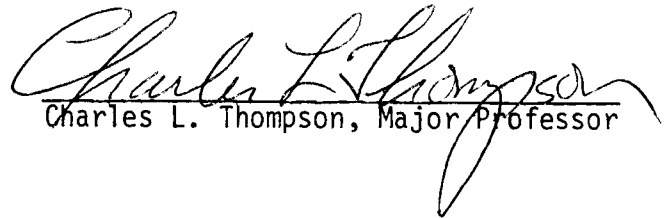


To the Graduate Council:

I am submitting herewith a thesis written by James Michael Adler entitled "Development and Validation of an Alcoholism Screening Inventory." I have examined the final copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Education and Counseling Psychology.

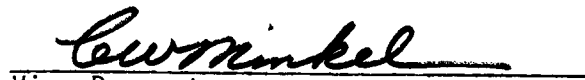
  
Charles L. Thompson, Major Professor

We have read this thesis  
and recommend its acceptance:





Accepted for the Council:

  
Vice Provost  
and Dean of the Graduate School

THE DEVELOPMENT OF AN ALCOHOLISM  
SCREENING INVENTORY

A Thesis  
Presented for the  
Master of Science  
Degree  
The University of Tennessee, Knoxville

James Michael Adler  
June 1985

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## ABSTRACT

The purpose of this study was to develop a paper and pencil alcoholism screening inventory which would screen alcoholics from non-alcoholics. Four groups consisting of 50 subjects each were studied. The groups involved were an alcoholic group, a control group, a general population group, and a "drivers convicted of driving under the influence" (D.U.I) group. Reliability of the instrument was tested using the test-retest method, and the split-half method. Validity was checked by comparing the mean of the alcoholic group with the means of the other three groups to determine if there was a difference. Counselors in the field of alcoholism evaluated the instrument on the content of the items used in the inventory. It was predicted that the inventory would successfully screen alcoholics from non-alcoholics. The hypothesis was supported by the data collected in the investigation.

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## CHAPTER I

### STATEMENT OF THE PROBLEM

Large consumption of alcohol by Americans is not new. It has been shown that Americans are consuming more than 2.7 gallons of alcohol a year, a 33 percent increase from 1950. Research has estimated that drinkers average about three drinks a day (Ward, 1983). It has also been estimated that about 5 percent of the population is alcohol dependent; that is approximately 10 million Americans who are classified as alcoholic (Mayer, 1983).

Researchers, however, have not agreed on a consistent method of diagnosing these alcoholics. Most attempts at diagnosing alcoholics have been inconsistent, impractical, and unpredictable (Ward, 1983). Therefore, the purpose of the present study was to devise a consistent, quantifiable, structured interview instrument for the detection of alcoholism.

#### 1. Justification

The problem of alcoholism has received increasingly more attention during the past few years. Society seems to be moving toward identifying alcoholics. Extensive treatment centers have been developed for the purpose of helping alcoholics live without drinking. Corporations have begun offering rehabilitation programs such as the Employee Assistance Program for alcoholic employees. Personal leaves are also being given to alcoholic employees seeking treatment with the assurance that their jobs will be waiting for

them when the return. Insurance companies have policies that include the cost of treatment for alcoholism. Courts are offering alcoholic offenders a choice of seeking treatment in hospitals as part, or all, of their sentence. These factors have greatly increased the importance of diagnosing alcoholism. It has become so important that the National Council on Alcoholism established a committee to present a set of criteria that would aid persons involved in diagnosing alcoholism.

There are many definitions and classifications of alcoholism currently being used. Many of the definitions include broad and ambiguous terms (Ward, 1983). One study used 10 different definitions of alcoholism in a treatment setting (Boyd, Derr, Grossman, Lee, Sturgeon, Lacock, Bruder, 1983). Without a standard definition of alcoholism, diagnosis is difficult. The final diagnosis depends on the subjectivity of the professional. To reduce the subjectivity of detecting alcoholism, paper and pencil screening tests were developed. By using a paper and pencil alcoholism screening test, the evaluator has a consistent, quantifiable, structured interview instrument to aid in the diagnosis of alcoholism. Although several screening tests are available, continued research is needed to keep up with current theories, treatment, and changing criteria.

The purpose of the present study was to develop a paper and pencil alcoholism screening instrument and to test the validity of the instrument. The importance of the study is based on the recognized need for efficient methods of diagnosing alcoholics,

as well as the need for further research to validate the use of paper and pencil screening devices in diagnostic procedures.

## 2. Hypothesis

It was predicted that alcoholics can be differentiated from non-alcoholics through the use of a paper and pencil alcoholism survey instrument.

## 3. Assumption

The four groups used in the study represented the alcoholic, student, general and "Drivers Convicted of Driving under the Influence" (D.U.I.) population.

## 4. Limitations

1. The direction of the items allows the respondent to answer based on previous responses.

2. Non alcoholic (control group) were not systematically proven to be non-alcoholic other than by being personal acquaintances of the investigator.

## 5. Definition of Terms

Alcoholic dependence. For the purpose of the present study, dependence refers to the presence of physical dependence and loss of control.

Loss of control. Loss of control refers to the pattern of drinking where any drinking of alcohol causes a chain reaction in

which the drinker is unable to stop until he or she becomes sick or passes out.

Alcoholic or problem drinker. These two terms refer to a person with the disease of alcoholism and are considered interchangeable. Alcoholism is defined as a pathological dependency on ethanol.

Social drinker. A social drinker refers to a person who drinks three to four times per month, and consumes less than two ounces of alcohol per drinking occasion (Ward, 1983).

Moderate drinker. A moderate drinker refers to a person who drinks alcoholic beverages in such amounts and frequencies as to comply with the dietary or customary usages of the community, without involvement in pathological behavior or consequences (Ward, 1983).

D.U.I. group. D.U.I. consists of persons convicted of driving under the influence of alcohol. Members of this group were arrested for driving with a blood alcohol level (B.A.L.) of .10 or higher. A person with a B.A.L. of .10 is considered legally intoxicated in the state of Tennessee. Upon conviction of D.U.I., part of their sentence and probation was to attend the D.U.I. education program in Knoxville, Tennessee.

The remainder of the study will be organized as follows:  
(1) Chapter II presents a review of the literature. Readings related to the history of diagnostic methods before paper and pencil screening tests, the history of paper and pencil screening

instruments, the effectiveness of paper and pencil instruments, criteria used in diagnosing alcoholism, and categories of drinkers, are also examined. (2) Chapter III includes the methodology of the study, organized in terms of instrument development, selection procedures, and analysis of data. (3) Chapter IV is a presentation of the data and the statistical procedures for treating the data. (4) Chapter V summarizes the study and offers ideas for further research.

## CHAPTER II

### REVIEW OF THE LITERATURE

After presenting a brief look at the literature which describes the diagnosis of alcoholics prior to paper and pencil screening instruments, the author will survey the literature concerning the history of paper and pencil screening devices, particularly the Michigan Alcoholism Screening Test (MAST). The rest of the chapter will be organized as follows: (1) the effectiveness of paper and pencil screening tests, (2) the criteria for diagnosing alcoholism, and (3) categories of drinkers.

#### 1. History of Diagnosis of Alcoholism

Although there are several theories about the roots of alcoholism, many experts consider alcoholism a disease (Ward, 1983). The notion that alcoholism is a disease has been important in the diagnosis of alcoholism. As with any disease, whether mumps or measles, the physical effects of the disease play an important role in the diagnosis of that disease. The same has been true of alcoholism. In 1952, E. M. Jellinek developed a chart which described the symptoms of alcoholism. Each phase was characterized by behaviors exhibited by the drinker. Once the drinker experienced these symptoms he or she was diagnosed as alcoholic. The two major symptoms thought to show that a person was alcoholic were (1) loss of and (2) the onset of prolonged intoxications. Later, alcohol

dependence was added to the criteria for diagnosis. Behaviors such as skipping meals when drinking, sneaking drinks, morning drinking, gulping drinks, and blackouts were considered characteristic of alcohol dependence. It was thought that a person reporting these types of behavior was alcoholic. In 1979, through a national survey, the use of social effects was added to the list of criteria used in diagnosing alcoholism. Social relationships with family or friends that were negatively affected were considered indicative of alcoholism. Police problems, automobile accidents, and job problems relating to the ingestion of alcohol were also included in the diagnostic criteria (Ward, 1983).

The quest for a better diagnostic method led to many definitions and classifications of alcoholism. Terms became so broad that their diagnostic usefulness was limited to patients who were grossly alcoholic (Ward, 1983). In order to get away from the uncertainty regarding the diagnosis of alcoholism, some people used only verifiable facts. The use of verifiable facts controlled for patients withholding information and lying, and also for the subjectivity of the diagnostician (Waller, 1967).

## 2. History of Paper and Pencil Screening Tests

About the time Waller was trying to avoid the subjective methods of diagnosing alcoholism, Selzer (Reprinted from Ward, 1982) began working in the same area. Selzer wanted to devise a method of diagnosing alcoholics in a more practical and predictive manner. Thus, he developed the Michigan Alcoholism Screening Test (MAST).

The MAST provided a consistent, quantifiable, structured interview instrument for the detection of alcoholism. Some of the advantages of this diagnostic method were that it was valid, reliable, inexpensive, easy to administer, and easy to score.

The potential of the instrument motivated Selzer to conduct more research on the MAST. Selzer compiled 25 questions, many of which had been used in other surveys. Following completion of the test, a method of validating the instrument was sought.

The MAST was given to 5 different groups. The groups consisted of (1) hospitalized alcoholics, (2) a control group, (3) convicted D.U.I. drivers, (4) persons convicted of drunk and disorderly behavior, and (5) drivers who had incurred 12 penalty points in two years for moving violations and accidents (Ward, 1983).

The MAST provided an excellent method of diagnosing alcoholics, but suffered from several weaknesses. The MAST had no checks to determine if a subject was lying to look good. Questions on the MAST are weighted. In fact, by answering either question 9, 20, or 21 alone, the subject would be considered alcoholic. The personal experience of the investigator and Dr. Mitchell was that one response to a question placed the two respondents above the cut-off recommended by the author as alcoholic. However, neither of the two respondents drank at all. The structure of the questions used in the MAST may also put the subject on the defensive. Zung (1982) found in his evaluation of the MAST, that the ambiguity of the questions had serious effects on the accuracy and consistency of

the test. He also noted that the author favored responses from subjects for present behaviors although the test did not clearly ask for responses presently occurring. The term "current" was ambiguous because it did not specify the importance of different time spans for scoring the test. Zung also explained that the absence of guidelines explaining how to interpret subjects' answers according to when the question was relevant diminished the accuracy of the test. It lowered the accuracy of the test because it allowed the test users to establish their own standards of scoring criteria, which increased the subjectivity of the instrument. It was concluded after several reviews that the test had promise, but continued research in the area of standardization and validation was needed (Zung, 1982). Several months later, Habib, Harris, and Fraker (1982) developed the Veteran's Alcoholism Screening Test (VAST). The VAST was designed specifically to avoid the weaknesses of the MAST. Habib, et al., felt that the MAST did not distinguish between a practicing alcoholic and a person who had been an alcoholic. These researchers felt that, for the purpose of diagnosis, it was important to distinguish between a person who was currently having drinking problems and a person who had previously had a drinking problem. To determine when a person was an alcoholic, Habib, et al., added three questions to each question used in the MAST. If the subject marked an alcoholic response to the MAST question, he would then mark whether the question referred to (A) now, (B) in the last year, or (C) in the past five years. Habib, et al., believed that by adding a time scale, they would increase the

reliability and validity of the MAST. They also believed that their instrument would be more useful in diagnosing alcoholics than the MAST. Habib, et al., also stated that the MAST used ambiguous terms such as "normal" and "bad." The VAST defined and reworded these questions to make it more accurate.

### 3. Effectiveness of Paper and Pencil Screening Tests

There are several studies showing the effectiveness of paper and pencil screening tests in diagnosing alcoholics. In Zung's study (1982), he used a modified MAST with 120 psychiatric patients who had received DSM II codes of drinking problems. The MAST was modified to include a follow up question that asked, "How recently did that happen?". The results of the study indicated that the test was reliable with correlations ranging from .59 to .85. It was concluded that "a more systematic pursuit of the bases for divergent outcomes between the test and the diagnostician" was needed (Zung, p. 437, 1982). Skinner (1982) studied the reliability of the MAST. He used 83 randomly selected individuals with alcohol related problems from patients who had voluntarily sought help at the Clinical Institute of the Addiction Research Foundation in Toronto. Ninety-four percent scored above the cut-off recommended by Selzer (1971) for the diagnosis of alcoholism. The test-retest reliability of the MAST was .84. Although the reliability of the MAST score was high, certain problems related to drinking were more reliable than others. Items that dealt with objective behavior

or events, such as arrests, were responded to more consistently than subjective questions dealing with alcohol misuse.

Selzer, Vinokur, and Rouijen (1975) studied the effectiveness of an abbreviated MAST as a self-administered alcoholism screening test. The Short Michigan Alcoholism Screening Test (SMAST) consisted of 13 questions used previously on the MAST. Selzer used both the MAST and the SMAST in his study. The reliability correlation between the two tests was .97 for the entire sample. Selzer concluded that, from the results obtained for reliability and validity, the SMAST was as effective as the MAST in screening for alcoholism. The SMAST, however, saved time and space (Selzer, et al., 1975).

The effectiveness of a paper and pencil screening test for the detection of alcoholism by family physicians was studied by Vande, Zachrich, and Scherger (1982). The study used the MAST and the SMAST. A total of 182 patients completed the two tests. Six of these patients had originally been diagnosed as alcoholic by their physicians. The two screening tests identified 61 of the patients as possible or probable alcoholics. The researchers felt that screening tests were effective in screening alcoholics, and that the ability to identify patients as alcoholic would aid physicians in their medical and pharmacological handling of these patients. Vande, et al., concluded that there was no difference between the MAST and the SMAST regarding identification of alcoholics. However, the researchers advocated the use of the SMAST because it was

quicker (Vande, et al., 1982). Stimmel, Sturiano, Cohen, Korts, Hambury, and Jackson (1981) carried out a similar study with 626 narcotic addicts. They used a modified Self-Administered Alcohol Screening Test (mSAAST). It was modified by defining and rewording ambiguous questions and terms. The test positively identified 80 percent of the patients classified as actively alcoholic. It was concluded that the mSAAST is a useful instrument for identifying persons at risk of becoming alcoholic (Stimmel, et al., 1982).

#### 4. Criteria for Diagnosing Alcoholism

Several definitions and classifications of alcoholism are being used today. Many of the new terms are stated broadly. Often, the ambiguity of these definitions limits their diagnostic usefulness to patients who are grossly alcoholic. Therefore, the National Council on Alcoholism established a committee to prepare a set of criteria which would aid in diagnosing alcoholics (Ward, 1982).

The committee's main purpose for establishing the criteria was to help counselors identify individuals with different levels of alcohol dependency. The committee was unanimous in their belief that alcoholism is a disease. They defined alcoholism as a pathological dependency on ethanol. The committee collected data and divided them into separate categories called tracks. Track I included physiological and clinical data. Track II consisted of behavioral, psychological, and attitudinal data. Three diagnostic levels were established by the committee. Diagnostic levels refer

to the diagnostic strength of the criteria. Level One is considered the most significant and most powerful indicator of alcoholism. Examples of Level One diagnostic criteria were tremors, hallucinosis, withdrawal seizures, and delirium tremens. The second level was less significant in diagnostic strength. However, a person exhibiting second level behaviors would be under strong suspicion of alcoholism. Examples of Level Two criteria include blackouts, alcohol myopathy, and lactic acid elevation. Level Three is the weakest level, and was indicative of a possible alcoholic. Examples of Level Three criteria are gulping drinks, beriberi, and frequent automobile accidents. The complete tracks established by the committee are found in Ward's book, Alcoholism: Treatment and Practice (Ward, 1982).

Not only did the committee document factors indicating alcoholism, but several sociological and epidemiological surveys documented other factors as well. Examples of these factors are: (1) a family history of alcoholism, (2) a history of teetotalism in the family, (3) a history of alcoholism or teetotalism in the spouse or spouse's family, (4) coming from a broken home, (5) being the last child of a large family, (6) having female relatives of more than one generation who have had high incidences of recurrent depression, and (7) heavy smoking (Ward, 1982).

A 1979 survey conducted by Clark and Midanik (reprinted from Ward, 1982) stated several social problems that indicated alcohol dependence: such as (1) relationship problems between the drinker

and a friend, the spouse, or a relative, (2) police problems such as arrests for drunk driving or public drunkenness, (3) automobile and other accidents related to the ingestion of alcohol, and, finally, (4) job problems such as job loss, a near loss, changing jobs rather than stopping drinking, and loss of raises or promotions (Ward, 1982).

### 5. Categories of Drinkers

Since 1946, when Jellinek first formulated his concept that alcoholics progressed through phases of drinking behaviors, experts have categorized drinkers of alcoholic beverages. In 1952, the alcoholism subcommittee of the World Health Organization distinguished two different categories of alcoholics. One category was listed as "habitual symptomatic excessive drinkers," otherwise called non-addictive alcoholics. The other category was labeled "alcohol addicts." The major difference between the two categories was the "loss of control" experienced by the addicts. Later in a study by Goodwin (1971), four categories were defined: (1) a moderate drinker was defined as neither a teetotaler nor a heavy drinker, (2) a heavy drinker was someone who had drunk daily for one year, and had drunk six or more drinks once a week for over a year, but who reported no problems. If problems were reported from drinking in the manner of a heavy drinker, then the study classified that person as a (3) problem drinker. The (4) alcoholic was defined as someone meeting the criteria of the heavy drinker, and who must

have had problems in 3 of these 4 areas: (1) social disapproval from friends, parents, or spouse concerning drinking habits, (2) job trouble, traffic arrests, or other police trouble relating to drinking, (3) blackouts, tremors, withdrawal hallucinations, convulsions, or delirium tremors, or (4) loss of control or morning drinking (Goodwin, 1971).

Several studies have categorized drinkers by the amount of alcohol they consume in a certain period of time. In a national survey done by Rachal, Williams, Brehm, Cavanaugh, Moore, and Eckerman (1975), they categorized drinkers by the amount of alcohol ingested per day. A light drinker was a person who drank .01 to .21 ounces of alcohol per day. A moderate drinker was anyone who consumed .22 to .99 ounces of alcohol per day, and a heavy drinker drank 1 or more ounces of alcohol per day (Rachal, et al., 1975).

## 6. Summary of the Chapter

In Chapter II, a survey of the literature related to the history of diagnosing alcoholics was presented. Beginning with the history of pre-paper and pencil diagnostic methods, the chapter reviewed the origin of paper and pencil screening devices, as well as their effectiveness as diagnostic tools. The criteria for diagnosing alcoholics, along with the different categories of drinkers, were also discussed.

Early diagnosis of alcoholism was contingent on the symptoms of the drinker. Alcoholism was considered a disease, and the drinker was diagnosed as alcoholic if enough characteristics of that disease were observed. Two major symptoms of an alcoholic were "loss of control" and "the onset of prolonged intoxications." Loss of control meant that, once the drinker took a drink, he could no longer control the amount of alcohol ingested. Later, alcohol dependence became a major part of the diagnostic process. Drinking behaviors were still used to diagnose alcoholism; however, there were no consistent methods of detecting alcoholism. The diagnostic process was considered unpredictable due to the subjectivity of the diagnostician.

In order to be more objective in the diagnostic process, screening tests were developed. The Michigan Alcoholism Screening Test was the first paper and pencil screening test used in the diagnosis of alcoholism. The idea of an objective procedure for detecting alcohol initiated research on better paper and pencil screening tests. Several studies showed the effectiveness of paper and pencil devices as diagnostic tools.

The need for being consistent in the diagnosis of alcoholism prompted the National Committee on Alcoholism to establish a set of criteria which would be used by professionals in diagnosing alcoholics. Although consistency has been important in diagnosing alcoholics, the same has not been true for distinguishing between other types of drinkers. Several methods of categorizing drinkers were discussed.

## CHAPTER III

### METHODOLOGY

#### 1. Development of the Inventory

The development of the inventory (see Appendix B) presented in the study followed the steps outlined in Aiken (1982), and Babbie (1983) (see Appendix F). Development of the inventory began with defining the criteria that were relevant in diagnosing alcoholics (Aiken, 1982). The Michigan Alcoholism Screening Test (MAST) (see Appendix A) was reviewed for specific criteria used in diagnosing alcoholics. The experimenter then researched the criteria established by the National Committee on Alcoholism as predictors of alcoholism. Once the criteria were defined, test items were developed. "I" statements were developed from the criteria obtained from the MAST and the committee. After the test items were constructed, the researcher selected the items that were included on the inventory. The selection of statements for the present study were based upon their diagnostic strength. Thirty-seven items were chosen.

It has been shown that the order in which items are placed can influence responses to remaining items, particularly with threatening material (Babbie, 1983). Due to the sensitive subject matter of alcoholism, eight demographic questions were included as an introduction. A Likert set of responses was chosen for the answering format. The Likert format allows the respondents to be

more specific in their answers than do tests using yes or no type responses. Subjects can answer quickly, and the objectivity of the Likert scale eliminates instructor bias, thus enhancing reliability (Babbie, 1983).

The time required to take the inventory ranged from 8 to 12 minutes. The time it took to score it was about 2 to 3 minutes. Neither time was significantly longer than the MAST.

The scoring procedure for the inventory has two simple characteristics. Each statement is weighed the same, and all responses range from four points, which is the highest alcoholic response, to zero, which designates a non-alcoholic response. A scoring sheet which shows in detail the point value for each response is included in Appendix C.

### Sample

Four different groups were given the inventory, hereafter referred to as the Adler Alcoholism Inventory: (1) hospitalized alcoholics, (2) a control group, (3) drivers convicted of D.U.I., and (4) a general population group. Each group consisted of 50 subjects, and will be discussed separately, due to specific differences in setting up and administering the instrument.

### Demographic Data

The demographic data of the sample indicate that the four groups were similar. All four groups were similar in sex, religion, and race. The control group consisted of all single students. The

group was comprised of half men and half women between the ages of 19 and 30. Ninety-six percent were baptist as well as Caucasian, and 4 percent were black. Males comprised 72 percent of the D.U.I. group. Seventy-two percent were single, 12 percent married, the rest separated or divorced. About 94 percent were baptist. The alcoholic group was very similar. Males comprised 70 percent of the sample. Forty percent were between the ages of 21 and 30, and 40 percent were between the ages of 41 and 50. Ninety-four percent were Caucasian, 6 percent black. Fifty percent were married, 20 percent single, 30 percent divorced. The general population group was comprised of 70 percent males. All were 31 years or older. Eighty percent were married and 90 percent stated they were baptist.

#### Hospitalized Alcoholics

Fifty hospitalized alcoholics agreed to fill out the inventory. Due to the sensitivity of the topic to the subjects, the inventory was administered by the director of the chemical dependency program. Each of the subjects was told that a graduate student, working on his thesis, had developed a screening inventory on alcoholism, and participants were needed to fill out the inventory for data. The subjects were also told that no names would be used, and participation was completely voluntary. Each subject who participated was given an inventory and a cover sheet (see Appendix D). The cover sheet explained the research and gave the name and number of the experimenter, in case any questions regarding the inventory arose. The completed inventories were collected by the director of the chemical dependency program and given to the experimenter.

### Control Group

The control group consisted of 25 males and 25 females. All subjects were either junior or senior students at The University of Tennessee, Knoxville. The subjects were selected from a co-ed university dormitory. Each subject was told by the experimenter that he was a graduate student at The University of Tennessee working on his thesis. It was explained to the subjects that the experimenter had developed an inventory on alcoholism, and volunteers were needed to fill out the inventory to provide data. The students were told that no names would be used in the results of the study, and that participation was voluntary. Each student who participated was given an inventory and a cover sheet explaining the research. Names were taken on a separate sheet of paper. Instead of using names, each student was assigned a number which was placed at the top of the inventory. Numbers were assigned so the inventory taken by the student the first time could be matched with the inventory taken by the same student the second time. Once the student had taken the inventory a second time, the list that showed which number was assigned to each student was ripped up and thrown away. Four weeks later, each student was asked to fill out the same inventory for reliability purposes. All students agreed. The completed inventories were collected at the dormitory front office.

### Drivers Convicted of Driving Under the Influence

Fifty subjects convicted of driving under the influence of alcohol agreed to fill out the inventory. For the protection of

the individual, the inventory was administered and collected by the director of the Knoxville D.U.I. School. Each subject was told that a graduate student, from The University of Tennessee, Knoxville, while working on his thesis, had developed an inventory on alcoholism. It was explained that subjects were needed to fill out the inventory for the collection of data. The subjects were told that no names would be used and that participation was voluntary. Subjects who agreed to participate were given an inventory and a cover sheet explaining the research. Numbers were assigned to each subject for the purpose of matching each subject's first and second test. The completed inventories were collected by the director. One week later, each subject was asked to fill out the same inventory again. It was explained to the subjects that two inventories were needed from each subject for reliability reasons. The completed inventories were collected by the director, who matched the inventories together and returned them to the experimenter.

#### General Population Group

The general population group consisted of 50 subjects living in an apartment complex. None of the subjects included in the general population group was attending college. Each subject was approached by the experimenter, who explained that he was a graduate student at The University of Tennessee, Knoxville. It was explained that the experimenter was working on his thesis, and had developed an inventory on alcoholism. The experimenter stated that he needed participants to fill out the inventory so that data could be

collected to determine the quality of the inventory. Each subject was informed that no names would be used and that participation was voluntary. The subjects who agreed to participate were given an inventory, a cover sheet which explained the research, and an envelope to return the inventory.

## 2. Analysis of Data

The data obtained from the 4 groups were analyzed for reliability and validity. Reliability was checked by the test-retest method, and the split-half method. Two groups, the control and D.U.I., were tested twice. The control group was retested after four weeks, while the D.U.I. group was retested after one week. The Pearson product-moment coefficient formula was used to obtain a correlation between the two test scores from each group. Internal reliability was checked on all four groups. The Spearman-Brown prophecy formula was used to estimate the reliability of the entire test between two equal halves. Finally, reliability was checked once again internally by taking different halves of the test administered on different occasions and finding a split-half correlation.

The inventory was also checked for validity. Content validity was checked three ways. The contents of the inventory were compared with the criteria established by the National Council on Alcoholism. Also, three experts in the field of alcoholism reviewed the inventory and agreed that it looked and acted like

a measure of alcoholism. Finally, the criteria used in the inventory was also used in the Michigan Alcoholism Screening Test, which is considered to have good content validity. Concurrent validity was checked by administering the inventory to 50 alcoholics. By establishing that the mean of the alcoholic group was different from the mean of the other three groups, concurrent validity was proven. A one-way analysis of variance was done to check for differences in the four means. The Nueman-Keuls post hoc test was done to determine which means were significantly different. An item analysis was also done to determine which items were the most powerful discriminators.

## CHAPTER IV

### RESULTS

#### 1. Discussion of Results

This chapter includes a discussion of the data collected from each group and the statistical procedures used to analyze the data. In the presentation of the findings, the groups are designated as alcoholic, D.U.I., general, and control.

In order to assess reliability, the control group and the D.U.I. group took the inventory twice. A correlation was calculated between the two sets of scores using the Pearson product-moment coefficient formula. Scores from all four groups were analyzed for internal reliability using the Spearman-Brown prophecy formula. The inventory was split into two halves with the odd and even items forming two tests. The two halves were treated as separate tests, and a correlation between the two sets of scores was calculated using the Pearson product-moment coefficient formula. The coefficient found using the Pearson formula was plugged into the Spearman-Brown formula, which gave an estimation of the reliability of the whole test. For the control group and the D.U.I. group, the split-half formula was done using the odd half from the pre-test with the even half on the post test, and the even half from the pre-test with the odd half on the post test. According to Aiken (1982), using the Spearman-Brown prophecy formula, with one form administered on one occasion with the other form administered on a subsequent

occasion, is the most desirable form of internal reliability (see Table 1).

Data collected from the four groups were analyzed for concurrent validity. In order to show concurrent validity, the test scores from the alcoholic group should be different from the scores of the other groups. A one-way analysis of variance was calculated to test for significant differences between the means of the four groups (Downie, Heath, 1965). A significant difference was found between the means of the four groups,  $F(3,196) = 144.69$ ,  $p \leq .001$  (see Table 2).

The means and standard deviation for each group are shown in Table 3.

In order to find which means were significantly different, a Nueman-Keuls Test for significant differences of means was performed (Anderson, Mclean, 1974). The results of this test indicated that the means of all groups were significantly different from each other, except for the control group versus the general population group (see Table 4).

An item analysis was performed to determine which test items had strong relationships with the total outcome of the inventory. Ten subjects from each group were randomly selected. Responses to each item from all 40 subjects were correlated with the total test score of each subject (Babbie, 1973). The results indicated that the majority of the items were highly related to the total score. However, some of the items were found to have a low

Table 1. Reliability Coefficients of Inventory

| Group              | Test-Retest | Split-half Pre-test | Split-half Post Test | Split-half Odd/Pre-test Even/Post Test | Split-half Even/Pre-test Odd/Post Test |
|--------------------|-------------|---------------------|----------------------|----------------------------------------|----------------------------------------|
| Control            | .94*        | .93                 | .91                  | .89                                    | .91                                    |
| D.U.I.             | .96**       | .96                 | .95                  | .94                                    | .94                                    |
| General Population | ---         | .96                 | ---                  | ---                                    | ---                                    |
| Alcoholic          | ---         | .85                 | ---                  | ---                                    | ---                                    |

\*Tested four weeks apart.

\*\*Tested one week apart.

Table 2. Results of ANOVA on Inventory Scores for Groups

| Source  | df  | SS        | MS       | F       |
|---------|-----|-----------|----------|---------|
| Between | 3   | 198656.89 | 66218.96 | 144.69* |
| Error   | 196 | 89700.06  | 457.65   |         |
| Total   | 199 | 288356.95 |          |         |

\*p ≤ .001

Table 3. Means and Standard Deviation for Groups

| Group     | Mean  | Standard Deviation |
|-----------|-------|--------------------|
| Gen. Pop. | 29.6  | 22.2               |
| Alcoholic | 103.0 | 18.4               |
| Control   | 22.7  | 14.8               |
| D.U.I.    | 47.6  | 27.4               |

Table 4. Nueman-Keuls Post Hoc Comparison of Group Means

| Group Comparisons | Difference Between Means | Calculated Value R |
|-------------------|--------------------------|--------------------|
| A vs. B           | 73.4                     | 16.95*             |
| A vs. C           | 6.9                      | 9.05               |
| A vs. D           | 18.0                     | 15.58*             |
| B vs. C           | 80.3                     | 17.79*             |
| B vs. D           | 55.4                     | 15.58*             |
| C vs. D           | 24.9                     | 16.95*             |

\*p ≤ .001

Group A: General population

Group B: Alcoholic

Group C: Control

Group D: D.U.I.

relationship as well. Seven of the 37 items had correlations under .40 which Williams (1979) indicates as small correlations (see Table 5).

## 2. Summary of Results

The research hypothesis for the present study stated that alcoholics could be successfully differentiated from non-alcoholics through the use of a paper and pencil screening instrument. A control group was included to compare the mean of an alcoholic group to the mean of a non-alcoholic group. It was found that the means of the two groups were significantly different. Therefore, the results presented in Chapter IV support the research hypothesis.

Table 5. Results of the Item Analysis of Inventory

| Question | Corr. | Question | Corr. | Question | Corr. |
|----------|-------|----------|-------|----------|-------|
| 9)       | .68   | 22)      | .78   | 34)      | .82   |
| 10)      | .71   | 23)      | .89   | 35)      | .30*  |
| 11)      | .85   | 24)      | .82   | 36)      | .90   |
| 12)      | .82   | 25)      | .90   | 37)      | .94   |
| 13)      | .11*  | 26)      | .84   | 38)      | .93   |
| 14)      | .89   | 27)      | .93   | 39)      | .62   |
| 15)      | .17*  | 28)      | .82   | 40)      | .80   |
| 16)      | .46   | 29)      | .73   | 41)      | .93   |
| 17)      | .05*  | 30)      | .82   | 42)      | .80   |
| 18)      | .27*  | 31)      | .77   | 43)      | .86   |
| 19)      | .21*  | 32)      | .71   | 44)      | .80   |
| 20)      | .69   | 33)      | .92   | 45)      | .26*  |
| 21)      | .92   |          |       |          |       |

\*Low correlations (Williams, 1979).

Note: Questions 1 through 8 are demographic items that have no effect on total score.

## CHAPTER V

## SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

## 1. Summary

The purpose of the study was to devise a consistent, quantifiable, structured interview instrument for the detection of alcoholism. The study was conducted in various settings located in Knoxville, Tennessee. The sample included 50 subjects in each of four different groups: a control group, an alcoholic group, drivers convicted of driving under the influence, and a general population group. The research hypothesis, that alcoholics could be successfully screened from non-alcoholics, was supported by the data collected in the investigation.

## 2. Conclusions

It has been concluded that the main findings show that alcoholics can be screened from non-alcoholics through the use of a paper and pencil screening instrument. The mean of the alcoholic group was found to be significantly different from the means of the other three groups.

Standardized procedures were not followed. The inventory was administered in different settings and by different administrators. However, the reliability of the instrument remained high, indicating that the instrument is not affected by the environment. The consistency of the instrument through various conditions is valuable

to the diagnostic procedure. By not allowing outside factors to influence the test results, the objectivity of the instrument and the diagnostic procedure is enhanced. The objectivity of the instrument controls for the subjectivity of the investigator, which would make the diagnostic procedure more consistent in all programs where diagnosing alcoholism is important. It should be noted that finding a method of diagnosing alcoholism that is not influenced by the setting or by the professional is the aim of researchers in the area of alcoholism (Habib, Harris, and Fraker, 1982; Mayer, 1983; Pokorny, Miller, and Kaplan, 1972; Selzer, Vinkur, and Van Rouijen, 1975; Stimmel, 1982; Ward, 1983). Results from the present study indicate that the inventory used in this study is a significant step toward that consistency.

### 3. Suggestions for Further Research

During the present study, several areas were found where further research is needed. Because of the importance of diagnosing alcoholism, larger samples of alcoholics should be tested. The areas where further research could be done in relation to the present study include the following:

1. A revision of the screening instrument, eliminating items that did not correlate with the screening process and items that neither indicated alcoholism or non-alcoholism.

2. Add a lie scale to the inventory in order to control for the denial alcoholics have by taking a few of the best items

and pairing them with similar items that are opposite in meaning, an index could be obtained of the consistency of the subjects' responses to questions regarding their alcoholic behavior.

3. Increase the sample to include more minorities.

4. Test the instrument in treatment centers with new admissions, and compare the diagnosis of the instrument with the diagnosis of the professional to see if the instrument can screen alcoholics still in the denial phase of their drinking.

Although the screening instrument proved successful in screening alcoholics from non-alcoholics, further research is needed to determine the long range effectiveness of the inventory, and the extent of its usefulness in the diagnosis of alcoholism. Despite the volume of literature concerning paper and pencil screening tests, relatively little has been written about the usefulness of a Likert type screening instrument. More research is needed in this area.

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## REFERENCES

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## APPENDICES

APPENDIX A

THE MICHIGAN ALCOHOLISM SCREENING TEST

## MAST

Point  
Value

Please circle your answer:

- |     |     |                                                                                                                                             |     |    |
|-----|-----|---------------------------------------------------------------------------------------------------------------------------------------------|-----|----|
| (2) | *1. | Do you feel you are a normal drinker?                                                                                                       | Yes | No |
| (2) | 2.  | Have you ever awakened the morning after some drinking the night before and found that you could not remember a part of the evening before? | Yes | No |
| (1) | 3.  | Does your wife (or parents) ever worry or complain about your drinking?                                                                     | Yes | No |
| (2) | *4. | Can you stop drinking without a struggle after one or two drinks?                                                                           | Yes | No |
| (1) | 5.  | Do you ever feel bad about your drinking?                                                                                                   | Yes | No |
| (2) | *6. | Do friends or relatives think you are a normal drinker?                                                                                     | Yes | No |
| (0) | 7.  | Do you ever try to limit your drinking to certain times of the day or to certain places?                                                    | Yes | No |
| (2) | *8. | Are you always able to stop drinking when you want to?                                                                                      | Yes | No |
| (5) | 9.  | Have you ever attended a meeting of Alcoholics Anonymous (AA)?                                                                              | Yes | No |
| (1) | 10. | Have you gotten into fights when drinking?                                                                                                  | Yes | No |
| (2) | 11. | Has drinking ever created problems with you and your wife?                                                                                  | Yes | No |
| (2) | 12. | Has your wife (or other family member) ever gone to anyone for help about your drinking?                                                    | Yes | No |
| (2) | 13. | Have you ever lost friends or girlfriends/boyfriends because of drinking?                                                                   | Yes | No |
| (2) | 14. | Have you ever gotten into trouble at work because of drinking?                                                                              | Yes | No |
| (2) | 15. | Have you ever lost a job because of drinking?                                                                                               | Yes | No |

- |     |     |                                                                                                                                                                                           |     |    |
|-----|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|
| (2) | 16. | Have you ever neglected your obligations, your family, or your work for two or more days in a row because you were drinking?                                                              | Yes | No |
| (1) | 17. | Do you ever drink before noon?                                                                                                                                                            | Yes | No |
| (2) | 18. | Have you ever been told you have liver trouble? Cirrhosis?                                                                                                                                | Yes | No |
| (2) | 19. | Have you ever had delirium tremens (DTs), severe shaking, heard voices or seen things that weren't there after heavy drinking?                                                            | Yes | No |
| (5) | 20. | Have you ever gone to anyone for help about your drinking?                                                                                                                                | Yes | No |
| (5) | 21. | Have you ever been in a hospital because of drinking?                                                                                                                                     | Yes | No |
| (2) | 22. | Have you ever been a patient in a psychiatric hospital or on a psychiatric ward of a general hospital where drinking was part of the problem?                                             | Yes | No |
| (2) | 23. | Have you ever been seen at a psychiatric or mental health clinic, or gone to a doctor, social worker or clergyman for help with an emotional problem in which drinking had played a part? | Yes | No |
| (2) | 24. | Have you ever been arrested even for a few hours because of drunk behavior?                                                                                                               | Yes | No |
| (2) | 25. | Have you ever been arrested for drunk driving or driving after drinking?                                                                                                                  | Yes | No |

\*Negative Responses are Alcoholic Responses

APPENDIX B

THE ADLER ALCOHOLISM INVENTORY

Please circle your answer:

NAME \_\_\_\_\_

1. My age is: A)20 or under B)21-30 C)31-40 D)41-50 E)51 years or older
2. My sex is: A)Male B)Female
3. My residence is: A)rural B)suburban C)urban
4. My last year in school was A)1 2 3 4 5 6 7 8 9 10 11 12 B)College 1 2 3 4  
C)Graduate School 5 6 7 8 D)Business or trade school 1 2 3 4
5. My race is: A)Caucasian B)Negroid C)American Indian D)Other
6. My religion is: A)Baptist, Methodist, Presbyterian B)Catholic C)Jewish  
D)Other (specify) \_\_\_\_\_ E)None
7. My occupation is: \_\_\_\_\_
8. My marital status A)Single B)Separated C)Divorced D)Widowed E)Married
9. I drink some type of alcohol A)Everyday B)4-5 days/wk C)2-3 days/wk D)1 day wk E)Never
10. I average about A)10 or more drinks/wk B)7-9 drinks/wk C)4-6 drinks/wk D)1-2 drinks/wk  
E)Do Not Drink
11. I consider myself a A)Problem drinker B)Heavy drinker C)Moderate D)Social E)Non-drinker
12. I have been arrested previously for behaviors related to my drinking A)4 or more times B)3 times C)Twice D)Once E)Never
13. My family or friends have had to call the law because of the way I acted when under the influence A)4 or more times B)3 times C)Twice D)Once E)Never
14. I smoke about A)2 or more pks/day B)more than 1 pk/day C)½-1 pk/day D)½ pk/day E)Non-smoker
15. I have been admitted to a hospital because of my drinking A)4 or more times B)3 times C)Twice D)Once E)Never

|     |                                                                                                                    | A) Strongly Agree | B) Agree Somewhat | C) Not Sure | D) Disagree Somewhat | E) Strongly Disagree |
|-----|--------------------------------------------------------------------------------------------------------------------|-------------------|-------------------|-------------|----------------------|----------------------|
| 16. | A member/s of my family are or were considered problem drinkers                                                    | A                 | B                 | C           | D                    | E                    |
| 17. | I was raised in a family with strict morals                                                                        | A                 | B                 | C           | D                    | E                    |
| 18. | I drink to get away from my worries                                                                                | A                 | B                 | C           | D                    | E                    |
| 19. | I feel more secure when I'm drinking                                                                               | A                 | B                 | C           | D                    | E                    |
| 20. | I know I can handle alcohol but I usually have a good reason to get drunk                                          | A                 | B                 | C           | D                    | E                    |
| 21. | I use alcohol to cope with feelings of loneliness, tension, blues, sadness, anger, or when I feel sorry for myself | A                 | B                 | C           | D                    | E                    |
| 22. | After drinking, I feel ashamed of myself                                                                           | A                 | B                 | C           | D                    | E                    |
| 23. | I resent the fuss people make about my drinking habits                                                             | A                 | B                 | C           | D                    | E                    |
| 24. | I've been embarrassed about things I've said or done after I've sobered up                                         | A                 | B                 | C           | D                    | E                    |
| 25. | Drinking has resulted in my neglecting responsibilities related to my family, work, or school                      | A                 | B                 | C           | D                    | E                    |
| 26. | It doesn't matter what I drink, any beer, wine, or liquor will do                                                  | A                 | B                 | C           | D                    | E                    |
| 27. | Before I go to a social gathering, I have a few drinks in case they don't have enough there                        | A                 | B                 | C           | D                    | E                    |
| 28. | I've used rent, grocery, utility, or bill money to buy alcohol                                                     | A                 | B                 | C           | D                    | E                    |
| 29. | When drinking I have been involved in an accident (car, home, work)                                                | A                 | B                 | C           | D                    | E                    |

|                                                                                                                               | A) Strongly Agree | B) Agree Somewhat | C) Not Sure | D) Disagree Somewhat | E) Strongly Disagree |
|-------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------|-------------|----------------------|----------------------|
| 30. Sometimes after drinking I have difficulty remembering things that have happened                                          | A                 | B                 | C           | D                    | E                    |
| 31. I can stop drinking after one or two drinks without any difficulty                                                        | A                 | B                 | C           | D                    | E                    |
| 32. Anytime I want to stop drinking I can                                                                                     | A                 | B                 | C           | D                    | E                    |
| 33. Sometimes I start drinking and should stop but I have trouble stopping                                                    | A                 | B                 | C           | D                    | E                    |
| 34. A friend or family member has gone for help about my drinking                                                             | A                 | B                 | C           | D                    | E                    |
| 35. Drinking has created problems in my relationship with my spouse, parents, or friends                                      | A                 | B                 | C           | D                    | E                    |
| 36. I've lost a friend/s because of my drinking                                                                               | A                 | B                 | C           | D                    | E                    |
| 37. Members of my family/friends worry or complain about my drinking                                                          | A                 | B                 | C           | D                    | E                    |
| 38. I've gotten into trouble at work because of my drinking                                                                   | A                 | B                 | C           | D                    | E                    |
| 39. I've changed jobs or found new ones because of my drinking                                                                | A                 | B                 | C           | D                    | E                    |
| 40. After heavy drinking I've experienced shakiness and/or hallucinations                                                     | A                 | B                 | C           | D                    | E                    |
| 41. After a few days without drinking, I get shaky and nervous, a drink helps to calm me down                                 | A                 | B                 | C           | D                    | E                    |
| 42. I drink alcohol even though I have an ulcer, liver damage, diabetes, on medication or have any other known health problem | A                 | B                 | C           | D                    | E                    |

A) Strongly Agree   B) Agree Somewhat   C) Not Sure   D) Disagree Somewhat   E) Strongly Disagree

43. As a way of trying to improve my own drinking situation, I have attended an Alcohol Anonymous meeting or seen a counselor
44. I have to drink alot to get high
45. My drinking is just a habit, I'm not addicted to alcohol

|   |   |   |   |   |
|---|---|---|---|---|
| A | B | C | D | E |
| A | B | C | D | E |
| A | B | C | D | E |

APPENDIX C

SCORING PROCEDURES FOR  
THE ADLER ALCOHOLISM SCREENING TEST

All statements included on the Adler Alcoholism Screening inventory have a scoring code of:

- A - four points
- B - three points
- C - two points
- D - one point
- E - zero points

EXCEPT: Questions 31 and 32. Their response values are:

- A - zero points
- B - one point
- C - two points
- D - three points
- E - four points

There are a total of 144 points on the inventory. The scale is as follows:

|                |                             |
|----------------|-----------------------------|
| *66-144 points | Problem Drinker (Alcoholic) |
| 40-65 points   | Potential Alcoholic         |
| 0-39 points    | Social to Moderate Drinker  |

\*66 was chosen as the cutoff because it was two standard deviations below the mean.

\*\*Question #45 was not included in the scoring due to the ambiguity of the wording.

APPENDIX D

COVER SHEET GIVEN TO SUBJECTS

To The Subject:

This is to inform you that this study involves research for a thesis project. The purpose of this is to develop an alcohol screening test that will separate problem drinkers from heavy, moderate, or social drinkers, hopefully in an effort to aid treatment. As a participant in this study, you would fill out an anonymous survey which takes about 12 minutes to complete. Names will not be included anywhere on the surveys to guarantee complete anonymity. Data from the surveys will be used collectively without reference to any individual. Participation is voluntary. You may discontinue participation at any time without explanation or penalty. There is absolutely no risk involved in your participating in this study. There are no benefits awarded for your participation in this study. If any questions arise concerning the research, the results, or your rights as a subject, you may contact Mike Adler at 974-5131 (school) or 573-7913 (hospital). Thank you for your time.

Sincerely,

Mike Adler

APPENDIX E

LETTERS FROM EXPERTS STATING THE CONTENT VALIDITY  
OF THE ADLER ALCOHOLISM INVENTORY

Dear Committee:

As an expert in the field of alcoholism, I have reviewed the "Adler Alcoholism Screening Inventory," and have concluded that this instrument looks and acts like it would screen alcoholics from the content of the inventory items included on the said inventory.

Sincerely,

Dr. Don Mitchell  
Director, Knoxville D.U.I  
Education Program

Dear Committee:

As an expert in the field of alcoholism, I have reviewed the "Adler Alcoholism Screening Inventory," and have concluded that this instrument looks and acts like it would screen alcoholics from the content of the inventory items included on the said inventory.

Sincerely,

Wendy Quamann  
Director of Adult Chemical  
Dependency Program  
Peninsula Hospital

Dear Committee:

As an expert in the field of alcoholism, I have reviewed the "Adler Alcoholism Screening Inventory," and have concluded that this instrument looks and acts like it would screen alcoholics from the content of the inventory items included on the said inventory.

Sincerely,

Mary Milner  
Counselor, Y.C.D. Program  
Peninsula Hospital

## APPENDIX F

### STEPS IN TEST DEVELOPMENT

### Steps in Test Development\*

- I. Define Purpose of Instrument
- II. Develop Table of Specifications--Specific Object to be Measured
  - A. Decide on type of question (short answer, multiple choice, essay)
  - B. Decide on type of answering format(A and B depend on purpose of instrument)
- III. Construct Test Items--(20% more than will be used is recommended)
- IV. Determine Test Length
- V. Arrange Test Items

\*Followed from Aiken (1982).

## VITA

James Michael Adler was born in Hammond, Indiana on May 25, 1961. He attended elementary school in that area, and then moved to Athens, Tennessee, where he graduated from McMinn Central High School in 1979. After completing two years of college at Roane State Community College, he transferred to The University of Tennessee, Knoxville. In August of 1983 he received his Bachelor of Arts degree in Psychology. In September of 1983 he began work towards a Master's degree in Community Agency Counseling, which was awarded in June 1985.