses that would not otherwise be present. All of these factors will limit the generalizability of this study.

The investigator administered all the instruments to the subjects, which provided uniformity and standardization; however, investigator bias is possible.

CHAPTER IV

RESULTS

The purposes of this study were two-fold. The first was to develop a Cancer Locus of Control scale. The second was to compare the patients' responses to the MHLC scale with those of the CHLC scale. This chapter will report the results of the descriptive and inferential analyses conducted to the second purpose.

The range of obtained patient scores for each of the Wallston and colleagues' three subscales of the MHLC was 7 to 26. The Internal dimension of the MHLC scores ranged from 16 to 33 ($\bar{X}$ = 25.6); the MHLC Chance scores ranged from 7 to 34 ($\bar{X}$ = 16.7); and the MHLC Powerful Others scores ranged from 14 to 36 ($\bar{X}$ = 26.1). The range for the CHLC subscales was 6 to 35. The CHLC Internal scores ranged from 14 to 33 ($\bar{X}$ = 24); the CHLC Chance scores ranged from 6 to 29 ($\bar{X}$ = 18.8); and the CHLC Powerful Others scores ranged from 14 to 35 ($\bar{X}$ = 25) (see Table 2).

Information on the consistency (reliability) and validity characteristics of the instruments was derived from 29 subjects. The alpha reliability coefficients for the CHLC were lower than for the MHLC across the three subscales (see Table 3).

TABLE 2

Mean and Standard Deviation of MHLC and CHLC Scores

MHLC Scales*	Mean	SD
Internal	25.6	4.53
Chance	16.7	6.49
Powerful Others	26.1	6.70
CHLC Scales*		
Internal	24.0	5.08
Chance	18.8	5.32
Powerful Others	25.0	5.34

* MHLC: n = 30; CHLC: n = 29

TABLE 3

Multitrait-Multimethod Matrix
(n = 29)

		MHLC			CHLC		
	Trait	I_1	C_1	P_1	I_2	C_2	P_2
MHLC	I_1	(.65)					
	C_1	-.11	(.72)				
	P_1	-.15	.42	(.75)			
CHLC	I_2	.49*	.00	-.10	(.63)		
	C_2	-.21	.33	.00	.27	(.62)	
	P_2	-.02	.15	.56*	.13	.17	(.48)

Note: Each subscale had six items. The validity diagonals are the set of underlined values. The reliability diagonals are the two sets of values in parentheses. Each heterotrait-monomethod triangle is enclosed by a solid line. Each heterotrait-heteromethod triangle is enclosed by a broken line.

* $p < .005$

Pearson correlation coefficients were calculated to determine the construct validity between the relevant subscales of the MHLC and CHLC instruments (see Table 3). Spearman correlation coefficients were computed to determine the correlation of both scales with the following demographics: age, time since diagnosis, years of education, and duration of time on chemotherapy. Correlations with the MHLC subscales indicated a negative relationship between age and the I subscale ($r = -.406$, $p = .026$). Correlations with the CHLC subscales showed that age also was negatively correlated with the I subscale ($r = -.523$, $p = .004$). There was no signficant correlation between the scales and years of educatin or duration of time on chemotherapy. Correlation with the MHLC subscales indicated a negative relationship between the length of time since diagnosis and the I subscales ($r = -.374$, $p = .042$).

There were six two-sample t-tests done for performance status, comparing patients who had a performance score of 90 percent or better with patients who had a lower than 90 percent score for each of the six subscales. The only difference found was on the CHLC Chance subscale where patients with a lower performance status scored higher ($\bar{X} = 20.3$) than patients with a higher performance score ($\bar{X} = 16$) ($t_{(27)} = -2.21$, $p = .035$).

There were also six two-sample t-tests performed comparing the order in which the tests were given. The order significantly affected only the MHLC P subscale. Patients who received the MHLC instrument at the second interview scored significantly higher on the Powerful Others subscale ($\bar{X} = 28.6$) than patients who completed the MHLC instrument at the first interview ($\bar{X} = 23.2$) ($t_{(28)} = -2.37$, $p = .025$).

CHAPTER V

DISCUSSION

Chapter V includes a discussion of the research findings and their application to the study problem. Review of the literature and preliminary work by the investigator established the need for development of a cancer-specific measure of locus of control. The limitations and implications for nursing practice of this study will be delineated and recommendations for further research will be made.

The Multitrait-Multimethod Matrix (Table 3) summarizes the reliability and validity results of the MHLC and CHLC instruments as they apply to the sample.

The Chronbach alpha reliability coefficients of the MHLC in this study range from .65 to .75. These results are similar to those found by Wallston in the original sample, ranging from .67 to .77.

The internal consistency estimates for the CHLC subscales were uniformly lower than for the MHLC subscales. The reliabilities obtained for the CHLC were .63, .62, and .48 for the I, C, and P subscales respectively. The Powerful Others subscale clearly had items that did not measure that phenomenon.

The correlations of the CHLC with the MHLC for the three subscales are defined to be the validity coefficients. Anastasi (1961) says "that to satisfy construct validity, the validity coefficients should be

higher than the correlations between different traits measured by different methods" (p. 119) (i.e. the correlations shown within the dashed triangle, Table 3). The data from the study population demonstrated this.

The validity coefficient "should also be higher than the correlations between different traits measured by the same method" (Anastasi, 1961, p. 119) (i.e. the correlations within the solid triangles, Table 3). In the study sample, the Chance score for the MHLC was more highly correlated with the Powerful Other score than it was with Chance in the CHLC. This indicates a possible weakness in the Chance subscale of the CHLC. For satisfying construct validity this was the only unexpected result that was obtained.

There is agreement between the Internal and Powerful Others subscales on the MHLC and CHLC scales. Correlation of the two Chance subscales is not statistically significant; however, there is evidence of some relationship between these scales. This may reflect that people cannot differentiate the MHLC and CHLC subscales on the I and P but can on the C. Or perhaps their LOC focus before or after the cancer diagnosis on the I and P subscales remained consistent. In a personal communication with Wallston (May 1983), he indicated a trend seen with cancer patients in that their I and P scores were consistently higher (I = 22-23; C = 18-20; P = 24-26) than their C scores.

Table 5 provides comparative mean scores for each subscale using Dodd's (1983) breast cancer sample and Burrish and colleagues' (1979) outpatient chemotherapy group. When comparing the present subjects' responses with Burrish et al.'s outpatient population, the current patients scored higher on the Internal and Powerful Others and lower on Chance scores.

TABLE 5

A Comparison of MHLC Subscale Scores

	$\bar{I}$	SD	$\bar{C}$	SD	$\bar{P}$	SD
Burrish et al.*	21.83	6.49	19.31	45.6	23.93	4.96
Dodd**	26.30	7.60	19.50	5.8	19.90	7.00
Dickson***	25.60	4.53	16.70	6.49	26.10	6.70

* n = 29
** n = 30
*** n = 29

Patients in this study were compared to the breast cancer sample. The breast cancer patients were slightly higher on the Internal subscale, lower on the Powerful Others, and higher on the Chance subscale.

Comparative mean scores for the MHLC and CHLC subscales in this study are shown in Table 6. In this sample, the subjects' Internal and Powerful Others scores on both scales were higher than their Chance scores. This is consistent with Wallston's observation that trends exist in cancer patients which indicate that their I and P subscale scores are consistently higher than their C subscale scores (I = 22-23; C = 18-20; P = 24-26) (personal communication, May 1983).

Several inferences can be made in relationship to the demographics. The sample studied is relatively young ($\bar{X}$ = 47.4 years). This may be representative of the outpatient population in relationship to hospitalized patients, who seem to be older. Age was negatively correlated on the Internal subscale of both instruments, indicating that

TABLE 6

A Comparison of Mean Scores for the MHLC and CHLC Subscales

	$\bar{I}$	SD	$\bar{C}$	SD	$\bar{P}$	SD
CHLC*	24.0	5.08	18.8	5.32	25.0	5.34
MHLC**	25.6	4.53	16.7	6.49	26.1	6.70

* n = 30
** n = 29

the older the subject the less the internal orientation. Length of time since diagnosis negatively affected the Internal subscale of ths MHLC scale, which would indicate that the longer the time with the cancer diagnosis, the less the internal orientation.

In Wallston's and colleagues (1978) original development sample of 115 subjects all awaiting air transportation in the Nashville, TN airport, there were no significant correlations with sex, and only one subscale (PHLC - Form A) correlated significantly with age ($r = .198$, $p < .05$) and educational level ($r = -.222$, $p < .05$).

There were only three non-White patients in this study. Therefore, data analysis concerning racial background was not performed.

Of the 23 subjects who said that their chemotherapy was to cure their disease, 15 had limited disease. Of the nine subjects with advanced diagnosis, eight answered incorrectly when indicating that their chemotherapy was for cure. This was similar to results cited by Dodd and Mood (1979) and Dodd (1982), who found a significant percentage

of their subjects with advanced disease were incorrect in reporting the possible curative power of their chemotherapy.

For 53 percent of the population studied, the duration of time on chemotherapy was seven months or less. A Spearman correlation coefficient was done to determine the relationship of the duration of time on chemotherapy to both scales, resulting in no significant correlation. However, of the subjects studied, 70 percent received their cancer diagnosis within the last two years. This closeness to the time of diagnosis may account for the external orientation seen in this population. In Wendland's (1973) study of disabled persons, he suggested that a tendency to expect increased direction from external forces exists during initial periods (1½ years) following disability.

Most of the subjects had the interviews in the Hematology/Oncology Clinic, but a few had the second interview either at home or in the hospital, which could have an effect on the scores. However, these patients were too few in number on which to perform data analysis.

Performance status was associated with the CHLC Chance subscale, which could be an indication that the higher a patient's perception of his/her physical ability to carry out activities of daily living, the less Chance-orientation that person assumes.

This investigator's research indicates that the CHLC Scale does not provide increased understanding of the LOC construct. Those individual items which did not improve the overall subscale should be further studied. Randomized sampling would allow for greater control of extraneous variables and thereby increase the rigor of the study.

The CHLC instrument had more face validity to the patients than did the MHLC instrument. When patients were offered the MHLC first, they

could not decide if the terms "illness" and "sickness" in the stem of the questionnaire items should be answered in a general (prior to cancer diagnosis) or in a specific (after cancer diagnosis) manner.

Further efforts should be made to develop a cancer-specific measure for LOC to increase our ability to predict health behaviors. For example, patients experiencing severe side effects of chemotherapy might tolerate such unpleasantness if they were high scorers on the Powerful Others subscale, especially if they trusted their doctors. Patients with a fungating cancerous mass who delayed treatment could be expected to score high on the Chance subscale and lower on the Internal and Powerful Others subscales. An understanding of the multidimensionality of LOC in the cancer population would hopefully provide clinicians the opportunity to make more relevant predictions about this population and to better understand the diversity among individuals' health behaviors.

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APPENDIX A

MULTIDIMENSIONAL HEALTH LOCUS OF CONTROL SCALE

MULTIDIMENSIONAL HEALTH LOCUS OF CONTROL SCALE
(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.

1 = Strongly Disagree
2 = Moderately Disagree
3 = Slightly Disagree
4 = Slightly Agree
5 = Moderately Agree
6 = 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

1 = Strongly Disagree
2 = Moderately Disagree
3 = Slightly Disagree
4 = Slightly Agree
5 = Moderately Agree
6 = Strongly Agree

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 B

CANCER HEALTH LOCUS OF CONTROL SCALE

CANCER HEALTH LOCUS OF CONTROL SCALE

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.

1 = Strongly Disagree
2 = Moderately Disagree
3 = Slightly Disagree
4 = Slightly Agree
5 = Moderately Agree
6 = Strongly Agree

1.	Now that I have cancer, 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 worse from cancer, I'll get worse.	1	2	3	4	5	6
3.	Having regular contact with my physician is the best way for me to avoid progression of my cancer.	1	2	3	4	5	6
4.	Most things that affect my health, now that I have cancer, happen to me by accident.	1	2	3	4	5	6
5.	Whenever I don't feel well from cancer, I should consult a medically-trained professional.	1	2	3	4	5	6
6.	I am in control of my cancer.	1	2	3	4	5	6

1 = Strongly Disagree
2 = Moderately Disagree
3 = Slightly Disagree
4 = Slightly Agree
5 = Moderately Agree
6 = Strongly Agree

7.	My family has a lot to do with how well I cope with cancer.	1	2	3	4	5	6
8.	I am to blame for getting cancer.	1	2	3	4	5	6
9.	Luck plays a big part in determining how soon I will recover from cancer.	1	2	3	4	5	6
10.	Health professionals control my cancer.	1	2	3	4	5	6
11.	Stopping my cancer is a matter of good fortune.	1	2	3	4	5	6
12.	The main thing which affects my cancer is what I myself do.	1	2	3	4	5	6
13.	If I take care of myself, I can avoid progression of my cancer.	1	2	3	4	5	6
14.	When I recover from cancer, 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, it's likely that cancer will progress.	1	2	3	4	5	6
16.	If it's meant to be, I will retain my health.	1	2	3	4	5	6
17.	If I take the right actions, my cancer will be controlled.	1	2	3	4	5	6
18.	Regarding my cancer, I can only do what my doctor tells me to do.	1	2	3	4	5	6

APPENDIX C

A MULTIDIMENSIONAL HEALTH LOCUS OF CONTROL TYPOLOGY

A MULTIDIMENSIONAL HEALTH LOCUS OF CONTROL TYPOLOGY

Type I
"Pure" Internal

	IHLC	PHLC	CHLC
High	X		
Low		X	X

Type II
"Pure" Powerful Others External

	IHLC	PHLC	CHLC
High		X	
Low	X		X

Type III
"Pure" Chance Internal

	IHLC	PHLC	CHLC
High			X
Low	X	X	

Type IV
Double External

	IHLC	PHLC	CHLC
High		X	X
Low	X		

Type V
Believer in Control

	IHLC	PHLC	CHLC
High	X	X	
Low			X

Type VI
(No title given)

	IHLC	PHLC	CHLC
High	X		X
Low		X	

Type VII
"Yea-Sayer"

	IHLC	PHLC	CHLC
High	X	X	X
Low			

Type VIII
"Nay-Sayer"

	IHLC	PHLC	CHLC
High			
Low	X	X	X

APPENDIX D

EXPLANATION OF CONSENT FORM

EXPLANATION OF CONSENT FORM

My name is Angie Dickson, RN, and I am a Master's Degree student working with Dr. Marylin Dodd. I am conducting research with patients who have the diagnosis of cancer. Your doctor has given me permission to ask you to participate, but the decision to participate is entirely yours. I do not work for the doctors, so they will not know if you decide to participate or not.

This study is designed to determine the influence of modifying selected items between a standard scale and on one specific to cancer patients. This information is important to understand how a person's belief about health influences his/her perceptions of illness.

If you agree to participate in this study, I will ask you to complete a questionnaire that will take about 15 minutes. I will remain with you to answer your question and assist you where necessary. Then, in one week from now, I or another nurse who is assisting me in my research will meet with you at your doctor's office (or hospital) to ask you to complete similar questionnaires again. I or the other nurse will remain with you to answer your questions.

Your responses on the questionnaire will be confidential and your anonymity will be protected. Your name will not appear on the questionnaire.

No one on the hospital staff or in the doctor's office, including your doctors, will know your specific answers. When I report the results of the study to them, I will summarize all of the responses I get from all the patients who participate so that no one individual can be identified.

As I mentioned earlier, you are free to decide to participate or not. Whether you participate or not will not affect the care you receive from your physicians or hospital staff.

You may refuse to answer any questions you do not wish to answer, and you are free to stop at any time without explanation. Any questions you have will be answered.

Your participation will not interfere with your doctor's appointment or hospital routine today or when I or the nurse meet with you again. If your doctor is ready to see you before you finish the questionnaires, you may complete the questionnaires after your appointment or hospital routine, or you may withdraw from this study.

There are no known risks to you from participating in this study, and the information you provide may be of great importance to improving the kind of care provided to cancer patients.

Do you have any questions?

Are you willing to participate? If Yes, I would like you to read this consent form. It summarizes the information I have just given you and your rights as a participant in this study. After you have read it and signed it, we will begin the questionnaire.

APPENDIX E

INFORMED CONSENT FORM

INFORMED CONSENT FORM

The research project to study patient's responses to the Multidimensional Locus of Control Scale and the Cancer Locus of Control Scale has been explained to me. If I agree to participate:

I will meet with Angie Dickson or another nurse who is assisting her for approximately 15 minutes today, and I will complete the Cancer Locus of Control Scale, which will take about 15 minutes.

In approximately one week, I will meet with Angie Dickson or another nurse. I will complete the Multidimensional Locus of Control Scale, which will take about 15 minutes.

I will also permit the investigator (Angie Dickson) to obtain information regarding my medical history and treatment from my medical records.

I have been told that all information is confidential and my identity will not be revealed. I am free to discontinue my participation in the project at any time. Any questions I have about the project will be answered. My decision to participate or not will not affect my care.

I have received a copy of this form and the "Experimental Subject's Bill of Rights" to keep.

On the basis of the above statements, I agree to participate in this project.

_____ _____

(Participant's Signature) (Date)

_____

(Witness's Signature)

CHR approval number _____

APPENDIX F

EXPERIMENTAL SUBJECT'S BILL OF RIGHTS

APPENDIX G

DEMOGRAPHIC QUESTIONNAIRE

DEMOGRAPHIC QUESTIONNAIRE (First Interview)

(Items 1-8, 10, 12-15 will be completed using the patient's medical record; items 9, 11, and 18 will be asked of the patient; items 16 and 17 will be completed by the investigator.)

1. Subject Code No. _____ 2. Age _____

3. Sex _____ 4. Race _____

5. Physician _____

6. Medical diagnoses other than cancer _____

_____

7. Other medications (excluding chemotherapy) patient is taking ____

_____

8. Cancer diagnosis _____

9. Date when cancer diagnosis was told to patient _____

10. Cancer prognosis: a) adjuvant _____ b) advanced _____

11. Cancer prognosis: Is the purpose of your receiving chemotherapy to cure the disease? Yes _____ No _____ Not Sure _____

12. Date chemotherapy started _____

13. Chemotherapy agents _____

14. Other cancer treatment patient is receiving concurrent with chemotherapy: a) Surgery _____ b) Radiation _____
c) Immunotherapy _____

15. Other cancer treatment patient received previous to initiation of current chemotherapy: a) Surgery _____ b) Radiation _____
c) Immunotherapy _____ d) Chemotherapy _____

16. Date of first interview _____

17. Site of first interview _____

18. Performance status at time of interview with investigator (Karnofsky, 1952)
(Use grade): _____

Grade	Scale
90-100	Fully active, able to carry on all predisease performance without restriction.
70-89	Restricted in physically strenuous activity but ambulatory and able to carry out work of a light or sedentary nature, e.g. light housework, office work.
50-69	Ambulatory and capable of all self-care but unable to carry out any work activities. Up and about more than 50% of waking hours.
30-49	Capable of only limited self-care, confined to bed or chair more than 50% of waking hours.
10-29	Completely disabled. Cannot carry on any self-care. Totally confined to bed or chair.
0	Dead.

APPENDIX H

BACKGROUND INFORMATION

BACKGROUND INFORMATION

What is your occupation? _____

_____

Please circle the number below that describes your educational experiences.

Elementary School	1 2 3 4 5 6 7 8
High School	9 10 11 12
Vocational School or Junior College	1 2 3 4
College	1 2 3 4
Graduate School or Professional School	1 2 3 4

APPENDIX I

INTERCORRELATIONS OF SUBSCALES

INTERCORRELATIONS OF THE MHLC SUBSCALES
(IHLC, PHLC, & CHLC) BY WALLSTON ET AL., 1978,
THE I, P, & C SCALES BY LEVENSON, 1978,
AND SOCIAL DESIRABILITY

	IHLC	PHLC	CHLC	I	P	C
IHLC	....					
PHLC	.124	....				
CHLC	-.293	.204	....			
I Scale	.567	-.073	-.303	....		
P Scale	-.115	.275	.566	-.252	....	
C Scale	-.140	.230	.799	-.222	.604	....
Social Desirability	.097	.091	-.236	.044	.107	.084

Note: Correlations for the MHLC subscales are based on Forms A and B combined. For $n = 115$, $r_I = .183$, $p = .05$; $r_P = .241$, $p = .01$; $r_C = .300$, $p = .001$.

APPENDIX J

PARALLEL ITEMS - MHLC AND CHLC

PARALLEL ITEMS ON THE MULTIDIMENSIONAL HEALTH LOCUS OF CONTROL SCALE AND THE CANCER HEALTH LOCUS OF CONTROL SCALE, BY SUBSCALE

IHLC Subscale

	MHLC Form A		CHLC
1.	If I get sick, it is my own behavior which determines how soon I get well again.	1.	Now that I have cancer, it is my own behavior which determines how soon I get well again.
6.	I am in control of my health.	6.	I am in control of my cancer.
8.	When I get sick I am to blame.	8.	I am to blame for getting cancer.
12.	The main thing which affects my health is what I myself do.	12.	The main thing which affects my cancer is what I myself do.
13.	If I take care of my self, I can avoid illness.	13.	If I take care of myself, I can avoid progression of my cancer.
17.	If I take the right actions, I can stay healthy.	17.	If I take the right actions, my cancer will be controlled.

PHLC Subscale

3.	Having regular contact with my physician is the best way for me to avoid illness.	3.	Having regular contact with my physician is the best way for me to avoid progression of my cancer.
5.	Whenever I don't feel well, I should consult a medically trained professional.	5.	Whenever I don't feel well from cancer, I should consult a medically trained professional.
7.	My family has a lot to do with my becoming sick or staying healthy.	7.	My family has a lot to do with how well I cope with cancer.
10.	Health professionals control my health.	10.	Health professionals control my cancer.

PARALLEL ITEMS (continued)

MHLC Form A	CHLC
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.	14. When I recover from cancer, it's usually because other people (for example, doctors, nurses, family, friends) have been taking good care of me.
18. Regarding my health, I can only do what my doctor tells me to do.	18. Regarding my cancer, I can only do what my doctor tells me to do.

CHLC Subscale

2. No matter what I do, if I am going to get sick, I will get sick.	2. No matter what I do, if I'm going to get worse from cancer, I'll get worse.
4. Most things that affect my health happen to me by accident.	4. Most things that affect my health, now that I have cancer, happen to me by accident.
9. Luck plays a big part in determining how soon I will recover from an illness.	9. Luck plays a big part in determining how soon I will recover from cancer.
11. My good health is largely a matter of good fortune.	11. Stopping my cancer is a matter of good fortune.
15. No matter what I do, I'm likely to get sick.	15. No matter what I do, it's likely that cancer will progress.
16. If it's meant to be, I will stay healthy.	16. If it's meant to be, I will regain my health.

APPENDIX K

SCORING INSTRUCTIONS - MHLC AND CHLC

SCORING INSTRUCTION - MHLC AND CHLC SCALES

The score on each subscale is the sum of the values circled for each item in that subscale.

Internal items:	1, 6, 8, 12, 13, 17
Chance items:	2, 4, 9, 11, 15, 16
Powerful Other items:	3, 5, 7, 10, 14, 18