San Fernando Valley State College

Variations in Response to Health Behavior Inventories

A thesis submitted in partial satisfaction of the requirements for the degree of Master of Science in Health Science

by

Elda Marie Neal

September, 1967
The thesis of Elda Marie Neal is approved:

San Fernando Valley State College

September, 1967
DEDICATION

For the love and devotion which have enriched my life, and the patience and understanding which have made this effort possible, I proudly dedicate this thesis to my husband,

EDSON L. NEAL
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>LIST OF TABLES</th>
<th>vii</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST OF FIGURES</td>
<td>viii</td>
</tr>
<tr>
<td>ACKNOWLEDGMENTS</td>
<td>x</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>xi</td>
</tr>
<tr>
<td>CHAPTER</td>
<td></td>
</tr>
<tr>
<td>I.  INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>II. LITERATURE REVIEW</td>
<td>4</td>
</tr>
<tr>
<td>TECHNIQUES USED TO OBTAIN POPULATION</td>
<td>4</td>
</tr>
<tr>
<td>PARTICIPATION</td>
<td></td>
</tr>
<tr>
<td>EARLY ATTEMPTS TO MEASURE HEALTH</td>
<td>8</td>
</tr>
<tr>
<td>EDUCATION</td>
<td></td>
</tr>
<tr>
<td>EVALUATION INSTRUMENTS AVAILABLE FOR USE AT THE SENIOR HIGH SCHOOL LEVEL</td>
<td>9</td>
</tr>
<tr>
<td>The Dearborn College Health Knowledge Test (1950, 1959)</td>
<td>9</td>
</tr>
<tr>
<td>The Johns-Juhnke Health Practice Inventory (1943, 1952)</td>
<td>10</td>
</tr>
<tr>
<td>The Kilander Health Knowledge Test (1951)</td>
<td>11</td>
</tr>
<tr>
<td>The Health Education Test: Knowledge and Application (1947, 1959)</td>
<td>12</td>
</tr>
<tr>
<td>The LeMaistre Health Behavior Inventory (1958)</td>
<td>12</td>
</tr>
<tr>
<td>The LeMaistre-Pollock Health Behavior Inventory (1962)</td>
<td>13</td>
</tr>
<tr>
<td>STUDIES IN WHICH THE LEMAISTRE AND LEMAISTRE-POLLOCK INVENTORIES HAVE BEEN UTILIZED</td>
<td>14</td>
</tr>
<tr>
<td>The School Health Education Study (1961-1963)</td>
<td>18</td>
</tr>
</tbody>
</table>
TABLE OF CONTENTS (continued)

CHAPTER II (cont.)

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONCLUSIONS FROM THE LITERATURE REVIEW</td>
<td>20</td>
</tr>
<tr>
<td>III. METHODS</td>
<td>21</td>
</tr>
<tr>
<td>PURPOSE OF THE STUDY</td>
<td>21</td>
</tr>
<tr>
<td>MEASUREMENTS</td>
<td>21</td>
</tr>
<tr>
<td>POPULATION STUDIED</td>
<td>21</td>
</tr>
<tr>
<td>Techniques Used to Select the Population</td>
<td>22</td>
</tr>
<tr>
<td>Random Selection of the Sample</td>
<td>22</td>
</tr>
<tr>
<td>THE RESEARCH DESIGN</td>
<td>24</td>
</tr>
<tr>
<td>Preparation of Tests</td>
<td>24</td>
</tr>
<tr>
<td>Preparation with Administrative Staff and Other School Personnel</td>
<td>25</td>
</tr>
<tr>
<td>Scheduling of Tests</td>
<td>28</td>
</tr>
<tr>
<td>Consideration of Techniques to Gain Student Participation</td>
<td>29</td>
</tr>
<tr>
<td>THE &quot;HAWTHORNE&quot; EFFECT</td>
<td>30</td>
</tr>
<tr>
<td>Step I: Membership Cards</td>
<td>30</td>
</tr>
<tr>
<td>Step II: Bulletin and Special Notices</td>
<td>31</td>
</tr>
<tr>
<td>Step III: Special Assembly</td>
<td>33</td>
</tr>
<tr>
<td>Step IV: Group Photograph</td>
<td>33</td>
</tr>
<tr>
<td>Step V: Special Edition of School Newspaper</td>
<td>34</td>
</tr>
<tr>
<td>Step VI: Place Cards</td>
<td>35</td>
</tr>
<tr>
<td>Step VII: Recognition from a Person of Prestige</td>
<td>35</td>
</tr>
<tr>
<td>Step VIII: Student Appointment Confirmations</td>
<td>36</td>
</tr>
<tr>
<td>CHAPTER III (cont.)</td>
<td>Page</td>
</tr>
<tr>
<td>---------------------</td>
<td>------</td>
</tr>
<tr>
<td>Administration of the Test</td>
<td>37</td>
</tr>
<tr>
<td>Test Environment and Student Behavior</td>
<td>38</td>
</tr>
<tr>
<td>Culminating Activities</td>
<td>39</td>
</tr>
<tr>
<td>Make-Up Tests</td>
<td>40</td>
</tr>
<tr>
<td>Data Collection</td>
<td>40</td>
</tr>
<tr>
<td>IV. ANALYSIS AND DISCUSSION OF FINDINGS</td>
<td>41</td>
</tr>
<tr>
<td>CONCLUSIONS</td>
<td>61</td>
</tr>
<tr>
<td>V. SUMMARY AND CONCLUSIONS</td>
<td>63</td>
</tr>
</tbody>
</table>

| BIBLIOGRAPHY | 65 |

<table>
<thead>
<tr>
<th>APPENDICES</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>I. COMMUNICATIONS</td>
<td>71</td>
</tr>
<tr>
<td>II. LEMAISTRE-POLLOCK HEALTH BEHAVIOR INVENTORY</td>
<td>88</td>
</tr>
</tbody>
</table>
LIST OF TABLES

<table>
<thead>
<tr>
<th>TABLE</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Population of students enrolled in Rio Mesa High School History curriculum distributed by sex and grade</td>
<td>23</td>
</tr>
<tr>
<td>2. Random sample of students enrolled in Rio Mesa High School standard history curriculum distributed by sex and grade</td>
<td>23</td>
</tr>
</tbody>
</table>
**LIST OF FIGURES**

<table>
<thead>
<tr>
<th>FIGURE</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Percent correct responses by Health Content Areas for Tests One, Two, and Three. Study sample consists of eleventh and twelfth grade students at Rio Mesa High School</td>
<td>44</td>
</tr>
<tr>
<td>2. Average responses in the Rio Mesa Sample (105 eleventh and twelfth grade students) compared to the National Norms of the School Health Education Study</td>
<td>46</td>
</tr>
<tr>
<td>3. Average responses for the three tests compared to the School Health Education Study norms by grade and sex for 105 eleventh and twelfth grade students at Rio Mesa High School</td>
<td>49</td>
</tr>
<tr>
<td>4. Average responses in eleventh grade males and females for 48 students at Rio Mesa High School for each administration of the LeMaistre-Pollock Health Behavior Inventory</td>
<td>51</td>
</tr>
<tr>
<td>5. Average responses in twelfth grade males and females for 57 students at Rio Mesa High School for each administration of the LeMaistre-Pollock Health Behavior Inventory</td>
<td>53</td>
</tr>
<tr>
<td>6. Average responses in eleventh and twelfth grade males for 52 students at Rio Mesa High School for each administration of the LeMaistre-Pollock Health Behavior Inventory</td>
<td>55</td>
</tr>
<tr>
<td>7. Average responses in eleventh and twelfth grade females for 53 students at Rio Mesa High School for each administration of the LeMaistre-Pollock Health Behavior Inventory</td>
<td>57</td>
</tr>
<tr>
<td>FIGURE</td>
<td>Description</td>
</tr>
<tr>
<td>--------</td>
<td>--------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>8.</td>
<td>The distribution of finish time for each successive administration of the LeMaistre-Pollock Health</td>
</tr>
<tr>
<td></td>
<td>Behavior Inventory for eleventh and twelfth grade students at Rio Mesa High School</td>
</tr>
</tbody>
</table>
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ABSTRACT

Variations in Response to Health Behavior Inventories

by

Elda Marie Neal

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The health education needs of high school students have been assessed using a variety of measuring instruments. One instrument which has been widely used in recent years is the LeMaistre-Pollock Health Behavior Inventory. The variations in responses to three forms of this inventory were investigated in this study. The three tests were administered under controlled conditions at weekly intervals to a select sample of 105 junior and senior students at Rio Mesa High School in Oxnard, California.

A variety of techniques were utilized to insure a high degree of teacher cooperation and student participation. These techniques were successful in that 99, 97 and 98 percent participation was secured from the sample population on the three consecutive tests.

Significant differences between the subgroups studied were observed in certain health content areas. These
differences, however, were small, and the pattern of total response indicated that there was no marked variation in responses to the three tests. The need for health instruction in each of the health content areas was apparent.

The findings of this study suggest that the three forms of the test--the copyrighted inventory and the two forms developed for this study--might be useful in a test-retest situation.
CHAPTER I

INTRODUCTION

The intent of this study was to investigate methodology in the assessment of health education needs.

Health education within the broad curriculum structure has received increasing emphasis during the twentieth century. For example, in 1918, the White House Conference on Education accepted health as one of the cardinal principles of education (18:2). Further evidence indicated that at this same time there was growing concern on the part of educators and lay groups for health instruction in the schools (24:156, 243).

The public schools must assume the responsibility for awarding priority to health instruction according to the statement of the National Health Education Association Project on Instruction (30:136). Support for this concept was given in the Summary Report of the 1961-1963 School Health Education Study (35:2). The concept was advanced that not only is health knowledge essential in terms of real life needs, but also that this knowledge can be presented most efficiently in the school setting. It was also held that organized health instruction is presented by no other public agency, further justifying the role of the school in this content area.
In order to meet this challenge, educational practices and policies have been undergoing extensive evaluation and revision. Although factions have been active in exerting pressure toward the promotion of change in school curriculum, Ammons and Gilchrist cautioned against a randomized approach to curricular change. They stated that the most crucial problem is "to assure that curricular change is not merely something different, but that it is constructive" (2:6).

In the assessment of health education needs as a foundation for curricular innovations, a variety of measuring instruments has been used; e.g., attitude scales, problem checklists, personal data questionnaires and similar devices. Sutton and Rich have summarized research studies which provide insight into student health interests, needs and problems as a basis for curriculum planning (39:19-29). Veenker reported the results of investigations which attempted to measure the health knowledge, attitudes and practices of school age children (41:35-41). Dzenowagis categorized health and safety misconceptions prevalent in school age children (13:50-52). These authors suggested that health attitudes and behaviors of adolescent students were not based on sound, scientific health knowledge.

If effective educational programs are to be developed within the context of recognized health education needs, then it is important to establish the accuracy of instruments used in the measurement of these needs. Further, it is important to assess the consistency of the responses in successive administrations of a given instrument to a given
group. If the group demonstrates the same level of performance on repeated trials, then educators may feel more confident in formulating instructional programs based upon these results. If, however, the responses change significantly and different levels of competency are exhibited with each administration of the given instrument then the educator may be less confident.

In this study, the LeMaistre-Pollock Health Behavior Inventory (HBI) was selected as the evaluative instrument to investigate the health needs of a selected high school population. The HBI has been used in high schools to measure health knowledge. In addition, this instrument is designed to assess health attitudes and practices. The inventory is copyrighted by the California Test Bureau, a leading publisher of educational and psychological tests (23:1-18). The purpose of this study was to determine the variations in response, if any, when the LeMaistre-Pollock Health Behavior Inventory was administered repeatedly to the same high school students.

Students from Rio Mesa High School were selected for study. Rio Mesa High School is located near El Rio, a rural area on the outskirts of Oxnard, California. Rio Mesa High School opened in the fall of 1965 and at the time of this study had an enrollment of 854 students. No organized health instruction was offered beyond the basic state requirements for instruction related to the use of alcohol, tobacco, and habit-forming substances. A pilot program in health education was being developed by a curriculum committee of the Oxnard Union High School District.
CHAPTER II

LITERATURE REVIEW

In order to measure the level of existing health knowledge, attitudes and practices, certain basic elements are necessary. This review of the previous research in health education considered four of the important necessary elements. These were:

1. Techniques used to obtain population participation.
2. Early attempts to measure health education.
3. Evaluation instruments.
4. Studies in which the Health Behavior Inventory had been utilized.

TECHNIQUES USED TO OBTAIN POPULATION PARTICIPATION

Essential to the success of any endeavor is the participation and cooperation of those for whom the particular effort is designed. This is recognized in the increasing number of studies devoted to an analysis of the reasons for success or failure in various health-related research projects. It therefore was necessary to investigate methods by which participation from the population had been stimulated.
Saunders and Samora studied the reasons for the failure of a community medical care program in Colorado. This program collapsed due to lack of support from those whom the program was designed to serve. Organized and implemented by "outsiders," the plan required the potential participants to join an organization, attend meetings, and pay dues. None of these activities, however, seemed significant to the target community. Some basic elements of good organizational design were used; e.g., the establishment of community needs, the selection of leadership through the democratic process and the involvement of potential participants in organizational meetings. Despite these efforts, the program was not one that would have been formulated by the largely Mexican-American population in the community and therefore did not gain their support (33:377-400).

Naegele described the establishment of a mental health agency, the Human Relations Service, which was initiated to provide both research and service to a suburb of Boston, Massachusetts. After five years of operation, the community assumed responsibility for its support. This action might be interpreted as a measure of success for the program. Particular emphasis was placed on the attainment of rapport with the clergy and the schools of Wellesley as potential sources of referral. Rapport was built on extensive interpersonal communications and a study of the value systems and obligations of each group. Specific techniques were uti-
lized to stimulate an increase in referrals by teachers and parents. These techniques involved: a school committee, teacher seminars, specific referral methods, consultant services to provide "feedback" to teachers regarding outcomes of referrals and pre-school clinics with parents (25:295-321).

Kimball described a program to determine health needs in an Alabama town of 13,000 citizens. The town contained three identifiable social divisions: long-term Caucasian residents, newly-arrived Caucasian industrial workers and Negroes. Techniques of community organization involved the following aspects: a series of Chamber of Commerce planning sessions; formation of a Community Council representing major civic, social and religious groups supplemented by representatives from principal institutions and industries; the development of a health inventory questionnaire; and the establishment of committees to study selected health problems in harmony with group interests. The latter aspect was consistent with accepted and understood community procedures. Although the Negro representatives were urged to prepare their own questionnaire, they unanimously accepted the one which had been developed by the Council. Results indicated that the survey was successful when existing social conventions and traditions were recognized and observed (21:269-294).

Clausen et al., studied the factors which were found to influence parental decision to participate in poliomyelitis
inoculations. The principal techniques used to solicit participation were radio and newspaper messages, and pamphlets and special releases by the medical staff and the health department. A negative influence was introduced when a nationally known radio commentator specifically warned against the use of the vaccine. Samples of participating and non-participating mothers of second grade children were interviewed. It appeared to the investigators that the commentator might have influenced many of the non-participants to abstain. Major factors differentiating the participating and non-participating groups were the level of education and the socioeconomic status of the mothers (9:119-129).

Adler et al., studied the effectiveness and acceptance of the Mobile Multiphasic Screening Program for Chronic Disease in Oklahoma. This program was introduced in 1960 immediately after the termination of a successful mobile tuberculin testing program. The multiphasic unit was transferred from area to area and remained in a specific county from one to three months. Before the mobile unit was brought into a county, the field unit director organized meetings with medical and civic leaders in order to gain their support. Community activity involved the formation of committees for publicity and for the scheduling of appointments. The geographic availability of a medical service to a predominantly rural population was postulated to be a major factor contributing to the success of this program (1:918-925).
EARLY ATTEMPTS TO MEASURE HEALTH EDUCATION

Of historical significance to the health educator today is Jullien's Plan (1816-1817), perhaps the earliest "pedagogical" questionnaire or evaluation instrument on record which demonstrated a concern for health. The plan was designed to promote comparative studies of European education. Many of the fifty-one items (from a total of 226) in the section on "Physical Education and Gymnastics" appeared to be related to what is today termed "health education." For example:

... What is the usual nourishment of children in the secondary schools and colleges? How many meals, and what can one notice in this regard?

... How many hours are the children allowed to sleep, and how are the rest hours distributed?

... Are their heads covered or bare during their sleep, and by what motive is one or the other method preferrable?

Health as an integral part of an evaluation device in education was perhaps one of the most important contributions made by Jullien (27:89-93).

Means, in documenting the history of health education in the United States, indicated that emphasis during the 1920's was placed on the development of desirable health habits. Instruments for the measurement of health habits were necessary (24:201). Andress and Goldberger developed A Health Habit Score Sheet, which was used subsequently by
the New York Public Schools. The forty items on this check-
list were subdivided into eight health habit areas (3:5).

Gates and Strang (1925, 1937) pioneered the development
of standardized test instruments for the evaluation of
health knowledge at the elementary and secondary school
levels. Although the test instruments were designed to
measure knowledge related to physiology and hygiene, these
instruments gained wide acceptance during the early years
of health knowledge evaluation and served as models for
subsequent tests (5:476).

EVALUATION INSTRUMENTS AVAILABLE FOR USE AT
THE SENIOR HIGH SCHOOL LEVEL

Solleder prepared a comprehensive list of health educa-
tion tests. Only those tests listed in the senior high
school section were considered for this review (37).
In addition, the Sixth Annual Mental Measurements Yearbook
(7:955-967), and Tests in Print (6:164-168) were used in
making the following selections.

The Dearborn College Health
Knowledge Test (1950, 1959)

This test consists of 100 multiple-choice test items
which are subdivided into eleven health content areas.
These items are directed to the measurement of knowledge in
the field of personal health. Although specifically con-
structed for college students, this test has been useful in
the evaluation of high school students following a specified course of instruction. Standardization was done in 1948-1950 on 2,000 college students, primarily in California. Post-instruction norms were established. The Flanagan split-halves technique and the Spearman-Brown correction formula were used to obtain a reliability coefficient of .89. The 1959 revisions were based on the analysis of the results from 15,000 students in twenty selected junior colleges, colleges, and universities. Seven items were revised and two items were changed completely (11).

The Johns-Juhnke Health Practice Inventory (1943, 1952)

This test is directed toward the evaluation of health practices rather than the measurement of specific health knowledge. The inventory consists of 100 statements representing thirteen health content areas common to health teaching. Responses are indicated on a five-point scale ranging from "never" to "always." Norms were established for grades 11, 12 and junior college in all content areas except safety education. The population used in the original inventory (1943) was 1,900 high school, junior college and university students (16). The test was revised (1951) using responses from 768 students. These students ranged in age from 14 to 27 years old. The high school students were randomly selected from established classes in schools similar to those in the original study (19:22,26). The relia-
bility coefficients ranged from .73 to .88 when scores from three administrations of the original inventory and scores on three forms of the revised inventory were analyzed. Validity of measurement was established by observing behavior during specific situations. In addition, the items were reviewed by a panel of health education experts (16).

The Kilander Health Knowledge Test (1951)

This test consists of seventy-five multiple-choice items grouped into five major health content areas. These areas are: personal health, community health and sanitation, nutrition, safety and first aid, social and emotional health (including alcohol and narcotics). Equivalent forms (Am and Bm) are available to facilitate the use of this instrument in a test-retest situation. The test manual indicated that the equivalent forms were comparable in content area, item difficulty and validity indices. The author pointed out that the test was designed to determine the extent of a student's knowledge in regard to health. No attempt was made to evaluate attitudes related to health. However, in order to answer many of the questions correctly, a knowledge regarding preferred attitudes or practices was required by the respondent. Standardization was done in 1950 and 1951 on approximately 2,000 students in thirteen schools from eleven states. The mean chronological age of these students was 16 years, 7 months (20). Their mean IQ was 106
as measured on the Terman-McNemar Test of Mental Ability (40) given at the same time as the health knowledge test. Standard scores and percentile norms are available.

The Health Education Test: Knowledge and Application (1947, 1959)

A different approach was taken by Shaw and Troyer in their probe for health knowledge. Their test is divided into two parts: sixty multiple-choice items and forty true-false items evaluating health knowledge. Equivalent forms (A and B) are available. Validity of measurement was obtained through evaluation of the test by a staff of experts. Reliability was determined by the split-halves method. Norms for both forms are available for grades 7 through 13 based on 6,753 students in schools in the East, West, Central, and Southern sections of the United States. Percentile score equivalents are also given for grades 7-12 (34).

The LeMaistre Health Behavior Inventory (1958)

The original inventory was developed for use in the School Health Education Evaluative Study in the Los Angeles area. Two trial forms were developed and tested. The instrument was designed to facilitate evaluation of student
behavior, i.e., health knowledge, attitudes and practices. The inventory consists of fifty situational problems with a five-response selection choice for each item. Each question, according to the author, deals with a different area of health competency needed by high school students. Validity was established by submitting the inventory to a panel of experts and by attempting to correlate the responses of 150 senior students with their absences during a two-year period. The validity coefficient was -.51. Reliability was determined through the Flanagan split-halves technique and corrected by the Spearman-Brown formula. A reliability coefficient of .94 was obtained and the standard error of measurement was 2.20 for the second trial inventory (22:5,6,45-58,61-65,79).

The LeMaistre-Pollock Health Behavior Inventory (1962)

Pollock added twenty-five items to the LeMaistre Inventory by applying the same techniques used by LeMaistre. The revised Health Behavior Inventory was administered to high school students in six states as a part of the School Health Education Study. This inventory was copyrighted by the California Test Bureau in 1962. The seventy-five items in the revised and copyrighted inventory were grouped into the
following ten health content areas: personal health; safety and first aid; family health; infection and disease; mental health; nutrition; community health; exercise, rest and recreation; drinking, smoking and narcotics; and dental health. Thirteen items were considered pertinent to more than one content area; therefore, a total of eighty-eight items were reflected in the final score (23:1-18). (See Appendix II for the items arranged by content areas.) The reliability coefficient obtained with the Kuder-Richardson Formula 20 technique was .91. The standard error of measurement was 3.74. The correlation coefficient was .82 when the twenty-five new items were correlated with the fifty original items through the Pearson-Product Moment method. Experts in the field of health served as a panel to whom the inventory was submitted (29:26).

STUDIES IN WHICH THE LEMAISTRE AND LEMAISTRE-POLLOCK INVENTORIES HAVE BEEN UTILIZED

The School Health Education Evaluative Study was conducted in the Los Angeles area during the five years from 1954-1959. The purpose of this study was to evaluate the effectiveness of school health education in certain selected schools in the Los Angeles area. A lack of valid and reliable instruments for the evaluation of health education hampered the study and stimulated the development of new inven-
tories (17:67). The LeMaistre Inventory was developed and selected for use because the researchers felt that it "... would be of value in appraising the changes occurring in behavior and in assisting teachers in knowing where to place emphasis in the health instruction program (8:5).

Benjamin Gmur used the LeMaistre Inventory as an instrument for the evaluation of three different patterns of instruction: core, correlation and direct course. Three secondary schools were selected from one geographic area and an attempt was made to match them in terms of enrollment, ability level of students, dropout rates and community characteristics. One hundred 9th and 12th grade students, respectively, were selected from each school. Students in the core program were grouped in classes according to ability; in the correlation and direct methods, the classes were heterogeneous. The inventory was administered to 9th grade students in either the required general science or social studies classes. The 12th grade students were selected from the required senior problems classes. The students were randomly selected from these classes. The author emphasized the problems of sample selection in a structured school environment. One hundred students were studied in each instructional program. A limitation in the study, as recognized by the author, was that individuals could not be followed through time; therefore, different students were studied at the 9th and the 12th grade levels.
On the basis of this sample, the author found significant differences in favor of the direct course of instruction. This study, although primarily concerned with the methods of instruction, illustrated the use of the LeMaistre Inventory to determine areas of need in health knowledge (15:9, 44-47, 57-59, 69).

A study by Ruth Rich also used the LeMaistre Inventory as one of several methods in the evaluation of health education needs of high school students in the Los Angeles City Schools. The test was administered to 959 students from grades 10 and 12 attending selected schools. The 10th grade students were selected from required classes in life science, and the 12th grade students were selected from senior problems or English classes. Other methods used were a problem checklist, a personal data questionnaire and physician's appraisal of each student's health status. No significant relationships were found among inventory scores, the number of health problems the students reported and their health status as determined by physical examination. Analysis of responses to the inventory indicated deficiencies in knowledge in the following content areas: sleep, rest and relaxation; prevention and control of chronic and degenerative diseases; safety education; and consumer health. In these content areas, less than 62 percent of the responses were correct. Significant differences were found between males and females, and between grades (31:21, 32, 42, 76, 174, 178).
A recent study evaluated new instructional materials based on the conceptual approach. Creswell et al., reported that several instruments were used, one of which was the LeMaistre-Pollock HBI in a test-retest situation. The research design included an experimental and two control classes in each of several schools. Significant differences were observed post-instruction in the responses of female students in the experimental and control classes. No significant post-instruction differences in responses were observed in male students. Among their findings, the authors emphasized the problem of conducting research with "fixed" classes (10:154-164).

The Long Beach Unified School System completed a study in June, 1967, designed to evaluate the Elementary and Secondary Education Act (1965), Title I Program in that district. The ESEA Program was designed to aid the culturally, educationally and economically disadvantaged (26:94-97,99). The LeMaistre-Pollock HBI was used before and after instruction in an attempt to measure change. Some possible problem areas in the use of the HBI with this group were summarized as follows:

1. The junior and senior high school levels of the test appeared to present reading difficulty for these boys and girls.

2. The responses to the items are sometimes geared to a higher socio-economic level than the one these children come from. Many items are keyed to "middle-class" responses.

3. Many of these pupils did not complete the test. It has been suggested that they are not "time-
The School Health Education Study (1961-1963)

The School Health Education Study was the largest single health education research effort to date in this country. The purpose of this study was to provide knowledge concerning the existing practices in health instruction in the public schools in the United States. The ultimate objective of the research was to "... focus on problems and issues so that local or regional groups may undertake further study and action for better health education in schools" (35:3). The study was designed in two phases: existing health education instructional practices as evidenced by answers to a questionnaire were investigated, and the "health behavior" of a sample of students in grades 6, 9, and 12 as measured by student responses on three "health behavior" inventories was analyzed.

The sampling plan used was a multi-stage, stratified cluster. School systems were grouped according to enrollment: large systems with 25,000 students and over; medium systems with 3,000 to 25,000; and small systems with 300 to 3,000. The sample represented 135 school districts in 38 states of which 116 or 85.9 percent participated in the student testing phase. A stratified sample of 6,000 test scores, consisting of 1,000 boys and 1,000 girls from each grade level tested was randomly selected for analysis from
the 17,634 student participants. A special subsample of 600 scores, equally divided by sex and district, was randomly selected for item analysis.

The LeMaistre-Pollock HBI was used as the instrument of evaluation for the 4,476 twelfth grade students who participated. An item analysis was done on scores obtained from 31 of the 75 items in the inventory. Each of the health content areas was represented in this analysis.

The Health Behavior Inventory as used in the national testing program contained twelve health content areas rather than ten. The findings indicated that scores were highest for the total group in the content area of stimulants and depressants. Other health content areas in rank order were: personal health; mental health; dental health; communicable diseases; safety education; family health; exercise, sleep and relaxation; consumer health; chronic diseases; community health; and nutrition. Less than one-half of the questions in the nutrition area were answered correctly. The best scores were achieved by girls in the medium districts in all content areas except two. When differences were significant throughout the test, the girls were found to answer items correctly more frequently than the boys. Analysis of the mean scores and the distribution of scores for twelfth graders indicated that differences between scores of the male and female students were related to the size of the school district (35:1-74).
CONCLUSIONS FROM THE LITERATURE REVIEW

The review of the literature indicated that various techniques had been used in the selection of populations for study, in the methods by which participation had been secured, and in the techniques used to assess knowledge, attitudes and practices related to health.

1. Factors which had been shown to influence participation of individuals within population groups were: the judicious use of communication media, the recognition of existing value systems and the utilization of existing organizational structure in which to organize the program.

2. Student populations studied had most frequently been selected from "fixed" classes, using the cluster sampling technique.

3. Instruments had been developed for the evaluation of health education needs. Of those reviewed, the Le-Maistre-Pollock Health Behavior Inventory was the most comprehensive and widely used in the senior high school.
CHAPTER III

METHODS

PURPOSE OF THE STUDY

The purpose of this study was to determine the variations in response, if any, when the LeMaistre-Pollock Health Behavior Inventory was administered three times, two in revised form, at weekly intervals to a random sample of junior and senior students in the standard history curriculum program at Rio Mesa High School.

MEASUREMENT

For purposes of this study, variations in response were measured by the differences in percentage of correct replies within each content area for the total group between the first, second and third application of the test.

POPULATION STUDIED

The population selected for study were those 11th and 12th grade students enrolled in the standard history curriculum at Rio Mesa High School during the 1966-67 school year. The assumption was made that choosing students from
one curriculum level would yield individuals with similar abilities.

**Techniques Used to Select the Population**

The students in the population to be studied were identified using the following methods: (a) a class roll for each class was obtained from all teachers teaching the standard history curriculum; (b) 11th and 12th grade history class rolls were carefully screened to prevent duplications and omissions of names of individuals, and (c) fifteen students were identified as having completed a history requirement during the 1966 summer session, eight of whom met the criterion of standard curriculum and were included in the population.

**Random Selection of the Sample**

One hundred and ninety-six juniors and seniors were eligible for selection. The distribution of this population by sex and grade is given in Table 1. Fifty-two boys and fifty-three girls were randomly selected from the population. This sample consisted of 105 students distributed by sex and grade as shown in Table 2. The size of the sample was determined by the maximum capacity of the testing center.
Table 1. Population of students enrolled in Rio Mesa High School History curriculum distributed by sex and grade.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Boys</th>
<th>Girls</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>44</td>
<td>48</td>
<td>92</td>
</tr>
<tr>
<td></td>
<td>(22.5%)</td>
<td>(24.5%)</td>
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<tr>
<td>12</td>
<td>53</td>
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<td>(27%)</td>
<td>(26%)</td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>97</td>
<td>99</td>
<td>196</td>
</tr>
<tr>
<td></td>
<td>(49.5%)</td>
<td>(50.5%)</td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Random sample of students enrolled in Rio Mesa High School standard history curriculum distributed by sex and grade.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Boys</th>
<th>Girls</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>22</td>
<td>26</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>(21%)</td>
<td>(24.7%)</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>30</td>
<td>27</td>
<td>57</td>
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<td></td>
<td>(28.6%)</td>
<td>(25.7%)</td>
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<td>Totals</td>
<td>52</td>
<td>53</td>
<td>105</td>
</tr>
<tr>
<td></td>
<td>(49.6%)</td>
<td>(50.4%)</td>
<td></td>
</tr>
</tbody>
</table>
THE RESEARCH DESIGN

The research design utilized in this study consisted of the following procedures:

Preparation of Tests

A complete test kit for the LeMaistre-Pollock Health Behavior Inventory was received through the cooperation of Dr. Raymond T. Eddy, Los Angeles representative of California Test Bureau. Dr. Eddy offered advice regarding the feasibility of conducting such a study. A letter was sent to the California Test Bureau requesting permission to use the inventory in the manner selected for this study. An affirmative reply was received prior to the administration of the first test (see Appendix I).

In order to minimize the degree of learning associated with repeated exposures to the same items and to give the students the impression that they were participating in a test especially designed for Rio Mesa High School, specific changes were made in this inventory. The format of the HBI was subjected to the following revisions:

1. Each of the seventy-five test items on the HBI was randomly assigned to a different sequence by the use of the random number table. This sequence became Test One. The process was repeated to yield a second reassignment of items. This second sequence became Test Two. Test Three
was reproduced as it appeared in the copyrighted inventory.

2. The five possible answers for each test item were randomly reassigned. The first reassignment was used in Test One, and the second was used in Test Two.

3. The three tests were identical in appearance with the following exceptions: (a) the color was changed to support the illusion that each test was different. Since white is the color most frequently used in test materials, the use of white paper in one of the tests might have introduced a bias either for or against that particular test. For this reason, white was eliminated and three pastel colors were selected. The color for Test One was yellow; Test Two, green; and Test Three, blue; (b) The numerals I, II, or III were used to identify the individual test.

4. The names of the main characters in Test One and Test Two were changed to Anglo-American names similar in nature to those in the original HBI. "John" and "Sue" appeared in the original inventory (Test Three). "Frank" and "Sally" were selected for Test One, while "Bill" and "Linda" were used in Test Two.

Preparation with Administrative Staff and Other School Personnel

A study of students in the school setting demanded extensive cooperative efforts between the investigator, administrative, certificated and classified staff.
1. An initial planning conference was held with the school principal in order to outline and obtain approval for the proposed study. Through frequent investigator-principal conferences, the methods for obtaining teacher and student cooperation were determined. The needs for clerical assistance were defined and such assistance was scheduled.

2. Conferences were held with the district director of curriculum, and with the district psychologist.

3. Consultation and support were obtained from the boys' and girls' counselors, the boys' and the girls' vice-principals and the librarian.

4. The experimental design of this study required that selected students be absent from the same class for three consecutive Tuesdays. In order to establish procedures which would minimize the inconvenience to the teachers and to protect the students from penalty, five key teachers were consulted early in the planning stage. An individual conference was held with each of these teachers during which the research problem was presented and suggestions were elicited. Several suggestions were incorporated into the research design. Interest and a supportive attitude were expressed by each of the five key teachers.

Twenty-three teachers were asked to release students from their second period classes. At the suggestion of the key teachers, an individual conference with each of these
twenty-three teachers was arranged no later than two weeks before the first test. The specific information given to these teachers included the dates of the tests, the number and names of students from each class who would be participating, as well as a basic purpose in curriculum development for the proposed research.

Because of the potential influence of the individual classroom teacher on the success of this study, a special appeal was made for support in promoting the idea of research among all of the students. Special recognition for those students selected to participate was also solicited, and consideration in planning classroom activities on testing days was requested.

Certain details of the design withheld from teachers at this time were: the specific purpose, the changes in class time on test days, the specific criteria for the selection of the sample and the specific selection mechanism. It was felt that some aspects of the design, if released prematurely, could be misinterpreted and introduce uncontrollable variables into the study.

A special message released to all teachers on the day of the first test requested that they not discuss the content of the tests or answer questions specific to the test material during the research period. The principal of Rio Mesa further emphasized this restriction at a faculty meeting on the same day.
5. In order to use the cafeteria for testing, arrangements were made to transfer the students using this facility as a study hall to the library on the three test days. A special reminder was sent to the study hall teacher and to the librarian on the day before each test.

6. The cooperation of the custodial and cafeteria staff was requested to insure a quiet atmosphere in and near the testing area. A special reminder was also sent to each of these departments on the day before each test.

Scheduling of Tests

1. Test Dates.—Three tests dates, April 11, April 18, and April 25 were selected to conform to the master calendar of events at Rio Mesa High School. Spring vacation (March 20-25), third quarter finals (April 3-7), scheduled field trips and the over-crowded calendar of the late spring provided practical problems in establishing a time plan.

2. Day of the Week.—Tuesday presented a lighter load of routine scheduled activities and was selected as the earliest day in the week that was practical for testing. Mondays and Fridays had a greater number of students absent, and the workload for administrative and clerical staff was heaviest. Furthermore, one school day was considered necessary immediately prior to the test day in order to permit time for the distribution of reminder messages to students and teachers.
3. **Hour of the Day**.—Student performance had been observed to be better in the morning hours. Period 1 was not feasible because the workload was highest for the administrative and clerical staff. In addition, the risk of student tardiness was greatest. The choice of Period 2 for testing provided an opportunity to issue special bulletins during Period 1, and also provided ample time to complete testing prior to the lunch period.

The schedule of classes at Rio Mesa High School allowed one hour for Period 1 and fifty minutes for all other periods of the day. On the three test Tuesdays, however, Period 1 was shortened ten minutes and Period 2 was lengthened. The bell at the end of Period 2 did not ring until the last student finished the test. This required that bells be operated manually during a portion of each test day.

**Consideration of Techniques to Gain Student Participation**

Ideas and suggestions from teachers and administrators to stimulate motivation were considered. Some were accepted and some were discarded. A monetary reward, refreshments, lapel buttons or pins and special grades for citizenship or participation were suggested as token rewards. These, however, were not utilized because they were not in keeping with school policy, were impractical, or were thought to set an unfavorable precedent for future testing.
THE "HAWTHORNE" EFFECT

The final strategy selected was designed to produce a group identification and recognition comparable to what is termed the "Hawthorne" effect (32:18-20; 36; 14:300-309). The steps in the establishment of the "Hawthorne" effect within the selected sample are cited below. Communications to the faculty and student body are given in Appendix I. Certain selected messages are repeated in the following text.

Step I: Membership Cards

Special white wallet-sized membership cards were printed in black and red, the Rio Mesa school colors. This card carried the Spartan-head insignia with the words "Spartans for Science." Each student's name was written in script with a black felt pen. A special note from the principal accompanied this card. His message stated:

CONGRATULATIONS

You have been selected to speak for the Spartans in Rio Mesa's first Health and Science Research Project. Your membership card will excuse you at 10:45 from your third period class. At this time, go immediately to the gym.

Edward W. Mcdonald
Principal
Each card and note was placed in an envelope and arranged according to the name of the second period teacher for distribution at a specified time.

**Step II: Bulletin and Special Notices**

The bulletin, issued each Tuesday and Friday, was read in all first period classes and was the usual way in which information was disseminated to both students and faculty. Arrangements were made to have the following notice appear as the first item on the Friday before a special assembly:

Rio Mesa High School has been invited to participate in a research project in Health and Science. A group of Rio Mesa students will be chosen to represent our high school in this research. Will it be YOU who will be selected to speak for the SPARTANS????

A personalized announcement to each faculty member was attached to the bulletin:

Dear ____________:

Research Needs Your Support!

I cannot provide you with details at this point in the Health Science Research Project, but will you please give your support to News Item #1 in today's bulletin? More to follow. . . .

All communications to teachers except those which were delivered by special courier were reproduced on pastel-colored paper instead of the usual white. In order to emphasize and personalize certain messages: (a) the messages were addressed in the first person; and (b) the teachers'
names and the signature were written by the investigator.

On the day of the special assembly, a second bulletin notice appeared as the first item. This notice read as follows:

Today, Period 2, those students especially selected to participate in the Health and Science Research Project will be notified... .

It Could Be YOU!!!

A second communication to all teachers was sent with this bulletin:

NOW IT CAN BE TOLD!

A battery of three Health Knowledge Tests will be given to a specially selected group of our Junior and Senior students. The tests will take place Period 2 on April 11, 18 and 25.

1. Students who have been selected to participate will be notified today in their second period classes. If no envelopes arrive for your students, it is because no one in your class will be participating.

2. At 10:45 today by special bulletin, participating students will be called from their third period classes for a meeting in the gym.

At the beginning of Period 2, the membership cards were delivered by student couriers to those teachers having students who were in the sample. A message to the teachers was sent with the cards:

Here are the membership cards for those students who have been selected to participate in the Health and Science Research Project. This card is the first "inkling" each student will have of his/her selection. Therefore, YOU are the key to
the success of this project. Please sell it BIG!

Thanks a million,

At 10:45, Period 3, student couriers delivered notices to the teachers of participating students with a request that these students be released to come to the gymnasium at that time. Twenty-six classroom teachers and three driver training teachers were involved.

**Step III: Special Assembly**

In the gymnasium, the students were welcomed by the principal. He emphasized the importance of this Research Project, the special nature of the selected group, and the important contribution which research could make in curriculum development. A brief presentation by the investigator outlined the privileges and the responsibilities of each participant. The importance of being present for all three tests was emphasized.

**Step IV: Group Photograph**

In order to promote a feeling of group solidarity, a picture of the participants was taken which was later used in a variety of ways. Ninety-one of the 105 students selected for the sample were present. Four students were on a field trip and ten students were absent. Those students who returned to school on the following day were given their
membership cards by their second period teachers. Those who were absent two days or more were contacted individually by telephone and were given their cards by the investigator upon their return to school.

An 11" by 14" picture of the participating students was displayed in the window of the student store during the two weeks of the testing. The student store occupied an important position on the Rio Mesa campus. Announcements and pictures displayed in this location attracted attention and could be easily observed by the entire student population in the normal course of the day's activities.

**Step V: Special Edition of School Newspaper**

A special edition of the school newspaper, **THE SPARTAN**, was prepared in order to emphasize to the student body and faculty the importance of the research project and the importance of the participants. The picture of the participants was the focal point of this special edition which was prepared by the investigator with the assistance of several faculty members and the student editor. The student staff was unable to assist in this publication because of the lack of time. Special arrangements were made to insure that the one thousand copies which were needed could be lithographed in one day and would be available on the afternoon prior to Test One. The special edition was distributed to each classroom during Period I on the day of the first test.
Step VI: Place Cards

Place cards were prepared for each test session to emphasize the special preparation that was made for each student each week. The names of the participants were printed in bold black letters on both sides of a triangular place card. The color of the paper in each session matched the color of the test. An effort was made to communicate the thought, "You are important to this research. This place is reserved for you. No one but you can fill it." A vacant place became conspicuous. It was hypothesized that a group feeling would develop and that absence would represent non-conformity to group standards.

Step VII: Recognition from a Person of Prestige

A reward was planned following each test. Recognition from a person of prestige was felt to be appropriate. The principal of Rio Mesa High School was considered the person with the most prestige on this campus. He indicated his willingness to assist. Each student was directed to the library upon completion of the test. The principal validated the student's membership card, checked his name on a roster, and thanked him individually for his participation. During this brief exchange with the student, the principal created a comfortable and personal atmosphere which seldom may be observed in the usual high school setting.
Step VIII: Student Appointment Confirmations

1. **Communications to students and parents.**—A careful check of absences was made during the week prior to the first test and continued during the two weeks of testing in order to determine which students in the sample were absent. Four students were absent for three or more consecutive days due to illness. Two girls were absent the entire week before the first test. However, these girls were brought to school by their parents specifically to take the test.

   The day before the first test, a reminder note was sent to each participant in his seventh period class. Those students who were absent were contacted by telephone or home visit. Prior to the second and third tests, reminder notes were sent to each participant in his third period class. The change in periods was made to insure communication with those students on a half-day schedule. Precautions were taken to make sure each student received a reminder on the day before each test.

2. **Communications to teachers.**—Each week, by special courier, the first period teachers were reminded to send participating students to the testing area at the end of Period 1. In order to avoid inconvenience and to save the teacher's time, a list of the names of the students was attached to each request. Bulletin notices were used weekly to remind teachers of the change in time schedule on test days.
Administration of the Test

Bean stated that "perhaps the most important single rule for good test administration is that conditions should be as uniform as possible every time the same examination is given" (4:18). The need for careful control of the testing environment is further emphasized by the Educational Testing Service (38:3-8).

1. The school cafeteria was used each week in order to prevent variations in physical environment.

2. Students were seated alphabetically in the same seat each week. Placards at the end of each row indicated the first and last student to be seated in that row. Place cards also eliminated confusion and loss of time in seating.

3. The test booklets, answer sheets and pencils were in place when the students entered the testing area. The name, grade, sex, date and numeral of test had been entered on the answer sheet by the examining staff prior to the test. The answer sheets were inserted into the test booklet and placed cover side down next to each place card. The test booklets remained in place until the chief examiner gave instructions to open them.

4. After each student finished the test, he left the cafeteria and went to the library where his membership card was validated by the principal.
5. The test was administered each session by the same counselor, assisted by the same three proctors.

6. The testing equipment was operated each session by the same individual.

Test Environment and Student Behavior

The investigator wished to detect variations in the behavior of students during the testing sessions which might reflect student awareness of the identical nature of the tests. In order to determine such changes, measurements were taken of the testing environment and of the students' behavior during the three tests.

1. The noise level during each session was recorded by placing an open microphone in the center of the room. The purpose of this technique was to document audible changes, if any, in the test environment. Prior to each test period, a tape recorder was adjusted to its most efficient settings by a student from the class in electronics. These settings were determined in a pre-test. The same settings were utilized for the three tests.

2. Wide-angle photographs were taken five minutes after each test began and were repeated at a specified time during each test. The purpose of these pictures was to provide visual documentation of changes, if any, in physical attitudes. This technique was introduced to provide a compara-
tive statement of task attention between the various testing sessions, as well as recording differences which occurred during any one test period.

3. The time when each individual student finished was recorded by a proctor who pressed a buzzer as the student stood up to leave. This was recorded on a second tape which ran continuously during the test sessions. These items were plotted on a graph in thirty-second intervals. Answer sheets were filed according to the order of finish. It was thereby possible to relate a specific time on the graph to a specific answer sheet and thus to establish the time of finish for each student in each test.

4. The lapsed time for each test was recorded by the use of a stop watch.

**Culminating Activities**

1. A reporter from the local press was present for the third and final session. He took pictures, one of which was published in the Oxnard Press-Courier with an accompanying article two days later. As an added incentive to be present for the final session, the students were advised of his presence in their reminder notes prior to this test.

2. A congratulatory letter was sent to the parents of each student who participated in this research. The student was mentioned by name and the letter was signed by the prin-
principal and the investigator. The letter was mailed two days after the last test (see Appendix I for the text of the letter).

3. A letter of appreciation from the investigator was mailed to each teacher and to members of the administrative staff.

Make-Up Tests

Those students who were absent during regular test sessions were given make-up tests in the conference room as soon as possible after each test. The same procedures used in the regular test sessions were observed in the special tests.

Data Collection

Standard IBM answer sheets were used for the collection of data. The correct and incorrect responses were scored and arranged by health content areas. This data was transferred to IBM cards for analysis.
CHAPTER IV

ANALYSIS AND DISCUSSION OF FINDINGS

The participation of the students in the three tests was of interest in assessing the effectiveness of the factors utilized to achieve the "Hawthorne" effect. Student participation was as follows: Test One, 99 percent (104/105); Test Two, 97 percent (102/105); Test Three, 98 percent (103/105). The study was not designed to assess the contribution of each motivating factor in accomplishing this result.

In the School Health Education Study, the LeMaistre-Pollock Health Behavior Inventory was analyzed from two points of view: (1) the percent of correct responses for a given item; and (2) the percent of correct responses for a health content area. For the purposes of this study, the latter measurement was used. Variations in responses between the three tests were measured by differences in percent of correct responses for a health content area. The responses obtained from males (11th and 12th grade students), females (11th and 12th grade students), 11th grade students (male and female), and 12th grade students (male and female) were compared.
The percent of correct responses in health content areas for the three tests are shown in Figure 1. No significant differences were observed between the tests. The statistical analysis used was based on the assumption that the individual's responses for each test would be independent of his responses on previous tests. Accordingly, Student's "t" statistics were used to determine differences (12:122-123).

Pollock classified each item in the inventory according to its objective—to test for knowledge, attitude or practice (29:51-52). Her classification scheme is reproduced in Appendix II. A maximum correct score was observed for the Rio Mesa High School in content area IX. Questions in this content area dealt with knowledge, attitudes and practices regarding drinking, smoking and narcotics. A higher correct score was to be expected because of previous exposure by the students to instruction in the ninth grade curriculum. In contrast, the lowest correct response was in the area of nutrition, content area VI. Approximately 40-45 percent of the items were answered correctly on each test.

The comparison of average response for the three tests at Rio Mesa High School and the School Health Education Study national norms is shown in Figure 2. The national norms presented should not be considered as an ideal score, but rather as an estimate of the existing level of information related to specific health content areas. These estimates
Figure 1. Percent correct responses by Health Content Areas for Tests One, Two, and Three. Study sample consists of eleventh and twelfth grade students at Rio Mesa High School.

Content Area

I. Personal Health  
II. Safety & First Aid  
III. Family Health  
IV. Infection and Disease  
V. Mental Health  
VI. Nutrition  
VII. Community Health  
VIII. Exercise, Rest & Recreation  
IX. Drinking, Smoking & Narcotics  
X. Dental Health
Content Area

Percent Correct Responses

- - - - Test One

--- Test Two

-------- Test Three
Figure 2. Average responses in the Rio Mesa Sample (105 eleventh and twelfth grade students) compared to the National Norms of the School Health Education Study.

Content Area

I. Personal Health
II. Safety & First Aid
III. Family Health
IV. Infection and Disease
V. Mental Health
VI. Nutrition
VII. Community Health
VIII. Exercise, Rest & Recreation
IX. Drinking, Smoking & Narcotics
X. Dental Health
were observed to be different for high school males and females in previous analyses (35:52; 8:13). No significant differences between grades had been demonstrated to date. Responses of the sample from Rio Mesa High School were consistently lower than these national norms. The largest differences were in content areas dealing with family health, mental health; nutrition; exercise, rest, and recreation; and dental health.

The average response for the three tests compared to the School Health Education Study norms by grade and sex is shown in Figure 3. Eleventh grade students showed more discrepancy from the national norms than did the twelfth grade students. Overall, the 12th grade males had scores "closest" to the national norms than did the other subgroups. The major discrepancy in response for the 12th grade males was in the area of nutrition. Twelfth grade females showed differences from the norms primarily in the areas of family health, mental health and nutrition.

The average responses by grade, sex and successive administrations of the LeMaistre-Pollock Health Behavior Inventory for the study sample are shown in Figures 4, 5, 6, and 7. No significant differences in scores were observed between the sexes within the 11th (Figure 4) or 12th (Figure 5) grades, or between scores for males (Figure 6), or for females (Figure 7) (12:122-123).
Figure 3. Average responses for the three tests compared to the School
Health Education Study norms by grade and sex for 105 eleventh
and twelfth grade students at Rio Mesa High School.

Content Area

I. Personal Health
II. Safety & First Aid
III. Family Health
IV. Infection & Disease
V. Mental Health

VI. Nutrition
VII. Community Health
VIII. Exercise, Rest & Recreation
IX. Drinking, Smoking & Narcotics
X. Dental Health

3a. Composite norms for three
tests compared to national
norms for males (11th grade).

3b. Composite norms for three
tests compared to national
norms for females (11th grade).

3c. Composite norms for three
tests compared to national
norms for males (12th grade).

3d. Composite norms for three
tests compared to national
norms for females (12th grade).

--------- Male/Female

--------- National Norms
Figure 4. Average responses in eleventh grade males and females for 48 students at Rio Mesa High School for each administration of the LeMaistre-Pollock Health Behavior Inventory.

Content Area

I. Personal Health
II. Safety & First Aid
III. Family Health
IV. Infection and Disease
V. Mental Health
VI. Nutrition
VII. Community Health
VIII. Exercise, Rest & Recreation
IX. Drinking, Smoking & Narcotics
X. Dental Health

4a. Eleventh Grade, Test One.

4b. Eleventh Grade, Test Two.

4c. Eleventh Grade, Test Three.

------ Female
------ Male
Figure 5. Average responses in twelfth grade males and females for 57 students at Rio Mesa High School for each administration of the LeMaistre-Pollock Health Behavior Inventory.

Content Area

I. Personal Health
II. Safety & First Aid
III. Family Health
IV. Infection & Disease
V. Mental Health
VI. Nutrition
VII. Community Health
VIII. Exercise, Rest & Recreation
IX. Drinking, Smoking & Narcotics
X. Dental Health

5a. Twelfth Grade, Test One.

5b. Twelfth Grade, Test Two.

5c. Twelfth Grade, Test Three.

------- Female

------- Male
Figure 6. Average responses in eleventh and twelfth grade males for 52 students at Rio Mesa High School for each administration of the LeMaistre-Pollock Health Behavior Inventory.

Content Area

I. Personal Health  
II. Safety & First Aid  
III. Family Health  
IV. Infection & Disease  
V. Mental Health  
VI. Nutrition  
VII. Community Health  
VIII. Exercise, Rest & Recreation  
IX. Drinking, Smoking & Narcotics  
X. Dental Health

6a. Eleventh & Twelfth Grade Males, Test One.  
6b. Eleventh & Twelfth Grade Males, Test Two.  
6c. Eleventh & Twelfth Grade Males, Test Three.

<table>
<thead>
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<th>Eleventh Grade</th>
<th>Twelfth Grade</th>
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Figure 7. Average responses in eleventh and twelfth grade females for 53 students at Rio Mesa High School for each administration of the LeMaistre-Pollock Health Behavior Inventory.

Content Area
I. Personal Health
II. Safety & First Aid
III. Family Health
IV. Infection and Disease
V. Mental Health
VI. Nutrition
VII. Community Health
VIII. Exercise, Rest & Recreation
IX. Drinking, Smoking & Narcotics
X. Dental Health

7a. Eleventh & Twelfth Grade Females, Test One.
7b. Eleventh & Twelfth Grade Females, Test Two.
7c. Eleventh & Twelfth Grade Females, Test Three.

----- Eleventh Grade
----- Twelfth Grade
Comparisons within the individual between tests were performed using the paired-difference Student's "t" test (12:124-127). The 11th grade males differed significantly (P < .05) in their response to questions in the health content area I between test one and test two. The 11th grade females differed significantly (P < .05) in their responses to health content area V between test one and test three. No other significant differences between test responses by content areas were observed within these subgroups.

Twelfth grade males differed significantly (P < .05) in their responses to area X between test one and test two. Twelfth grade females differed significantly (P < .05) in their responses to questions in health content area VII between test two and test three. The twelfth grade students improved in these specific areas on the subsequent test as compared to the prior one. No other significant differences between tests were observed.

While significant differences between test administrations were found, it was evident from a consideration of the data presented in Figures 4-7 that such differences were small. Further, the pattern of responses to each test was similar.

The distribution of student finish times for each successive administration of the HBI is shown in Figure 8. The total time of the first test was 58 minutes; of the second test, 46 minutes; and of the third test, 35 minutes. The
Figure 8. The distribution of finish time for each successive administration of the LeMaistre-Pollock Health Behavior Inventory for eleventh and twelfth grade students at Rio Mesa High School.
The range of finish times was similar. The finish times were ranked for each test. Analysis showed no marked change in individual rankings.

Photographs taken of the participants during each test indicated no apparent differences in physical attitudes. In addition, the background noise level remained constant throughout the testing periods. The decrease in testing time may be related to familiarity with the testing environment. Consideration of the data presented in Figure 1 would suggest that there was no indication of significant learning of health information from successive administrations of this inventory in three apparently different formats.

CONCLUSIONS

The findings in this study may be summarized as follows:

1. Student responses to the revised forms of the Health Behavior Inventory were similar to each other and to the copyrighted inventory.

2. If the questions in the inventory do, in fact, measure the presence or the absence of knowledge, attitudes and practices related to health, then responses from the students in this study indicated deficiencies in knowledge in all health content areas.
3. Areas of health knowledge in which the students in this study were particularly deficient were: family health; mental health; nutrition; exercise, rest, and recreation; and dental health.
CHAPTER V

SUMMARY AND CONCLUSIONS

The health education needs of high school students have been assessed using a variety of measuring instruments. One instrument which has been widely used in recent years is the LeMaistre-Pollock Health Behavior Inventory. The variations in responses to three forms of this inventory were investigated in this study. The three tests were administered under controlled conditions at weekly intervals to a select sample of 105 junior and senior students at Rio Mesa High School in Oxnard, California.

A variety of techniques were utilized to insure a high degree of teacher cooperation and student participation. These techniques were successful in that 99, 97 and 98 percent participation was secured from the sample population on the three consecutive tests.

Significant differences between the subgroups studied were observed in certain health content areas. These differences, however, were small, and the pattern of total response indicated that there was no marked variation in responses to the three tests. The need for health instruction in each of the health content areas was apparent.
The findings of this study suggest that the three forms of the test--the copyrighted inventory and the two forms developed for this study--might be useful in a test-retest situation.
BIBLIOGRAPHY


23. Harold E. LeMaistre and Marion B. Best Pollock. Health Behavior Inventory, Senior High Level, used by permission of California Test Bureau, a Division of McGraw-Hill Book Company, Monterey, California, copyrighted 1962.


APPENDICES
APPENDIX I

COMMUNICATIONS
SAN FERNANDO VALLEY STATE COLLEGE
Northridge, California

Department of Health Science

March 20, 1967

California Test Bureau
Del Monte Research Park
Monterey, California

Gentlemen:

Permission is hereby requested of the California Test Bureau to use the LeMaistre-Pollock Health Behavior Inventory as a part of a research project in Health Science under the auspices of the Department of Health Science at San Fernando Valley State College. My objective is to prepare a Master's Thesis in Health Science.

Previous studies using this and similar inventories have suggested that (1) these inventories do in fact measure health knowledge, and (2) more effective educational programs can be developed when based on recognized needs of the students. Therefore, it becomes important to assess the amount of repetition observed on successive administrations of a given questionnaire to a given group.

If the group repeatedly indicates the same levels of competency in the questionnaire, then the educator may feel more confident in basing educational programs upon these results. If however, the responses change and different areas of competency are exhibited with repeated administration, then the educator may feel less confident in planning programs based on these results. Therefore, the purpose of my study is to determine the variation in response, if any, when the LeMaistre-Pollock Health Behavior Inventory is administered repeatedly to the same high school students.

The test will be administered to a randomly selected group of eleventh and twelfth grade students at Rio Mesa High School, a senior high school within the Oxnard Union High School District. The test will not be used as prepared by the California Test Bureau. The test items and item responses will be used in three different random orders. One ordering, however, corresponds to that used in the copyrighted inventory. The inventory will be reproduced on three different shades of pastel paper. The names, John and Sue, will be changed in two of the tests.
The purpose of these disguises is to minimize the ability of the students to recognize that the same test is being administered to them on three successive occasions.

I respectfully request your permission to modify the Le-Maistre-Pollock Health Behavior Inventory in this way. It is my belief that the results of my proposed research can add to the existing body of knowledge concerning this and similar behavior inventories. I will be most happy to present to you a complete report of my findings.

This research proposal has been approved by my Thesis Committee: Dr. John M. Weiner, Dr. Wilfred Sutton, and Dr. L. H. Glass. Further developments now are contingent upon your favorable reply.

Gratefully yours,

Elda M. Neal
Elda M. Neal, R.N., B.S.
School Nurse
Oxnard Union High School District

EMN/1k

cc: Dr. Edward B. Johns

John M. Weiner, Dr. F. H.
Thesis Chairman
April 6, 1967

Ms. Elda M. Neal
Rio Mesa High School
545 Central Avenue
Oxnard, California 93030

Dear Ms. Neal:

This is to confirm verbal permission given by Mr. Archie Lapointe on March 28, 1967, for you to reproduce the Health Behavior Inventory, Senior High Level on three different shades of pastel paper and to change the test items and item responses to three different random orders for use as part of a research project in Health Science under the auspices of the Department of Health Science at San Fernando Valley State College for your Master's thesis.

It is understood that your thesis is for customary limited distribution and is not intended for commercial publication.

Acknowledgment must include the following information:

From the Health Behavior Inventory, Senior High Level, devised by E. Harold LeMaistre and Marion B. Pollock. Copyright © 1962 by McGraw-Hill, Inc. Used by permission of California Test Bureau, a Division of McGraw-Hill Book Company, Monterey, California.

We would appreciate a copy or an abstract of your thesis when it is completed.

Sincerely,

Sydney D. Demarest (Mrs.)
Editorial Assistant
Copyrights and Permissions

cc: Mr. Archie Lapointe
Dr. Jack R. Matlock
Dear (Teachers and Members of the Administrative Staff):

We have just finished our first Health and Science research project at Rio Mesa High School. This program was made possible by your understanding and cooperation for which I am personally grateful.

The purpose of this research was to determine the level of health knowledge of junior and senior students in our standard history curriculum. Information from this study will be made available to the district curriculum committee for their consideration in devising an appropriate program, and certain measurements from this study form the basis for my Master's Degree thesis.

As you know, the students selected for this project had to be present at three consecutive test sessions. In order to assure their presence your classes were interrupted for student reminders, special bulletins, and specific other requests for your cooperation. We also had to readjust the Tuesday class schedule to accommodate the testing schedule.

It should be obvious from this brief summary that, without your support, none of this would have been possible. You were truly an important part of this research program.

My warmest thanks to you for your contribution to the potential development of health education in our district, and for your assistance in the attainment of my personal goal.

Most sincerely,

[Signature]

Elda
Dear Mr. and Mrs.  

As you know, Rio Mesa High School has been involved in a research project to find out how much our students know about health. Such knowledge will have wide-reaching benefits to the student, his family and his community. The purpose of this research is to develop an effective teaching program in health. Information from this research project will be used by the curriculum committee in our district.

We at Rio Mesa High School are proud of all of our students and particularly of those who participated in this program. The enthusiasm and cooperation demonstrated by all students in this project was very gratifying. We especially wish to thank you as parents for your guidance and encouragement.

We are pleased to have had the outstanding cooperation of (student's name) as a part of our research project.

Sincerely,

Elda M. Neal  

Elda M. Neal, Research Director

Elmont W. Michaelson, Principal
CORRESPONDENCE TO TEACHERS

3/31/67

Dear __________:

Research Needs Your Support!
I cannot provide you with details at this point in the Health Science Research Project, but will you please give your support to News Item #1 in today's bulletin?
More to follow.

Gratefully,

------------------------------------------------------------

4/4/66

To All Teachers:
Re: Health and Science Research Project

Now it can be told:
A battery of three Health Knowledge Tests will be given to a specially selected group of our Junior and Senior students. The tests will take place Period 2 on April 11, 18 & 25.

1. Students who have been selected to participate will be notified today in their second period classes. If no envelopes arrive for your students, it is because no one in your class will be participating.

2. At 10:45 today by special bulletin, participating students will be called from their third period classes for a meeting in the gym.

-------------------------------------------------------------
Dear __________:

Here are the membership cards for those students who have been selected to participate in the Science & Health Research Project.

This card is the first "inkling" each student will have of his/her selection. Therefore, YOU are the key to the success of this project. Please sell it BIG!

Thanks a million,

------------------------------------------

To: Period 3 teachers
From: Mr. Michaelson

1. Please send the following students to the gym at this time:

------------------------------------------

TO ALL TEACHERS:

It is extremely important that during the next two weeks no discussion be held with students regarding the content of the health knowledge tests certain students will be taking.

This is necessary in order to keep the findings as valid and reliable as possible.

Students may ask questions, or volunteer information. Please tell them to wait until all three tests are completed and then to ask again.

Thank you,

------------------------------------------
Dear __________

Would you believe that 104 of the 105 participants in the Health and Science research project were present last Tuesday??? Much of this is due to your cooperation. Anything you can do in your class to maintain the level of interest will be greatly appreciated. Tuesday, April 18, period 2, the 2nd test will take place. We're trying for 105 out of 105!

---------------------------------------------

4/24/67

Dear __________

Your cooperation has been simply outstanding! In spite of the "flood" last week, 102 of the 105 participants were present for Phase II of the Health and Science research project. "Just one more time," and this research project will be history. Tomorrow, April 25, same time, same place, for the third and final Phase.

Thanks a million,

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4/18/67

Please send the following students to the cafeteria at the end of period 1 (9:10) today. Thanks,

---------------------------------------------

4/25/67

Please send the following students to the cafeteria at the end of period 1 (9:10) today. Thanks,
Research Project:

Rio Mesa High School has been invited to participate in a research project in Health and Science. A group of Rio Mesa students will be chosen to represent our high school in this research. Will it be YOU who is selected to speak for the Spartans?

-------------------~--------~-------------------------------

Research Project:

Today, Period 2, those students especially selected to participate in the Health and Science Research project will be notified--It could be YOU!

------------------------------------------------------------

4/7/67

On Tuesday, April 11, Period 1 will end at 9:10. Period 2 will begin at 9:15. This schedule is made in order to accommodate a special testing program during second period.

------------------------------------------------------------

4/11/67

Because of special testing today Period 2, it may be necessary to hold second period two or three minutes late. Please do not release your second period class until the bell rings. A reminder also that Period 1 ends at 9:10 today. Period 2 begins at 9:15.
Because of special testing today, Period 2, it may be necessary to hold second period 2 or 3 minutes late. Please do not release your second period class until the bell rings. A reminder also that Period 1 will end at 9:10 today, period 2 begins at 9:15.

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4/25/67

A reminder that Period 1 today will conclude at 9:10. Please do not dismiss your second period class until the bell rings. This is the last session of the Health Inventory. Thanks to all for your cooperation.

-----------------------------
COMMUNICATIONS TO STUDENTS

First message regarding the project:

CONGRATULATIONS

You have been selected to speak for the Spartans in Rio Mesa's first Health and Science Research Project. The membership card will excuse you today at 10:45 from your third period class. At that time, go immediately to the gym.

Second week:

A REMINDER:

Tomorrow, period 2, Phase II of the Health and Science Research Project will take place. It is vital that YOU be there. The Research Group is making history! Let's make it 105 present! Bring your membership card.

Third week:

JUST ONE MORE TIME! and our Health and Science research will be history. The Press-Courier is very interested in our project and will have a reporter (and possibly a photographer) here Tuesday for our final session. They can't believe that you've all been coming voluntarily three times in a row for three tests . . . they want to see for themselves. LET'S SHOW THEM! 105
Membership Card

RESEARCH PROJECT  "SPARTANS FOR
in Health Science  SCIENCE"
Rio Mesa High School
Spring, 1967

Bring this card to Testing Area
Card holder is entitled to participate in a research project and agrees to be present on April 11, 18, and 25, 1967 for this research.
MEMOS TO VARIOUS PERSONNEL

4/10/67

To Second Period Study Hall Teacher:

Dear Bill: Just a reminder. Please tell your study Hall students to meet in the library tomorrow—except for any who are taking the test.
(repeated each week)

Thanks,

To Custodian: 4/10/67

Mr. Haney:
Tuesday, April 11th, period 2, special testing will take place in the Cafeteria. (Period 2 will begin at 9:15 a.m. instead of 9:25 am., and will last approximately one hour.)

Quietness near the testing area will be most important. Please do not run lawn mowers or similar type equipment near the cafeteria during that period.

Thanks to you & your crew,

Mr. Haney: 4/18/67

A reminder: Period 2 (9:15 to 10:15) today—Special testing in the cafeteria. Thank you for bringing the equipment. It was beautifully quiet last week—Can we count on the same again this week?

Thanks to you all,

Mr. Haney: 4/25/67

A last reminder: Special testing period 2 today (9:15 to 10:15). Thanks for keeping everything so quiet in the test area.
To Cafeteria Manager, June Frye:  

4/10/67

Dear June:

This is a reminder of the special testing that will take place in the Cafeteria tomorrow, Tuesday, April 11, during second period.

Second period will begin at 9:15 a.m. (instead of 9:25 a.m.) and continue for approximately one hour.

Please remind the cafeteria staff of the importance of being especially quiet during this period. Sorry about that!

Thanks,

4/18/67

Dear June:

A reminder: Special testing period 2 (9:15 - 10:15). You were quiet as mice last week—Can't tell you how much it was appreciated.

I will get the extra table out & the gear I borrowed returned after testing.

Thanks,

4/25/67

Dear June:

Same song, third verse—9:15 - 10:15 today. Thanks for the beautiful cooperation.

4/11/67

To Librarian & Photographer, Kenneth Johnson:

As the students reach the library they should be encouraged to study. The less opportunity they have to discuss the test immediately after taking it—the better.

See you at 9:30 and about 9:55. Thanks,
4/18/67

Mr. Johnson:

Study Hall today, period 2, in the library. Same procedure as last week.

Pictures at 9:30 and 9:50.

How about taking the shots today of group from the other corner, same side of room? Come in the same door. There's a chair for you to stand on.

At 9:50, one picture of Lee & I with our equipment & one picture of Glenn & Marie checking out (get a student if you can).

Also: One or two pictures of Mr. Michaelson stamping someone's card.

Does the roll hold that many??

Thanks,

4/25/67

Mr. Johnson:

One from each corner of the back & one from the front each time, if possible.
The shots are all excellent!
Will let you know if I want any special shots.

To Electronics Teacher, Mr. Harwood: 4/11/67

Jerry:

Just a reminder about period 1 and the boys who are going to set up the mike.

Thanks,
Jerry:

Just a reminder. The tape recorders are all set up. Ask the boys to report to me and I'll go over with them to check them out. Can't tell you how I appreciate this.

4/25/67

Jerry:

Larry did a great job last week. The recorders are all ready to be tested. Surely appreciate the service.
APPENDIX II

LEMAISTRE-POLLOCK HEALTH BEHAVIOR INVENTORY

Items arranged by Health Content Areas. Each item has been classified with respect to the author's intent to measure knowledge (K), attitude (A) or practice (P).

The circle designates the preferred response for each question.
DIRECTIONS

Each of the problem situations on the following pages concerns your health knowledge, attitudes, and practices. Five possible answers are given for each question. CHOOSE THE ANSWER WHICH YOU THINK BEST EXPRESSES YOUR OPINION, OR WHAT YOU WOULD DO.

Read each statement carefully before marking on your answer sheet. Each of the possible answers is numbered from 1 to 5. If you would choose number 1, you blacken the space under the number 1 on your answer sheet. If you would choose number 2, you blacken the space under number 2, etc.

If you change an answer, be sure to erase the old mark completely.

DO NOT CREASE OR FOLD YOUR ANSWER SHEET.

DO NOT WRITE OR MARK IN YOUR TEST BOOKLET.

Work as fast as you can without making mistakes. As soon as you have finished, STAND UP. Take your answer sheet and test booklet to Mrs. Weed at the EXIT. Go to the library and check in. Mr. Michaelson will stamp your membership card to indicate that you have completed Test I (II III).
I. PERSONAL HEALTH

(A) 1. When John and Sue enrolled in senior high school, they were required to take a health examination. You would say

1. such examinations are necessary only if John and Sue show signs of ill health.
2. this requirement could be put aside, since both were examined last year and found to be in excellent health.
3. the school should be concerned only with communicable disease found among students.
4. everyone should be examined by a doctor periodically, whether or not there is cause.
5. any school requirements could be handled by the school nurse.

(A) 2. During Sue's health examination, she was asked to give details of her family's health history. It is your opinion that she should

1. not be required to supply information if there is a record of mental illness in her family.
2. be required only to give information that concerns her own health.
3. supply all the information requested by the doctor.
4. not be required to supply information concerning communicable disease in her family.
5. supply only that information which she thinks the school should have.

(P) 3. When weighed, Sue was told that she was underweight and should gain several pounds. If you were Sue, you would

1. consult a trained dietitian.
2. buy a tonic that provides vitamins and builds appetite.
3. ask the advice of the family doctor.
4. go to a nearby gymnasium for body-building exercises.
5. eat plenty of high-calorie foods.
follow directions carefully.

2. see your physician.
3. ask your pharmacist for advice.
4. begin to use a medicinal skin soap.
5. apply frequent hot compresses to your face.

John and Sue, applying what they have learned in health instruction, take sensible precautions to avoid communicable disease. Which of the following is the poorest practice relating to contagious diseases?

1. Borrowing or lending a comb or lipstick
2. Washing or peeling fruit before eating it
3. Drinking pasteurized milk
4. Drying your feet well, particularly between the toes
5. Taking advantage of immunization measures

One day Sue noticed that her eyes were inflamed and irritated. Over a period of several days, this condition grew worse until she was unable to read or to do her school work. If you had similar difficulties, you would

1. consult an optician or an optometrist.
2. consult an ophthalmologist (oculist).
3. protect your eyes by limiting your reading and TV viewing.
4. buy a pair of glasses, if you found a pair you liked.
5. protect your eyes by wearing dark glasses.

In his health class, John learned that the number one killer is heart disease. He knows that his best precaution against this disease is to

1. avoid participation in vigorous physical activity.
2. keep his weight below normal.
3. be concerned that nothing he does taxes the heart.
4. have regular medical examinations.
5. take tablets to maintain normal blood pressure.
(P) 66. Sue has noticed how many products relating to health are advertised on television and in popular magazines. With her health education, she is able to make wise decisions about such matters. If you were Sue, you would

1. buy a medicine advertised on television if it seemed suited to your needs.
2. believe that minor illnesses can just as well be treated by home remedies.
3. see what your friends think of a product, then buy if they recommend it.
4. know that legislation guarantees the reliability of any advertised medicine.
5. refuse to buy any medicine not prescribed by a medical doctor.

Sue and John should know what action to take for each of the complaints named in Items 67 to 71. Match each item with one of the actions listed which you feel is appropriate. (You may take the same action for more than one complaint.)

(P) 71. Painful injury to back (Complaint)
Action:
1. Go to a pharmacist.
2. Go to a medical doctor.
3. Go to a chiropractor.
4. Treat yourself.
5. Go to a health advisor not listed above.
II. SAFETY AND FIRST AID (9 items)

(P) 5. During the summer vacation, Sue spent a holiday at the beach. In order to protect her skin from the sun, she took special precautions. If you were Sue, you would

1. use a sun-tan lotion recommended by your pharmacist, then not worry any more about sunburn.
2. get a quick sun tan by uniformly exposing your body to the sun.
3. expose your body to the sun as little as possible.
4. expose your body to the sun for short periods of time each day.
5. use an ultra-violet lamp to tan the skin just before the holiday.

(P) 49. During a chemistry class, John accidentally spilled some strong acid on his hand. The chemistry teacher, being skilled in first aid, took immediate action. If you were the chemistry teacher, you would have

1. washed the acid off the hand with lots of water.
2. neutralized the acid with a strong alkali.
3. phoned for the school physician or nurse.
4. covered the hand with oil.
5. applied a lotion or ointment for burns.

(K) 50. Sue and John visited a dairy farm during a field trip. John removed his socks and shoes in order to wade a stream, and accidentally stepped on a rusty nail. John should

1. paint the wound with a strong antiseptic and forget about it.
2. merely wash the foot with soap and water and cover it with clean bandage.
3. visit his doctor for a tetanus shot.
4. enlarge the wound to make it bleed, then get a typhus shot.
5. stay off the foot until danger of infection has passed.
(K) 51. Hiking one day, one of John's friends was bitten on the leg by a poisonous snake. A boy ran to call the doctor. John should know that the next thing to do is

1. raise the afflicted part to keep it from swelling.
2. give the boy a hot drink so that circulation will be increased.
3. follow the procedure of constriction, incision, and suction.
4. help him walk to the highway where help can be found more quickly.
5. cover him with blankets to prevent shock.

(P) 52. Two cars collided outside John's home. John found one driver unconscious, but with no apparent injuries. The second driver was conscious, but a gash on his arm spurted blood. If you were John, you would immediately

1. call for a physician and an ambulance.
2. call the police.
3. remove the victims from the cars in case there might be fire.
4. try to revive the unconscious driver.
5. stop the bleeding by applying pressure against the cut.

(P) 53. John's father bought a new car which had a padded dashboard and strong safety belts. If you were John, you would

1. use the belt whenever driving long distances.
2. use the belt whenever driving at high speed.
3. use the belt if driving on freeways where all cars travel at high speed.
4. refuse to use the belt on the theory that the car might catch fire or be immersed and you would be trapped.
5. use the belt even if driving at slow speed and for just a few blocks.
(A) 54. John purchased a second-hand car which was in excellent condition. If you were John, you would consider it a poor safety practice to
1. keep a regular check on the car's mechanical condition.
2. refuse to pick up hitchhikers.
3. be courteous to others using the road.
4. drive consistently at a very slow speed.
5. drive only when alert.

(K) 65. There have been a number of traffic accidents at an intersection near Sue's home. Her parents believe the accidents are due to inadequate lighting of the intersection. If you were they, you would
1. ask a prominent citizen to complain to the local council.
2. write a letter of complaint to the local newspaper.
3. write to the appropriate authority requesting an inspection of the intersection lighting.
4. refuse to pay taxes until better lights are installed.
5. not do anything, as it is a police matter.

(F) 74. John and Sue have learned the recommended Civil Defense procedures to follow in the event of an attack. If a wavering air raid siren is heard, and if they are more than fifteen minutes away from home, they should
1. seek shelter in designated buildings.
2. call their parents immediately to make plans to meet.
3. look up the block warden and try to assist him in his work.
4. stay where they are, whether sheltered or not, to avoid traffic congestion.
5. go home as quickly as possible, no matter how long it takes.
III. FAMILY HEALTH (9 items)

(A) 2. During Sue's health examination, she was asked to give details of her family's health history. It is your opinion that she should

1. not be required to supply information if there is a record of mental illness in her family.
2. be required only to give information that concerns her own health.
3. supply all the information requested by the doctor.
4. not be required to supply information concerning communicable disease in her family.
5. supply only that information which she thinks the school should have.

(K) 22. The home lives of John and Sue and their relationships with their families have also undergone a gradual change. You know they are becoming more mature when they now

1. accept family decisions without question.
2. express their opinions in family matters.
3. keep their opinions to themselves or express them only to their friends.
4. are certain that their opinions are the right ones.
5. seek the help and advice of their friends before making decisions.

(A) 27. Sue and John have been going out together since their first year of senior high school. Recently they have talked about going steady. If you were Sue, you would feel that you should

1. spend more time with friends of your own sex.
2. not participate in any social activities without John.
3. associate with a number of friends of both sexes.
4. learn to spend more time alone.
5. only see John at school activities.
(A) 28. Both John and Sue are becoming more mature in many ways. Their parents realize that John and Sue will
1. want increasing independence, but will also want to remain close to their own families.
2. reject the old-fashioned ideas of parents.
3. want to prove that they are old enough to be completely independent.
4. make decisions without consulting the family.
5. not want their parents to offer an opinion on any of their friends.

(A) 29. Sue and John both have many friends of the opposite sex. They realize that parents are very interested in such friendships. Their parents would expect Sue and John to
1. have the greatest number of friends among the opposite sex.
2. be reluctant to discuss sex matters with their parents.
3. conflict with them about staying out late.
4. know all about sex.
5. seek sex information from scientific sources or from them.

(P) 30. Health instruction relating to preparation for marriage is proving to be very interesting to both John and Sue. The information they receive should be scientifically sound. They should be most cautious about information coming from
1. their own parents.
2. articles in popular magazines.
3. medically reliable sources.
4. statements made by their church.
5. their school health education program.

(A) 31. Sue's mother has been helping Sue with her homework in the "preparation for marriage" portion of the course. In order for Sue to have a wholesome attitude, Sue's mother understands that education relating to sex and marriage is
1. a normal part of high school education and preparation for life.
2. too embarrassing for most parents to cope with.
(P) 32. Sue and John are now in their final year of high school. In order for them to understand how dating relates to the preparation for marriage, they should now

1. begin to date as many others as possible.
2. continue to date each other only.
3. announce their engagement.
4. date each other regularly and others occasionally.
5. double-date only.

(A) 75. John and Sue have now completed high school and college. They have become engaged to be married. The choosing of a family physician and a family dentist is very important for young married people, so you would expect John and Sue to select a physician and dentist who

1. are members of the local medical or dental association.
2. display letters of appreciation from grateful patients.
3. have limited state licenses.
4. advertise in health magazines.
5. have the largest practices.
IV. INFECTION AND DISEASE (16 items)

(A) 37. John's father was given a medical examination. It was found that he had tuberculosis. You believe:

1. John should not let anyone know the nature of his father's illness.
2. members of John's family should be given a tuberculin skin test.
3. John need have no medical examination as tuberculosis attacks only elderly people.
4. John should not marry, as tuberculosis can be inherited.
5. John's father, once cured, will be immune to any further attack.

(P) 38. There was an epidemic of colds in the high school. Sue woke one morning with typical symptoms. If you were Sue, you would:

1. know that a cold is not serious and go to school as usual, but you would dress warmly and refrain from exercise.
2. stay at home and in bed until the cold was improved.
3. ask your doctor to give you a shot of antibiotics.
4. take a cold tablet at the indicated intervals.
5. see if you had a fever and if not follow the rule of "feeding a cold."

(A) 39. As infants, and again when they entered school, John and Sue were immunized against diphtheria, smallpox, whooping cough, and tetanus. Since then, they have had three polio inoculations. You believe:

1. this will permanently protect them from the five diseases.
2. immunization should be renewed each year for all five.
3. only the polio shots need be renewed each year.
4. these five diseases are the only ones against which inoculation is effective.
your family doctor should be consulted about inoculations every year.

(A) 40. John learned in health class that the venereal disease rate has increased alarmingly in the past few years, particularly among high school students. If you were John, you would believe that

1. once a venereal disease has been cured, one has permanent immunity.
2. prompt diagnosis and treatment with penicillin can completely cure venereal disease.
3. although increasing today, venereal disease has never been a major social problem.
4. venereal disease symptoms will eventually disappear if not treated.
5. venereal disease can be inherited.

(P) 41. As a health education project, John and Sue have been helping the local department of health in its immunization campaign. You would not consider it necessary to be immunized if

1. the disease concerned is no longer prevalent in this country.
2. you had acquired active immunity through experiencing the disease.
3. you had been in contact with the disease but had not acquired it.
4. you were immunized as a baby.
5. you had a naturally high resistance to the disease.

(P) 42. Sue's four-year-old brother contracted influenza. If you were Sue's mother or father, you would

1. isolate her brother from all possible contact with others.
2. not isolate her brother, believing it better to get influenza, and thus acquire immunity.
3. let her brother play with other children, providing they play out-of-doors.
4. not send for a doctor, as influenza is a common disease.
5. not be concerned, as influenza can do no permanent damage.
(K) 43. John and Sue, applying what they have learned in health instruction, take sensible precautions to avoid communicable disease. Which of the following is the poorest practice relating to contagious diseases?

1. Borrowing or lending a comb or lipstick
2. Washing or peeling fruit before eating it
3. Drinking pasteurized milk
4. Drying your feet well, particularly between the toes
5. Taking advantage of immunization measures

(P) 44. Sue noticed that John had a large brown mole on his neck. John told Sue that it had always been there, and that when irritated, it became sore. If you had such a mole, you would

1. not be concerned if there was no history of cancer in your family.
2. control the occasional irritation by a healing salve.
3. not be concerned unless it changed size or color.
4. consult a physician about the need to have it removed.
5. have it removed, as all brown moles are cancerous.

(A) 45. John and Sue's health education class was shown a film concerning teenagers' smoking. They were impressed by the scientific evidence showing that smoking contributes to lung cancer. You feel they should

1. decide not to take up smoking at any age.
2. wait until they are fully grown before starting to smoke, rather than risk stunting their growth.
3. restrict their smoking to one or two cigarettes after meals.
4. smoke less than a pack a day, since only heavy smoking is dangerous.
5. know that the danger of getting lung cancer is too remote for concern.
46. One day Sue noticed that her eyes were inflamed and irritated. Over a period of several days, this condition grew worse until she was unable to read or to do her school work. If you had similar difficulties, you would

1. consult an optician or an optometrist.
2. consult an ophthalmologist (oculist).
3. protect your eyes by limiting your reading and TV viewing.
4. buy a pair of glasses, if you found a pair you liked.
5. protect your eyes by wearing dark glasses.

47. John and Sue have learned that more adolescents and young adults die of chronic disease than they had supposed. They now know that

1. chronic disease can be transmitted from person to person.
2. although young people do suffer chronic disease, it presents a major problem only to the aging.
3. chronic disease accounts for more than three-fourths of all disabling conditions in the United States.
4. diabetes is no longer a problem since insulin has been perfected.
5. asthma and hives are bacterial in origin.

48. In his health class, John learned that the number one killer is heart disease. He knows that his best precaution against this disease is to

1. avoid participation in vigorous physical activity.
2. keep his weight below normal.
3. be concerned that nothing he does taxes the heart.
4. have regular medical examinations.
5. take tablets to maintain normal blood pressure.
Sue and John should know what action to take for each of the complaints named in Items 67 to 71. Match each item with one of the actions listed which you feel is appropriate. (You may take the same action for more than one complaint.)

COMPLAINT (see Action below)

(P) 67. Persistent indigestion
68. Recurring abdominal pain
69. Persistent skin inflammation
70. Persistent cough

ACTION
1. Go to a pharmacist.
2. Go to a medical doctor.
3. Go to a chiropractor.
4. Treat yourself.
5. Go to a health advisor not listed above.
V. MENTAL HEALTH (8 items)

(K) 6. John has observed a number of gradual changes in his body. You know that John should
   1. accept the changes as being normal.
   2. watch each aspect of these changes carefully in order to make sure he is developing normally.
   3. attend a body-building class if he thinks he is developing too slowly.
   4. try to hide these changes if he thinks he is developing too quickly.
   5. not discuss these changes with anyone.

(P) 19. During final examinations, Sue became tired and irritable due to the increased tension and long study hours. She should
   1. have an iced soft drink as a stimulant.
   2. eat a bar of chocolate for quick energy.
   3. take vitamin pills to counteract fatigue.
   4. take time to relax completely at regular intervals during the day.
   5. accept such fatigue and tension as part of modern living.

(P) 21. During their first year in high school, there has been a change in the social behavior of both John and Sue. The best indication of this is that they
   1. help others if it does not inconvenience themselves.
   2. are at ease in social situations which they find interesting.
   3. point out friends' mistakes in order to correct them.
   4. participate in activities only with their own age group.
   5. are cheerful and cooperative in their relationships with family and friends.
22. The home lives of John and Sue and their relationships with their families have also undergone a gradual change. You know they are becoming more mature when they now
1. accept family decisions without question.
2. express their opinions in family matters.
3. keep their opinions to themselves or express them only to their friends.
4. are certain that their opinions are the right ones.
5. seek the help and advice of their friends before making decisions.

23. John is becoming noticeably more mature. He is accepting leadership in student affairs, and enjoys working with his fellow students. Consequently, you would expect him to
1. be very concerned about what people think of him.
2. want others to make decisions for him.
3. be very anxious about his health problems.
4. develop a variety of interests.
5. resent criticism or suggestions when he has done his best.

24. Sue understands that a mature person is one who can make satisfactory adjustments to all situations. She understands that all of the following would be desirable except
1. a realistic attitude toward life.
2. the ability to make decisions based upon careful consideration of the facts.
3. the ability to work hard, but insisting on leisure hours and vacations.
4. the ability to put off pleasure until necessary work is done.
5. the need to be praised and to be the center of attention.
(P) 25. John is disappointed because he failed to make the football team. If you were John, you would
1. see the football coach and plead to be included on the team.
2. tell yourself that being on the team is not very important.
3. say you are not sorry, since you will now have more time for study.
4. join as many student activities as you can.
5. find a substitute activity that would give you satisfaction.

(K) 26. Sue and John were surprised to learn that one out of two hospital beds in this country is occupied by a mental patient. You understand that
1. patients in mental hospitals are there because they are dangerous either to themselves or others.
2. people can be classified as "sane" or "insane" just as they can be classified as "well" or "sick."
3. mentally ill individuals should never marry, since they may have children who would inherit their disorder.
4. mental illness is as curable as any other kind of illness.
5. children who grow up without frustrations will be mentally healthy adults.
VI. NUTRITION (6 items)

(K) 8. Sue and John were invited to a large picnic. They have learned that certain foods are potential sources of food poisoning. Which one of the following foods should they avoid if refrigeration is impossible?
   1. Chicken salad
   2. Watermelon
   3. Bologna
   4. Lettuce
   5. Tomatoes

(K) 9. When John and Sue visited a dairy during a field trip, they saw how milk was pasteurized and bottled. Now, they understand that pasteurization is done primarily because it
   1. destroys all the bacteria in the milk.
   ② kills any pathogenic organisms present.
   3. prevents the formation of lactic acid.
   4. preserves the homogenization.
   5. improves the taste of milk and makes it more digestible.

(K) 10. Sue knows that there are many important things to learn about nutrition, especially if she expects to be a homemaker in a few years. If you were Sue, you would know
   1. Vitamin A deficiency results in spongy, bleeding gums.
   2. The body cannot manufacture any vitamins so we must provide them all through diet.
   3. Cod liver oil is necessary to provide us with Vitamin B.
   4. Overconsumption of vitamins is not a problem in our society.
   ② Vitamins are too often destroyed by cooking.
11. Sue's weight is now normal, thanks to the treatment she followed when underweight. You feel that Sue should now

1. satisfy her appetite for certain foods whenever she wants them.
2. regularly take vitamin pills to insure adequate nutrition.
3. avoid skipping meals as a means of controlling her weight.
4. take calorie-controlled diet preparations if she begins to gain weight.
5. drink homogenized milk in preference to pasteurized milk.

12. John was often constipated. If you had the same tendency, you would

1. avoid milk and cheese.
2. regularly take a mild laxative.
3. include bran in your breakfast.
4. drink plenty of orange juice daily.
5. increase your daily consumption of fruits and vegetables.

13. In his nutrition class, John has learned about food values. He is now making sure that his eating habits are sound. You would expect John to

1. eat some sweets between meals in order to keep up his energy.
2. supplement his diet with concentrated foods.
3. have a breakfast which would supply about one-third of his daily food requirements.
4. be guided by nationwide advertisements for body-building foods.
5. prevent night hunger by having before-bedtime snacks.
VII. COMMUNITY HEALTH (11 Items)

(K) 9. When John and Sue visited a dairy during a field trip, they saw how milk was pasteurized and bottled. Now, they understand that pasteurization is done primarily because it
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2. kills any pathogenic organisms present.
3. prevents the formation of lactic acid.
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5. improves the taste of milk and makes it more digestible.

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1. know that a cold is not serious and go to school as usual, but you would dress warmly and refrain from exercise.
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3. ask your doctor to give you a shot of antibiotics.
4. take a cold tablet at the indicated intervals.
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(P) 42. Sue's four-year-old brother contracted influenza. If you were Sue's mother or father, you would
1. isolate her brother from all possible contact with others.
2. not isolate her brother, believing it better to get influenza, and thus acquire immunity.
3. let her brother play with other children, providing they play out-of-doors.
4. not send for a doctor, as influenza is a common disease.
5. not be concerned, as influenza can do no permanent damage.
(K) 72. John and Sue's class was invited to view a film showing the scope of the World Health Organization program. They now understand that the W.H.O.

1. is a part of the International Red Cross.
2. solves the health problems of undeveloped countries.
3. makes its services available to any nation requesting assistance.
4. is concerned largely with influenza control.
5. is largely supported by private foundations.

(A) 73. Sue and John studied the role of the United States Public Health Service. They learned that this federal agency performs all but one of the following functions:

1. Supersedes local health authorities in individual state emergencies.
2. Assigns experts to assist local authorities in epidemic control.
3. Operates quarantine stations at seaports and airports with foreign commerce.
4. Fosters and promotes public health research both directly and by grants-in-aid.
5. Provides hospital care for members of the U.S. Coast Guard.
VIII. EXERCISE, REST, AND RECREATION (7 items)

(A) 14. John and Sue, in adjusting to their school routine, find that they have to organize their daily activities. In order to keep themselves in top physical condition, you would expect them to

1. have two one-hour periods of strenuous physical activity each week.
2. have a regular amount of enjoyable, vigorous exercise each day.
3. limit their exercise to what they get in school.
4. do deep-breathing exercises as soon as they get up in the morning.
5. join body-building classes at a local gymnasium.

(A) 15. John has learned that physical fitness can be promoted by regular, daily exercise. In addition to his physical education class, he now walks a mile to and from school instead of riding the bus. You believe that

1. the exercise will make him gain weight because it stimulates appetite.
2. physical fitness and endurance naturally increase as we grow up.
3. exercise relaxes tension and actually helps reduce weight.
4. American children are bigger and have more endurance than ever before.
5. physical fitness and academic achievement are not related.

(A) 16. Watching television is Sue's favorite recreation. It is your opinion that

1. watching TV is the best possible recreation.
2. TV is not recreational, since it is not truly an activity.
3. the best recreation involves groups of people, rather than a single person.
4. recreation varies with each person's needs and interests.
5. recreation is active and usually takes place out-of-doors or in the gymnasium.
(K) 20. John and Sue learned in health education that people require periods of rest and relaxation as well as sleep. They now know that
1. fatigue from strenuous activity is relieved only by sleep.
2. a plan for relaxation would not include any physical activity.
3. the best type of rest involves lying down for a short period each day.
4. a change of activity cannot result in rest.
5. the best way to relax and rest is to take a hot shower.
IX. DRINKING, SMOKING, AND NARCOTICS (6 items)

(A) 45. John and Sue's health education class was shown a film concerning teenagers' smoking. They were impressed by the scientific evidence showing that smoking contributes to lung cancer. You feel they should

1. decide not to take up smoking at any age.
2. wait until they are fully grown before starting to smoke, rather than risk stunting their growth.
3. restrict their smoking to one or two cigarettes after meals.
4. smoke less than a pack a day, since only heavy smoking is dangerous.
5. know that the danger of getting lung cancer is too remote for concern.

(A) 55. John drove Sue to a teenage party where he was offered an alcoholic drink. He politely refused. It is your opinion that John

1. was right to turn down the drink, since he was responsible for driving.
2. could have taken just one drink without its affecting his driving.
3. could have accepted, since alcohol taken in moderation is a stimulant.
4. could have taken it if he had a cup of coffee before he drove home.
5. should not drink any whisky, but could have accepted beer.

(K) 56. John and Sue studied the effects of alcohol. They should know that it

1. is a stimulant and makes people have more fun at parties.
2. is all right for adults since it improves the disposition.
3. should be taken by everyone as an effective aid to digestion.
4. helps to eliminate excessive fatigue.
5. is a depressant and deadens the senses.
57. John heard of someone who sells special cigarettes which are guaranteed to be harmless, but "give you a lift." If you were offered one of these cigarettes, you would
1. try one cigarette only, but no more.
2. refuse, and inform the authorities.
3. see how others like them before you try one.
4. buy a pack, since they are guaranteed to be harmless.
5. try one, and if you like it, buy more.

58. John and Sue know that some students use "pep" pills to keep them alert, and sleeping pills to induce sleep. Because of facts learned in class, it is John and Sue's opinion that
1. such pills are safe to use for short periods of time.
2. if prescribed by a doctor, it is all right to refill a prescription indefinitely.
3. these preparations are dangerous if used without supervision.
4. such pills are habit-forming, since they are narcotics.
5. it can do no harm to use a friend's pills if he obtained them from a physician.

59. Both John and Sue are enthusiastic about physical fitness. They have learned that to be in top condition, they should avoid smoking. You feel that smoking is
1. dangerous to health until you are 21 years old.
2. helpful in keeping excessive weight down.
3. harmless when done in moderation.
4. beneficial only to nervous or tired people.
5. harmful to everyone and dangerous to some.
X. DENTAL HEALTH (4 items)

(P) 33. Sue's dentist checked her teeth and found them in excellent condition. If your teeth were sound, to keep them that way you would
1. eat only those foods requiring a great deal of vigorous chewing.
2. use a dentifrice recommended by a dentist.
3. chew a tough, sugarless gum regularly for exercise and cleansing action.
4. brush your teeth after each meal.
5. drink only fluoridated water.

(K) 34. Sue tries to brush her teeth exactly as the dentist advises. She uses a popular toothpaste because she knows it to be effective in
1. killing germs in the mouth and throat.
2. preventing pyorrhea and bleeding gums.
3. preventing cavities and loss of teeth.
4. refreshing her mouth and cleansing her teeth.
5. preventing or removing halitosis.

(A) 35. John and Sue live in a town where fluoride is routinely added to all drinking water. This is done because it
1. eliminates the unpleasant odor of chlorine.
2. helps prevent tooth cavities.
3. is an aid to digestion.
4. purifies the water and makes it safe to drink.
5. clears the water and makes it sparkle.

(A) 36. A classmate of Sue's told her that going to a dentist only to learn that your teeth are in good condition is a waste of money. You believe that the best time to visit a dentist is
1. when you think you need dental treatment.
2. when you know you need dental treatment.
3. at regular intervals.
4. at the first sign of toothache.
5. when you can't stop a toothache.
Typist: Ardell Boyse

Reproduced by: Mary McCullum
5972 Jamieson Ave.
Encino, California
Telephone: 344-8841