

1995

Allied Health Research on Health Promotion/ Disease Prevention: The Assessment of the Reliability and Validity of a Health Risk Appraisal for a College Population

Sandra McMillan Neal Ph.D.
Tennessee State University

M. Jo Edwards Ph.D.
Tennessee State University

Find similar works at: <https://stars.library.ucf.edu/jhoe>
University of Central Florida Libraries <http://library.ucf.edu>

Recommended Citation

McMillan Neal, Sandra Ph.D. and Jo Edwards, M. Ph.D. (1995) "Allied Health Research on Health Promotion/Disease Prevention: The Assessment of the Reliability and Validity of a Health Risk Appraisal for a College Population," *Journal of Health Occupations Education*: Vol. 10 : No. 2 , Article 5.
Available at: <https://stars.library.ucf.edu/jhoe/vol10/iss2/5>

This Article is brought to you for free and open access by STARS. It has been accepted for inclusion in Journal of Health Occupations Education by an authorized editor of STARS. For more information, please contact lee.dotson@ucf.edu.



Journal of Health Occupations Education
Fall 1995, Volume 10, No 2

Allied Health Research on Health Promotion/Disease Prevention:
The Assessment of the Reliability and Validity of a
Health Risk Appraisal for a College Population

Sandra McMillan Neal¹

M. Jo Edwards

Abstract: This research is a step toward solidifying the role of Health Risk Appraisals (HRA) in health education program planning and intervention evaluation. The HRA can be used to accumulate data on health behaviors of the college population. Instruments can be administered in classrooms and to large groups. Establishing the validity and reliability of health risk appraisal instruments can make data usable for assessing risk, planning interventions, and assessing the impact of those interventions on the clients. This study describes a method of establishing validity and reliability of the “College Wellness Check (CWC),” a health risk

¹Sandra McMillan Neal, Ph. D., is Assistant Professor M. Jo Edwards, Ph. D., is Professor and Adams Chair of Excellence in Health Care, Middle Tennessee State University, Murfreesboro, TN.

appraisal for college students. The test-retest method was used to determine reliability and was established at .92 using a Pearson product moment correlation. Validity of the CWC was established using a jury panel of thirty experts, with a 96.2% agreement.

Today, in most industrialized societies, leading causes of illness and death are related to affluence and the proliferation of consumer goods, lack of exercise, highway accidents, violence, risky behavior, and mental illness. Individuals choose, consciously or not to eat or drink **unwisely**, to smoke, to drive too fast, or to drive while impaired. The life styles of individuals frequently contributes heavily to the conditions from which they suffer. These **diseases** are frequently referred to as diseases of choice, affluence, or neglect. Positive gains in the health of a population should result from encouraging individuals to modify adverse life styles and change behavior patterns that leave them open to unnecessary risks.

To provide vehicles for these changes, the Surgeon General of the United States **in** 1979, Joseph A. **Califano**, M. D., issued a report **on** health promotion and disease prevention entitled "Healthy People" (U. S. Department of Health, Education, Welfare, 1979). Subsequently, "Healthy People 2000" (U. S. Department of Health, Education, Welfare, 1980) was issued. These documents proposed that part of the nation's health status is directly related to health risk behaviors and called for a new public health revolution to emphasize health promotion and **disease** prevention as a major facet of American health policy. Guidelines from these reports **encourage** individuals and communities to modify

behaviors in the direction of healthier models. More recently, the health care debate has refocused the attention from acute care to prevention and primary care.

Public school health education, developed since the sixties, has been aimed at reducing health risk behaviors by attempting to change passive and dependent attitudes toward **health** to attitudes of self-responsibility. **Federal** and state legislation has been enacted to foster the development and implementation of comprehensive health education in public schools in order to deter adoption of negative health behaviors. Health Sciences teachers (health occupations) are being utilized as part of an interdisciplinary team to develop and teach in lifetime **wellness** curriculum (Tennessee State Board of Education, 1994).

The life style of most primary students is influenced by their adult caretakers, therefore, making life style changes difficult to accomplish through health education. However, students at the secondary and **postsecondary** education levels are generally in charge of making life style decisions which, for some, constitutes a teachable moment. Often this group is neglected as **health** education is infrequently **mandatory**. Employing appropriate change strategies **like** those identified as effective in public health studies, students could be prime targets for lowering health risk behaviors through health education and health promotional projects. Health education **directed** toward lifetime **wellness** does exist in some institutions.

One study **entitled** the Life Style Improvement Program, located at the University of Wisconsin at Stevens Point, consisted of a computerized life style assessment that identified health risk behaviors with an automated referral to support areas **on campus** (**Hettler**, 1980). This study showed **significant** reduction in health risk behaviors **in** students who chose to

participate. Studies of a **program** at the University of South Carolina entitled **Wellness** (Love, **Lamkim**, and Morphis, 1980), reported similar structure and results.

These projects proved to be effective although computer access and **individual** counseling for students under this model is expensive. Computer scored risk appraisals and classroom and group **health** education, taught through an interdisciplinary approach, guided by data from the Health Risk Appraisal (**HRA**) may be an effective alternative. HRAs are used to **identify** the risk area of the student prior to counseling and prescribing change. Data from the **HRA** can be utilized to plan a risk reduction program, evaluate the effect of an intervention and to establish or expand a research data base. One weakness of using HRA data is that most instruments have no established validity or reliability measures. This article describes one method of establishing the validity or reliability of a health risk appraisal instrument to facilitate use of the instrument,

Instrument

The HRA had its beginning in the **early** 1960s and has continued to grow in **popularity**. The primary work for the HRA was done by **Robbins** and Hall (1970). Their work began with the **Framingham** study and was reported in 1970. During the last decade, the HRA has been used in almost every avenue of the health community. Industry, educational sites, hospitals, and community health centers are finding a need for the **HRA**. **Laszlo** and **Milsum** (1979) stated the HRA is emerging as a major tool for promoting improved health and lifestyle.

Prevention plays a **significant** role in achieving a healthy life. One of the major problems facing health educators today is implementation of what is known about prevention.

The HRA is a tool that can be used to focus on prevention as an individual choice.

Utilization of the HRA promotes individual participation that will influence behavior and reinforce existing health behavior (Coffi, 1979). Richardson (1985) stated that one of the most significant advancements in prospective medicine has been the development of health appraisal instruments. Utilization of these instruments has allowed health facilitators to gain insights into the nature of the client populations with whom they work and plan programs in accordance with identified needs.

Although the HRA can be considered a stand-alone program, most health professionals consider it a tool for motivating people to enter risk reduction programs (Sterling, 1979). As technology has advanced, the use of computers has increased the opportunity for individual participation on a large scale. The ease of administration has enhanced the attractiveness of the HRA and enabled its use in many places, including the classroom. Today, HRAs are typically inexpensive and easily administered with the use of a microcomputer. Therefore, many HRAs have been targeted toward classroom use.

Despite widespread acceptance, questions still remain about the technical aspects of the HRA. Health professionals must be concerned with the reliability and validity of the instruments, especially if the data are used to support research. Even though the HRA is now approaching thirty years of use, research on the reliability and validity of HRAs is scarce.

The College Wellness Check (CWC) is among the many HRAs available that have no established reliability or validity available. Research of the current literature was used to determine questions to be included in the CWC. It is being used in many settings outside the

research area **and** more than 500 copies have been sold (Rhode Island Department of Health, 1987).

purpose

The purpose of this study was to determine the reliability and content **validity** of one HRA, CWC. Two research questions **were** developed:

1. What is the test-retest reliability (correlation coefficient)?
2. What is the content validity?

Reliability refers to the degree of consistency with which an instrument measures the attribute that it is supposed to be measuring. The less variation an instrument produces in repeated measures, the higher its reliability (Doerr and Hutchins, 1981). Reliability ensures that the data obtained through the **HRA** are as consistent as possible. **Pursley** and Neutens (1986) indicated a great concern for the reliability of self-reported information pertaining to one's own health **habits** and health measurement.

There are several ways of estimating reliability. Different types of consistency are determined by different methods; consistency over a period of time, over different forms of the instrument, and within the instrument itself (**Gronlund**, 1985). Consistency over a period of time, the test-retest method, is a measure of stability in which the same test is given twice to the same group with a time interval between tests ranging from **several** minutes to several years. Reliability studies by Smith, **McKinlay** and **McKinlay** (1989) showed results were not affected by the length of the **follow-up** period. The test-retest reliability was assessed by comparing self-reported baseline information to follow-up information for selected risk factors.

“Validity refers to the appropriateness of the interpretations made from test scores and other evaluation results, with regard to a particular use. It is always concerned with the specific use of the results and the soundness of our proposed interpretations” (Gronlund, 1985, p 55). Validity ensures that we are truly measuring the health risks of a particular population.

Content validity estimates how well the sample of test questions represents the health risks to be measured and is the type of validation examined in this study. Efinger (1984) stated that the evidence of validity is sometimes limited to the testimony of experts. Essentially, the content validation would determine the adequacy of the sampling of health habits considered important for college students.

Methodology

Subjects

The subjects consisted of a class of 208 men and women from the general studies Psychology 142 class at Middle Tennessee State University. The HRA was administered in the spring semester, 1992. Twenty-four students were eliminated from the study because they were absent on the second day of the testing and 16 were eliminated because of errors in marking the test. Therefore, a total of 168 students were analyzed in the study.

Instrumentation

The Health Risk Appraisal used was the College Wellness Check (CWC) which is a computerized HRA developed by the Rhode Island Department of Health. The version used in this study was published in January, 1987. The CWC is a questionnaire that consists of fifty items for eliciting information about health risk factors including the following risk

areas: demographics, family history, body build, exercise, smoking, sleep, diet, drugs and alcohol, safety, stress and moods, human sexuality, and cancer. Anonymity was ensured by having the students put the **first** letter of their mother's maiden name and the month and day of their birthday on the upper right corner of the answer sheet. After the questionnaire was completed, the data were entered into the computer, which produced an **immediate** printout. There was a period of one week between the test and retest. The scores of the respondent's **first** test were paired with the scores of their second test and the **identifiers** were then removed.

Results from the completion of the CWC were made available to the students **after** the administration of the second test. Students were given a copy of the booklet, The Way to Wellness (Rhode Island Department of Health **Wellness Check Program**, 1987), to help answer any questions about their particular feedback. Participants were also encouraged to arrange a meeting with the researcher for **clarification** or consultation and further information on any particular situation.

For the purpose of determining content validity, a copy of the questions for the **CWC** was given to a panel of thirty experts in the health field, who were chosen on the basis of their training and experience. Each was asked to decide whether the question was an appropriate item to include in a **HRA** for a college population. Twenty-one of the mailed thirty questionnaires were completed and returned for a 70 % response rate. The results were tabulated to determine a percentage of agreement on each item. The panel of experts was encouraged to make comments considering any items that were omitted or that should have been given additional attention.

Statistical Procedures

The data were subjected to analysis using SPSSX (SPSS, 1986). The Pearson product moment correlation was used to determine the relationship between the test and retest of the CWC. The overall analysis also included descriptive data, including mean, standard deviation, and mode.

Results

Reliability Results

A .92 coefficient was obtained from the Pearson product moment correlation. The .92 coefficient indicated a substantial positive degree of association between scores on the first (test) and the second (test) **administration**. Further, the analysis indicated that with 168 subjects, this relationship was statistically significant at the 0.001 level ($p > .001$).

Validity Results

The content validity was reported as a percentage of agreement among the expert panel. These 21 experts came from a variety of backgrounds in the health professions, e.g., professors, nurses, and public health care providers. Their evaluations of the questionnaire were averaged to obtain an overall assessment of agreement on the material contained in the CWC. Additional comments on the questionnaire were also noted. To determine content **validity**, each rater was asked to indicate which of the fifty items were either acceptable or unacceptable to include on a **HRA** for a college population. The overall percent of agreement was 96.2 %. Many of the 21 respondents who marked some questions, not appropriate, indicated they did so because of wording problems, not content error.

Conclusions and Implications

Based on the **findings** of this study, the high reliability and content validity indicated that the CWC is an appropriate **HRA** to use with a college population which expands the use of the **CWC**. This HRA would allow us to gain knowledge about the nature of the student population with whom we work and to plan programs in accordance with **identified** needs. Health Science faculty involved in health promotion/disease prevention programs with college populations can use this as an instrument to help document intervention effectiveness. The high reliability and content validity established by this study would ensure that any changes detected in the health habits of an individual over time are due to real lifestyle changes and not to unreliable reporting by clients.

The strong content validity established by this study supports the position that the questions asked in the CWC represent valid health concerns in a college population. Therefore, interpretations made from test scores and other information gathered through this HRA would be appropriate for a college population. The procedure employed to establish **validity** and reliability is described in this study. A similar procedure can be used to validate other HRA instruments for research purposes.

References

- Coffi, J. P. (1979). The effect of **health** status feedback on health beliefs: **An inquiry into the prebehavioral** outcomes of a health hazard appraisal. Proceedings from the Society of Prospective Medicine. 15th Annual Meeting, 57-59.
- Doerr, B. T., & Hutchins, E.B. (1981). Health risk appraisal: Process, problems, and prospectus for nursing practice and research. Nursing Research. 30 (5), 299-306.
- Efinger, J. (1984). Psychometrics and health risk appraisal: Reliability and validity in individual feedback. Proceedings from the Society of Prospective Medicine. 15th Annual Meeting, 63-65.

- Gronlund, N.E. (1985). Measurement and evaluation in teaching. New York, NY: **McMillan Publishing Company**.
- Hettler, W. (1980). Wellness promotion on a university campus, family and community health. The Journal of Health Promotion and Maintenance, 3 (1), 77-95.
- Laszlo, C. A., & Milsum, J.H. (1979). An integrated health hazard appraisal program: Application, development and research. Proceedings from the Society of Prospective Medicine. 15th Annual Meeting, 57-59.
- Love, M., Lamkim, R., & Morphis, L. (1980). Wellness works! Columbia, SC: **University of South Carolina Press**.
- Pursley, R. J., & Neutens, J.J. (1986). Can microcomputers identify differences in health status between different groups? Health Education, 17 (2), 37-42.
- Rhode Island Department of Health. (1987). The way to wellness. Providence, RI: Author.
- Smith, **McKinlay**, & **McKinlay**, (1989). The reliability of health risk appraisals: A field trial of four instruments. American Journal of Public Health, 79, (12), 1603-1607,
- SPSS. (1986). SPSS user's guide (2nd cd.). Chicago, IL: Author/
- Tennessee State Board of Education (1994). Lifetime wellness curriculum framework: Grades 9-12. Nashville, TN: Author.
- U.S. Department of Health Education and Welfare. (1979). Healthy people: The surgeon general's report on health promotion and disease prevention. Washington, D. C.: Author.
- U.S. Department of Health and Human Services. (1980). Promoting health/preventing disease: Objectives for the nation. Washington: D.C.: Author.