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WHITE, PATRICIA HATHAWAY

THE USE OF THE CANTER BACKGROUND INTERFERENCE PROCEDURE FOR THE BENDER GESTALT TEST ON ALCOHOL ABUSERS BETWEEN THE AGES OF 17 AND 21 YEARS

The University of Oklahoma PH.D. 1980

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THE UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

THE USE OF THE CANTER BACKGROUND INTERFERENCE PROCEDURE FOR THE BENDER GESTALT TEST ON ALCOHOL ABUSERS BETWEEN THE AGES OF 17 AND 21 YEARS

A DISSERTATION

SUBMITTED TO THE GRADUATE FACULTY

in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

BY

PATRICIA H. WHITE

NORMAN, OKLAHOMA

1980

THE USE OF THE CANTER BACKGROUND INTERFERENCE PROCEDURE FOR THE BENDER GESTALT TEST ON ALCOHOL ABUSERS BETWEEN THE AGES OF 17 AND 21 YEARS

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ABSTRACT

THE USE OF THE CANTER BACKGROUND INTERFERENCE PROCEDURE FOR THE BENDER GESTALT TEST ON ALCOHOL ABUSERS BETWEEN THE AGES OF 17 AND 21 YEARS

BY: PATRICIA HATHAWAY WHITE

MAJOR PROFESSOR: O. J. RUPIPER

This study was designed to determine whether the Canter BIP Effect discriminated between individuals ages 17-21 years who were alcohol abusers and those who were not. Canter (1976) suggested that the alerting properties of the BIP Effect might prove effective in monitoring changes in an individual's central nervous system function.

An incidental, nonprobability sample of 50 alcohol abusers were identified by observational criteria. They consented to serve as participants in the experimental group. A comparable group of 50 non-abusers were selected to serve in the control group. The test data were analyzed by using Student's t-test for independent data to compare the mean Difference Scores of the two groups. The data were analyzed further by utilizing Student's t-test to compare each design score between the experimental group and the control group.

The analysis of data led to rejecting the null hypotheses of no statistically significant difference between the mean score of the experimental group and the control group on the Difference Scores and the mean scores on individual designs 2, 3, 5, 6, and 7, respectively. In all instances more errors were displayed by the experimental group which indicated the usefulness of the instrument in distinguishing between alcohol abusers and alcohol non-abusers.

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THE USE OF THE CANTER BACKGROUND INTERFERENCE PROCEDURE FOR THE BENDER GESTALT TEST ON ALCOHOL ABUSERS BETWEEN THE AGES OF 17 AND 21 YEARS

CHAPTER I

INTRODUCTION

Alcohol abuse and alcoholism have been defined by either non-scientific theories of drinking or simplistic scientific theories, e.g., one early theory placed almost exclusive emphasis on the nature and the quality of the first drinking experience (Blane & Chafetz, 1979; Bourne & Fox, 1977; Braucht, 1973; Hartford & Mills, 1978). The major means of identification which were considered as warning signals of alcohol abuse were based on observation (Beschner & Friedman, 1979; Ehline & Tighe, 1977; Valle, 1979). The most frequently observed behaviors included: belligerent attitudes while drinking, severly disrupted and/or broken interpersonal relationships while drinking, wanton property destruction, drunken driving, accedental injuries, rapidly declining

academic performance, impaired work performance, and faulty memory about recent behavior and/or events (Calahan, Cisin, & Crossley, 1969; Kraft, 1979).

Blane and Chafetz (1979) stated that the current trend among the researchers in social and behavioral science was to develop more complex and sophisticated theoretical models of alcohol abuse and alcoholism which would aid in scientific problem solving. Many of these sophisticated theories and models of drinking, such as; developmental aspects (Zucker, 1979), ecological aspects (Hartford, 1979), and sex differentiation aspects (Wilsnack & Wilsnack, 1979) used survey instruments designed to elicit social behavior patterns and their causes.

Gotthiel (1977) advocated early adolescent intervention based on the premise that it was a "cost-effective approach as well as one which would reduce the personal and social consequences of chronic addiction" (p. 40). Nicklen (1977) postulated that early intervention was important in that adolescents who abused alcohol could become addicted within 12 to 24 months, depending upon specific physiological variables. Gregson and Taylor (1977) assessed the effects of alcohol induced cognitive disruption on social and economic rehabilitation. They stated that cognitive impairment was was the most significant single predicator of relapse.

Other research was aimed more directly at solving the problem of identifying alcohol abuse rather than listing the observed behaviors. This research concentrated on the effects

of alcohol on the cerebral function and the resulting perceptual motor behavior. Long and McLachlan (1974) studied the long term reversibility of cerebral dysfunction in adult male alcoholics. They found a significant overall improvement in psychometric performance of alcoholics who had abstained for a year. Berglund, Leijonquist, and Horlen (1977) examined the long term reversibility and the prognostic significance of cerebral dysfunction in alcoholism. They concluded that "a combination of personality ratings and psychometric tests . . . has advantages in describing the course of cerebral dysfunction in alcoholism" (p. 1769). Although cerebral dysfunction was considered a generally poor prognostic sign for recovery (Haug, 1968), the findings were not confirmed (Berglund, et. at., 1977).

Favazza and Cannel (1977) administered the Michigan Alcoholism Screening Test (MAST) to 245 midwestern college students to evaluate the degree of alcohol used by this group of young people. The results revealed that a significant percentage of the students had scores indicative of alcoholism. Kraft (1979) noted that the MAST was standardized on older subjects who were clinical patients at the time of the research to standardize and norm the MAST. Favazza and Cannell (1977) and Kraft (1979) call for further research to ascertain validity with non-clinical subjects.

The problem of alcohol abuse is still a major social concern (Kerr Foundation, 1979; Oklahoma State Dept., Division

on Alcoholism, 1978, 1979). An estimated five percent of teenagers, ages 13 to 19, were getting drunk at least once a week according to the survey conducted by the National Institute on Alcohol Abuse and Alcoholism (1974). Based on the NIAA estimate, that means approximately 17, 000 teenagers in Oklahoma were drunk at least once a week (Kerr Foundation, 1979).

The research that seemed to hold the most promise for identifying alcohol abuse before the user became physically addicted was the research that focused on the effect of alcohol on the central nervous system. A survey of the literature did not yield information to indicate that any widely recognized test which contained diagnostic validity and reliability was being used which would adequately predict an individual's tendency to become alcoholic. This investigator believed that research for a valid and reliable diagnostic test instrument which would differentiate alcohol abusers from alcohol non-abusers was needed.

The Canter Background Interference Procedure for the Bender Gestalt Test could possibly satisfy this diagnostic need. The Canter Background Interference Procedure (BIP) was designed to assess perceptual motor deficiencies in persons who had brain damage. The full diagnostic range of the Canter Background Interference Procedure Effect was still unknown. Canter (1976) believed that it had the potential as a diagnostic tool to determine central nervous system changes

in individuals who had been victims of drug intoxication.

The Bender Visual Motor Gestalt Test (Bender, 1938) was the graphomotor test Canter chose in order to research his background interference theory. Bender (1938) published the Bender Visual Motor Gestalt Test based on nine designs she selected from research done in visual gestalt psychology by Wertheimer (1923). The designs are geometric figures, comprised of circles, angles, curves, dots and lines, which were combined in a variety of gestalt relationships. The subject was given the designs, one per card, and asked to copy them on a blank sheet of paper. The subject saw, reorganized, and reproduced the designs as he/she perceived them. The test was constructed for clinical diagnosticians to use with both children and adults. It was used clinically only as a minor indicator in a battery of personality tests for this purpose.

Bender's 1938 research (p. 5) indicated that the manner in which the subject perceived the nine designs, then reproduced them was determined by the individual's biological principles of sensory motor action. These biological principles varied greatly from subject to subject, depending upon the subject's maturational level, growth pattern, and pathological state. The pathological state could be either functionally or organically induced.

The Bender Gestalt had been used frequently as a maturational test for visual motor and perceptual motor

gestalt functions in young children. Laura Bender (1946) defined the gestalt function as;

> that function of the integrated organism whereby it responds to a given constellation of stimuli as a whole, the response itself being a constellation or pattern or gestalt (p. 3).

Bender, in advocating the use of the Bender Gestalt, suggested that

> any deviation in the total organism will be reflected in the final sensory motor pattern in response to the given stimulus pattern (p. 4).

The Bender Gestalt was one of the most widely researched and clinically used tests (Sundberg, 1961; Tolor & Schulberg, 1963). Its potential was still in the data gathering research stage (Gilbert, 1978; Ogden, 1967). Various scoring systems had also been developed in attempts to alleviate Bender's lengthy and subjective scoring system, e.g., Canter (1976), Hutt (1953), Keller (1955), Koppitz (1963), Pascal and Suttell (1951), and Yates (1954). With the exception of the Koppitz scoring system, these systems were intended to be used only with adults or with institutionalized children who were diagnosed as retarded. The Koppitz (1963) system deserved mention in that it was the most widely used scoring system for all children, both normal and impaired, from five to 10 years of age. The Pascal-Suttell (1951) scoring system was the most widely recognized scoring system for adults 15-50 years old.

The Pascal-Suttell scoring system was an outgrowth of two areas which Pascal believed needed further research. First,

Pascal found Bender's (1946) scoring system too unweildy for rapid scoring of large numbers of protocols and too subjective for consistent scoring reliability by all clinicians (p. 15). Second, Pascal saw the psychological interpretative value of the test while he was a student under Hutt's tutelege in the psychiatric division of a military hospital (p. 5). Hutt (1969) had done work with alcoholic patients using the Bender Gestalt Test. He contributed to the interpretative value of the test in isolating design deviations which were common to the pre-alcoholic or alcoholic conditions.

Pascal and Suttell concurred with the research which established the Bender Gestalt Test as a diagnostic instrument for determining a subject's organic brain dysfunction. They viewed the design reproduction as a work sample which confirmed any individual's cortical capacity to percieve the designs and the subject's psychomotor capacity to reproduce them. They also saw potential for additional diagnostic information to be gained from interpreting the Bender protocols: namely, that an individual's performance was a reflection of his attitude toward reality. They researched the subject's ability to draw the designs as a function of ego strength. In other words, Pascal and Suttell developed their scoring system to measure ego strength which they hypothesized was correlated with the individual's emotional adjustment or attitude toward reality (pp. 8-9).

Pascal and Suttell postulated that the task of copying

the Bender Gestalt Test designs would yield two-fold clinical evidence; (1) the subject's capacity to perceive correctly and then copy the design effectively; and (2) the subject's interpretation of what the designs and the task meant in the light of personal experience. Pascal and Suttell (1951) also determined that:

> the evidence available suggests that when these [drawings] are compared with those of normal controls discriminating differences can be found (p. 6).

Their research resulted in the Pascal-Suttell scoring method for adults ages 15-50.

Canter (1976) also encountered scoring problems. He developed the Canter Background Interference Procedure for the Bender Gestalt Test "out of the frustration with false positives" (p. 1) which occurred when the Pascal-Suttell scoring method was used. Canter began his research in 1963. He needed to test a neurosurgical patient; the only paper readily available was a coffee stained sheet of faded graph paper. Canter used it and discovered that the condition of the paper created a distinctly disruptive effect on the patient. The current BIP procedures were the result of Canter's research. Canter (1976) believed his work added an objective dimension and advantage to scoring the test which was not present in the Pascal-Suttell method. The Canter Background Interference Procedure for the Bender Gestalt Test scoring method also was standardized on adults ages 15-50.

Statement of Problem

The intent of this study was to determine whether there were results on the Canter Background Interference Procedure for the Bender Gestalt Test which discriminated between individuals who abused alcohol and individuals who did not abuse alcohol. The background interference procedure effect, as described by Canter (1976), measured the changes in the subject's performance between the standard mode of the Bender Visual Motor Gestalt Test and the Canter Background Interference Procedure for the Bender Gestalt Test test mode.

Although the BIP was used primarily to screen adults for organic brain damage Canter suggested that:

> the study of the BIP effect per se, without regard to its use as a diagnostic indication of brain damage may be of value (p. 21).

Canter went on to recommend further research with the BIP Effect for monitoring

> the status of individuals subject to possible changes in the CNS function as for example . . . drug intoxication (p. 21).

The literature on alcoholism regarding the clinical aspects revealed that the cerebral function of an individual was impaired by chronic alcoholism (Berglund, et. al., 1977; Hutt, 1969; Long & McLachlan, 1974). In other words, an individual who abused alcohol experienced perceptual motor dysfunction to some degree. Since it was accepted that the Canter Background Interference Procedure had the capacity to indicate disorders of the central nervous system, including

perceptual motor dysfunctions, further research with the BIP Effect might reveal that it could be used to monitor changes in an individual's central nervous system due to drug intoxication. Should the discrimination properties of the test prove significant, progress could be made in early identification and treatment of potential alcoholics.

Operational Definitions

Alcohol Abuser: any person who had physiological, psychological, and/or social problems due to excessive alcohol consumption.

Alcoholic: any person who was so habitually preoccupied with excessive alcohol consumption that normal physiological, psychological, and social functioning was impossible.

BIP Effect: the subject's level of impairment on the BIP relative to the subject's performance on the Bender Gestalt Test.

CHAPTER II

REVIEW OF THE LITERATURE

Mann (1970) was appointed as Executive Director and chief spokesman when the National Council on Alcoholism was founded in 1944. She pointed out that alcohol was not identified as a disease during the 1940's. She wrote: "Medical care was usually not available. Treatment facilities were almost nonexistent" (p. xi). Mann (1970), a recovered alcoholic, was instrumental in convincing the medical profession that alcoholism was a disease. As chief spokesman for the NCA, she spent most of her time lecturing nationwide. Her lectures focused on three concepts:

1. alcoholism is a disease and the alcoholic a sick person.
2. the alcoholic can be helped and is worth helping.
3. alcoholism is a public health problem and therefore a public responsibility (p. xi).

Mann (1970) used a question-answer format to dispense information about alcoholism. She covered such topics as: facts and figures; myths and misconceptions, e.g., alcohol

was not an aphrodisiac; recognition of alcoholic symptoms; causes; and helping the alcoholic to recover. Mann addressed the behaviors, both physical and psychological, which could be identified by observation.

Jellinek (1960) was among the first in the medical profession to advance the theory that alcoholism was a disease. He studied several cultures and found that the problem of alcohol abuse varied from one culture to another in specific characteristics. Jellinek determined that there were five different classifications that described alcohol addiction worldwide. He believed that doctors and clinical workers in the United States should be alerted to each of the classifications due to the patients they encountered from the various cultures who were living in the United States. Briefly, these were the classifications which Jellinek developed. (1) Behavior characterized by a continued psychological dependence or reliance upon the effect of alcohol for relief of physical or emotional pain. There were no withdrawal symptoms and no signs of progression. This type was often more of a symptom of an underlying illness, probably emotional, than an illness in its own right. (2) Behavior characterized by cirrhosis or similar complications. Usually, there was no psychological or physical dependence, nor were there withdrawal symptoms. The incentive was usually simple compliance with social custom

coupled with poor nutritional habits. It was this type of alcoholism that may be observed in countries like Portugal or Chile, where the poorer classes may have depended on wine for a certain number of cheap calories, disregarding the fact that it contributed no other food values. (3) Behavior characterized by increased body tolerance to alcohol, physical dependence, with craving or withdrawal symptoms in case of deprivation. There was loss of control--i.e., the inability to stop drinking after the first few drinks--and a gradual progression from psychological to physical dependence. There might be occasional periods of abstinence. This type of alcoholism was most common in the United States, Canada, and Australia. (4) Behavior characterized by increased body tolerance of alcohol, physical dependence and craving or withdrawal symptoms in case of deprivation. In contrast to the preceding types, there was very rarely loss of control. On the other hand, an almost total inability to abstain from drinking even for a short time was inherent in this type. This was the type of alcoholism that was most commonly found in wine-drinking countries such as France or Italy, where drunkenness, in the American sense of the concept, was very rare, but where a rather large part of the population was under constant day-long mild intoxication. If the individual were suddenly deprived of wine, there may be violent withdrawal symptoms, ranging all the way to delirium tremens after several days. Many victims of this type of alcoholism:

were totally unaware of their condition and undoubtedly would have been indignant at being labeled alcoholic. (5) Behavior characterized by repeated bouts of very heavy drinking, spaced out with intervals of relative or total abstinence. The American "weekend drunk" was a victim of this type of alcoholism; so was the Finnish logger. Camba Indians of Bolivia behaved in this manner but were not classed in this group because their weekend drinking was entirely within the norms of their culture. Also, this group behavior was unaccompanied by real lack of control, violence, or hangover.

Jellinek (1960) characterized these groups worldwide with the expectation that education would be a major deterrent to alcoholism. It was also his expectation that the medical profession would rally rapidly in an effort to help stamp-out an old and disabling disease.

Schroeder (1975) investigated alcoholism from a public policy point of view. He wrote that the United States courts had permitted policies, strategies, and laws on drug abuse to evolve which were confusing, contradictory, and frequently self-defeating. In dealing with alcohol, he noted that alcohol was America's favorite recreational drug. At the same time, the contradiction was apparent that alcohol abuse was associated with traffic accidents and fatalities, as well as with many violent crimes.

Schroeder (1975) reported that alcohol could be

considered therapeutic when the user did not abuse it. Non-abusive use of alcohol could create feelings of well-being and gregariousness. In that alcohol was a depressant, it could be used as a mild sedative; it could relieve tension when it was consumed moderately. Schroeder (1975) defined moderate of average consumption as three ounces. He did not state during what time period or by what age or size person. He went on to state that twice the moderate amount impaired judgment and reflexes; three times that amount might trigger mild paranoia and belligerency. The toxic effect of alcohol could occur after the amount was more than tripled. Depending upon the individual's specific physical and emotional health, the toxic level of alcohol could result in death. Whether or not death was the result, Schroeder (1975) stated that some type of physical impairment was almost inevitable at the toxic level.

Schroeder cited Irwin's (1970) study on drugs to describe other dangers of alcohol. For example: alcohol was addictive both physically and psychologically. Long term physical abuse could cause brain, liver, pancreas, and/or kidney damage. Abusers developed a tolerence for alcohol and needed larger amounts to become high. Withdrawal symptoms occurred when the user stopped drinking abruptly. "Withdrawal from alcohol is more dangerous and more potentially fatal than the withdrawal from heroin" (P. 150). The people who were involved in identifying

alcoholics and placing them in treatment needed to insist that medical care be a part of the treatment process.

Schroeder mentioned the survey conducted by the Highway Traffic Safety Administration in 1974. The results of this study indicated that half of the high school students in America attended drinking parties at least once a month. Of this group, 61 percent admitted to getting high at each party. Schroder concluded that social justice and community support could not be legislated. The drug problem would abate only when there was no further demand for drugs. Public policy could not control or minimize the teenager's drinking habits.

Englebardt (1975) used the information gathered in the U.S. Department of Health, Education, and Welfare study done in 1974 as the basis of his work. The study revealed that 63 percent of the seventh grade boys and 54 percent of the seventh grade girls who were surveyed had used alcohol at least once. The percentage of teenagers who used alcohol at least once by the seventh grade increased with age. Of the high school seniors interviewed, 93 percent of the boys and 87 percent of the girls had used alcohol at least once.

Englebardt (1975) learned that there were no Alcoholic Anonymous groups exclusively for children or teenaters prior to 1970. The young were integrated with the

adults and the results on recovery were less than satisfactory due to the teenagers inability to comprehend the recovery message as it was taught to adults. Since then, many groups were organized nationwide and their member ship was sizeable. Englebardt agreed with the government researchers in stating that alcohol was the drug of choice among people. He believed it was necessary to understand teenager's reasons for alcohol abuse, as well as how alcohol affected them differently than it affected non-alcoholics, if we hoped to teach teenagers to drink responsibly.

Englebardt charted the history of alcohol, its chemical composition, and what the impact of alcohol abuse could do to the teenager's health. He stated that teenagers who have not reached their full physical growth could become chemically dependent far more rapidly than older, physically mature individuals. Permanent physical damage to the liver and intestines also occured more rapidly in teenagers (pp. 28-29). He listed the wide range of diseases and disabilities which occur when alcohol is abused for long periods of time.

Englebardt estimated that 70 percent of all alcoholics were not skid row bums; instead, he described them as respectible citizens who apparently were capable of carrying on normal, productive lives. He went on to describe an alcoholic or problem drinker personality. His

profile of a problem drinker included seven specific behavior signs.

> Any individual who:
> 1. must drink in order to function or cope with life . . .
> 2. . . . frequently drinks to a state of intoxication . . .
> 3. goes to school or work intoxicated
> 4. habitually drives a car, operates potentially dangerous machinery, or participates in any other dangerous past time while under the influence of alcohol
> 5. keeps bottles hidden
> 6. drinks to the point of blackouts
> 7. has drinking habits so different . . . that they comand your attention . . . (pp. 31-33).

Englebardt (1975) identified alcoholic behavior by observation. He stated that the causes for alcoholism were hazy. He postulated that alcoholism could be avoided only when teenagers used alcohol with respect. He advocated a family educational program to produce sensible drinking habits.

Curtis (1968) emphasized the necessity of education and awareness of the problem which could be created when alcohol is abused. He listed many medical facts in an effort to dispel the myths which surrounded the physical use of alcohol. In discussing the myths of increased creativity and performance, Curtis presented information about emotional stability. He returned to his thesis that education could be a major deterrant when it was conducted at the appropriate time in a teenager's development. Curtis discussed social and ethical attitudes in the United States

as compared to Norway. He concluded that the only solution to alcohol abuse and alcoholism rested with each teenager and their decision to abuse it or to stay healthy.

Silverstein and Silverstein (1975) attempted to educate teens to use alcohol and not to abuse it. Their study explained how alcohol was produced and described the difference in the variety of alcoholic beverages which were available, e.g., beer and ale, wine, and distilled spirits.

Silverstein (1975), described the effects of alcohol in the body. He wrote a detailed chemical analysis and process description of the effects alcohol created on each of the vital organs. He also described the physical impairment which was caused when alcohol was abused.

Silverstein and Silverstein (1975) reviewed the social pressures surrounding alcohol which were generated in the Unites States. Peer pressure was a major factor in any age group; but it was, perhaps, most prevalent among teenagers. Under the guise of hospitality, or "guilting" a teen to be one of the gang, peer groups encouraged illicit drinking bouts. In discussing peer pressure, the Silverstein's included the heriditary vs. environment causes. They concluded that alcoholism was not caused by heridity.

The Silverstein's (1975) discussed treatment for alcoholism as it was available in 1975. They recommended using

the services of Alcoholics Anonymous (1955) as the quickest, most effective, most supportive services available nationwide. Silverstein's described alcoholism as an individual disease which affected the entire family. They discussed the multiple problems the family must learn to cope with as a consequence of an alcoholic family member. They concluded that the decision to abuse alcohol was a personal decision and that each teenager should be responsible for making a wise decision once the adults had educated the teen to the problem.

The committee who wrote the First Special Report to the U.S. Congress on Alcohol and Health (1971) pointed out that some investigators continued to look for a unitary answer to solve the problem of how alcoholism occurred. They also attempted to identify the crucial factors associated with the onset and progression of alcoholism as related to a single cause. The committee postulated that the search for a single cause might be an unrealistic goal (Alcohol & Health, 1971).

The committee (1971) discussed the view point that other theorists used a multifaceted approach to solve the problem of how alcholism occurred. The multifaceted approach included investigations into the physiological, psychological, and sociological needs of the individuals who became addicted to alcohol. The committee went on to study the

variables that comprised an alcoholic personality, on the theory that the individual characteristics might be the clue to why some individuals could drink and never become alcoholic yet others seemed incapable of controlling their drinking. The committee developed a tentative model of the alcoholic personality. They described the alcoholic personality as an individual who responded to alcohol physiologically by experiencing intense relief and relaxation when he drank. Furthermore, the alcoholic personality had certain difficulty in dealing with and overcoming depression, frustration, and anxiety. Finally, the alcoholic personality was a member of a culture that induced guilt and confusion regarding what kinds of drinking behavior were appropriate (pp. 67-68).

The researchers then pointed out that not all alcoholic personalities fit the model. They called for further research to identify more clearly, the association between alcohol and an individual's physiological, psychological, and sociological personality characteristics.

The study concluded with the observation that much was known about treatment and rehabilitation for alcoholism. Therefore, everyone should make an effort to obtain treatment for any alcoholic they could identify, based on the foregoing descriptions.

Hartford (1979) attempted to relate drinking behavior to the drinker's ecology. He reviewed numerous case

histories in the light of the pressure or influence the enviornment, and the people who populated the environment, placed on the alcohol consumer. He listed most of the conceivable sites that teenage drinkers from 13 to 19 years old could chose, both public and private. Hartford (1979) described drinking group memberships ranging from the solo individual in a bar to a large private celebration party which included all ages of people. He included the methods used in two different studies on teenage alcoholism and how the conclusions related to the victim's ecology (environment).

Hartford (1979) viewed the behavioral settings as ecological units. He postulated that the theoretical models which considered an individual's physiological, psychological, and sociological factors were incomplete models. Hartford discussed the probability that the ecological pressures and influences were stronger determinants of the way a teenager decided to drink abusively or non-abusively.

Hartford cited studies which claimed that peer pressure was an infrequently stated reason for drinking when teenagers were surveyed. He explained that the seeming discrepency between the survey responses and his research was due to the lack of consideration for the ecology. Hartford was satisfied that any researcher who included a comprehensive view of the ecology units with research on alcohol would conclude that the ecology was an integral part of the eventual solution to the problem of alcoholism.

Zucker (1979) constructed a multiple-influence developmental model in an effort to establish a rationale for alcohol addiction. Zucker contended that it was no longer appropriate to consider single concepts, such as the physiological, psychological, or sociological, as the causes for teenage alcoholism. Instead, researchers and clinicians must consider multiple factors which interact simultaneously. Zucker suggested using a model which encompassed four levels of influence that operated across developmental stages and across internal-external environments. He selected:

> a. sociocultural and community influences;
> b. primary-group (family) influences;
> c. intimate secondary-group (peers and family of procreation) influences; and
> d. intraindividual influences, including cognitive and personality variables and nonrepresentational elements such as genetic factors (p. 139).

After applying these influences to his research, Zucker (1979) reached several conclusions. First, there were behavioral markers in early childhood that related to problem drinking. Next, educational efforts generally were not effective because the cognitive capacity of adolescents was not compatible with the content or timing of the educational massage. Last, too few educational attempts considered all the levels which functioned simultaneously with each adolescent.

Horman (1979) concentrated his research on the impact of sociopolitical systems. He commented that if the

hypothesis that alcoholism was a disease were accepted, there was absolutely no need to discuss the impact of sociological factors on teenage alcoholics. Horman (1979) theorized that most people want to define alcoholism as a medical problem in order to reduce their own anxieties about the problem and, simultaneously, to have good reason to place the alcoholic in a treatment situation.

Horman (1979) determined that the primary phenomenon of alcoholism was a sociological phenomenon. He discussed the three areas he found to be most pertinent sociologically and politically to the increase in alcohol consumption by teenagers during the past 10 years. These areas were: (1) alienation of teenagers in the United States; (2) the availability of alcoholic beverages in relation to the per capita consumption; and (3) effects of lowering the legal drinking age.

Horman listed the components of alienation as "feelings of powerlessness, normlessness, meaninglessness, isolation, and self estrangement" from society (p. 264). He described alienation as an insidious problem which created depression, anxiety and rebellion in teenagers. He did not find any sociopolitical action that alleviated the teenagers alienation. He assumed that the political situation had encouraged teenage alcoholism by permitting the easy availability of alcohol to younger members of

society without any attempt to make progress in the moral structure of the government, e.g., Nixon's distrust of his cohorts, his betrayal of the American people, and his refusal to stand responsible for his actions, in addition to his decadent personal habits. Horman's (1979) final comment that the "elected and appointed government leaders see their responsibility as . . . funding rehabilitation service for the casualties" (p. 280) generally summed up his argument that teenage alcoholism was primarily a sociopolitical phenomena.

Zung's (1978) study of the Michigan Alcohol Screening Test (MAST) added to the research Favazza and Cannell (1978) did. Zung did a factor analysis on the MAST to assess 1000 adult motorists who were arrested for driving while intoxicated. Those tested were labeled both alcoholic and non-alcoholic. The MAST protocol results indicated that all the subjects, alcoholic or not, displayed alcoholic symptoms of: (1) help-seeking, (2) discord, (3) alienation, and (4) denial. Zung recommended that research be continued with diagnostic screening instruments.

Canter (1963) developed the Background Interference Procedure to be applied to graphomotor tests for the purpose of assessing visual motor and visual perceptual abilities. Canter noted that there were major problems in determining whether a subject's deficiency in performance was due to

motor ineptitude, mental defect, psychosis, drug impairment, or brain disease on most graphomotor tests. Canter's

> experimental technique requires S to copy figures of the Bender-Gestalt type, each on a blank sheet of paper. After an interpolated task, he copies the figures onto papers which contain a moderately dense background of randomly placed intersecting curved lines (p. 914).

Canter (1966) applied the Background Interference Procedure to the Bender Visual Motor Gestalt Test in order to measure visuomotor impairment as well as to compare the subject's performance decrements. His sample included 30 brain damaged psychiatric patients, 22 psychotic nonorganic patients, and 24 nonpsychotic, nonorganic patients. Each subject took the Bender Gestalt Test using both the standard paper and the BIP paper. The tests were scored by the Pascal-Suttell (1951) method. The brain damaged patients' results showed markedly lower scores on the BIP paper than on standard paper while the other patients' scores showed little or no change. A tentative scoring method for the BIP was established in order to screen the brain damaged patients from the psychiatric patients. A new sample was used for the second trial. The results, based on the tentative scoring method, indicated that the BIP used with the Bender Gestalt Test was highly sensitive to the effects of brain damage. The BIP technique also appeared promising in discriminating the visual motor

impairments of patients who received specific treatment for drugs or surgery.

Canter (1968) proposed a modified scoring system for the BIP Bender based on the Pascal-Suttell (1951) scoring method. The revision included a Maximum Deviation Score for each design which provided a quantified value for all designs, no matter how distorted the design execution might be. Canter compared his scoring results with a technician's scoring results using his modified scoring system. The results of the BIP Bender classification method revealed a high degree of identification of organic disorder with the independent medical neurological data. The scorers results were also highly comparable using the modified scoring system. The modified scoring system appeared easier and more efficient for non-clinicians to learn. It was Canter's intent to encourage a wider range for research with the Background Interference Procedure for the Bender Gestalt Test.

Adams (1969) attempted to clarify, as well as simplify, two complex problems for psychologists: (1) whether the clinical psychologist was trained to assist in the neurological diagnosis of brain damage via psychometric assessment techniques, and (2) whether the concepts of unitary vs. multidimensional brain damage were phenomenon which could be isolated, then identified successfully based on the predictive results on one psychological assessment instrument, namely the Canter BIP. The researcher

reviewed numerous studies to advance the concept that damage to the brain and central nervous system was a multidimensional problem which produced performance differences and therefore, required discriminating psychometric treatment (Adams, 1966; Burgemeister, 1962; Gallagher, 1957; Adams, 1969). Adams then debated the advantages that seemed to be identifiable when the Canter BIP was used. He concluded that the Canter BIP was a unique diagnostic instrument in that it contained "simplicity of the elements" in addition to "complexity of the over-all tasks" (p. 594). These advantages, according to the author, "offer an approach to reconciling the unitary and multidimensional notations about . . . predicating when a general and when a specific deficit in performance is to be expected" (p. 595), e.g., impairments of patients who receive treatment for drugs or surgery.

CHAPTER III

METHOD

Sample

Older adolescents, 17 to 21 years of age participated in this investigation. All subjects lived in the Southwest region of the United States in a University community, population 65,000-70,000.

The subjects who abused alcohol were identified by teachers, public school and college counselors, juvenile law enforcement officers, juvenile service workers, ministers, parents, and peers. The criteria for selection, based on observation included: recent poor attendance records and/or classes dropped, rapidly declining academic performance, personality changes, inappropriate or destructive behavior, faulty memory about recent events, and law enforcement and/or community disciplinary action. See Appendix A for the specific information requested.

All subjects were matriculated students in either high school or college. All had the potential to be

academically successful, based on achievement test scores, college entrance board scores, and grade point averages prior to their declining academic performance. All were members of upper-middle-class socioeconomic families. No subject had a medically diagnosed history of brain damage or any identified brain impairment. All subjects had part-time jobs and worked from six to thirty-six hours per week.

An incidental, nonprobability sample of 50 alcohol abusers were identified. They consented to serve as participants in this investigation. A comparable sample of 50 non-abusers were identified and they consented to serve as the control group. Distribution of subjects in the respective samples are shown in Table 1 by chronological age, sex, race, and school matriculation level.

Instrumentation

The Canter Background Interference Procedure (1976) was a two-step process. First, it required a subject to reproduce the Bender Gestalt Test designs on a blank sheet of paper in the standard mode. After a 10 minute interval, during which another task was interpolated, the subject reproduced the Bender Gestalt Test designs a second time on Canter's background interference sheet. Canter (1976) described the sheet as "a sheet of paper filled with intersecting sinusoidal lines which provide the background 'noise' or interference during the copying task" (p. 2). See Appendix C and

TABLE 1

Composite Description of Experimental (E) and Control (C) Subjects by Chronological Age, Sex, Race, and School Matriculation Level

	Chronological Age							
	17	17.5	18	18.5	19	19.5	20	20.5
(E)	8	9	7	5	5	5	5	6
(C)	8	5	4	7	6	6	7	7

	Sex	
	Male	Female
(E)	38	12
(C)	26	24

	Race		
	White	Black	American Indian
(E)	40	2	8
(C)	41	2	7

	Matriculation Level					
	High School Junior	High School Senior	College Freshman	College Sophomore	College Junior	College Senior
(E)	7	8	12	10	8	5
(C)	9	10	7	10	9	5

Appendix D for a copy of the Background Interference Sheet and a letter of permission to reproduce the sheet.

Canter (1966) postulated that the strength of the BIP lay in the comparison of the results between the subject's performance on the standard mode, then the BIP mode. The results did not compare the subject to an ideal or perfect model for the motor reproduction of the designs. Each test mode was scored according to Canter's (1976) modified version of the Pascal-Suttell scoring system. The results included an Error Score for each test mode; a Difference Score (D-Score), which was derived by subtracting the Bender Gestalt Test mode Error Score from the Canter mode Error Score; and a Number Positive (NP), which was derived by summing the number of individual design scores that deteriorated by two points or more on the Canter BIP.

The subject must ignore the background lines on the BIP sheet in order to perform equally well on both test modes. Canter was confident that many replications of his early research confirmed the sensitivity, as well as the validity and reliability of the BIP mode over the sole use of the standard Bender Gestalt mode in effectively diagnosing brain dysfunction. Canter (1966; 1968; 1969; 1971; 1976) reported that the BIP would discriminate decrements in motor performance due to dysfunctions other than organic brain damage. He suggested that further study of the BIP Effect per se might yield valuable information concerning deterioration in the

central nervous system function caused by drug intoxication, including alcohol, as one possible variable.

Eminent clinicians have collected and collated data on the Bender Gestalt Test responses (Bender, 1938; Koppitz, 1958, 1960; Hutt, 1953, 1969; Pascal-Suttell, 1951; Tolor & Schulberg, 1963) in an effort to predict an individual's personality organization and behavior attitudes. Gilbert (1978) and Ogden (1967) synthesized and edited the hypotheses that clinicians most frequently used to diagnose and to evaluate a subject's disorder based on the Bender Gestalt Test protocol profile.

To use the Canter Background Interference Procedure for the Bender Gestalt Test for the purpose of assessing the test protocol profiles for alcoholic personality predictors seemed appropriate. The BIP interpretation did not attempt to diagnose any personality tendencies. In addition to those clinicians already cited, Curnutt (1953), Hammer (1958), Hutt and Briskin (1960), Kaldegg (1956), Story (1960), and Woltmann (1950) have observed several general areas and four specific Bender Gestalt designs which they hypothesized were associated with pre-alcoholic tendencies or alcoholism due to unusual modes of reproducing the Bender Gestalten. The descriptive model is Ogden's synthesis (1967, pp. 58-71). The general areas included: (1) unusual treatment of the gestalten, (2) modifications in design size, and (3) types of design arrangements. The unusual treatment executed by subjects evaluated as

pre-alcoholic or alcoholic included; numbering and boxing off designs; overlapping and crossing difficulty; perseveration and/or rotation of specific designs; motor incoordination tremor; and distortion of design asymmetry. The alcoholic who had reached an organic condition modified the design size by noticably reducing the size of each design. A very methodical type of design arrangement in conjunction with other specific tendencies was the third area which was indicative of pre-alcoholism or alcoholism.

The specific designs that were hypothesized to be determiners of pre-alcoholism and alcoholism were designs 2, 5, 6, and 7, respectively. Specific distortions reoccurred in each of these, according to the psychological test assessments and data sources (Gilbert, 1978; Ogden, 1976).

Procedure

Each subject was administered the Bender Visual Motor Gestalt Test according to the instructions in the Canter Background Interference Procedure for the Bender Gestalt Test manual. The Background Interference Procedure directed the test administrator to present the Bender Gestalt Test cards to the subject twice. The first time, the subject was given a blank sheet of paper and told to reproduce the Bender Gestalt Test designs, as instructed in the manual. The cards were presented in a clipboard with the paper clipped to the board. When the subject had completed the nine designs, there was at

least a ten minute interval between the administration of the standard Bender Gestalt mode and the BIP mode. The subject talked about personal history and memorable events as the interpolated task during the interval. Then the subject was given the BIP sheet. The Bender Gestalt cards were presented again according to the instructions in the manual. All subjects completed the copying test procedure within 15 to 30 minutes; the interpolated task varied from 10 to 20 minutes.

The BIP sheet was attached to a carbon with a sheet of onionskin behind it. This clarified scoring procedures and scoring determinations for the examiner when the lines of the copied design coincided with the curved printed lines of the BIP paper or when one copied Bender Gestalt design was superimposed over another design. The test was scored using the Canter Background Interference Procedure scoring method. Canter recommended scoring the designs in pairs, i.e., the standard Bender Gestalt copy of Design A, then the BIP Design A. "By such a pair-wise approach, any arbitrary or tenuous decision as to a particular deviation may be applied equally to the results obtained on the two modes of administration." (p. 4) A ruler with 1/16 inch markings and a protractor were used in order to determine accurately the slant of the axis lines and the number of degrees in the angle distortions.

Method of Analysis

The data were analyzed by using Student's t-test to compare the Canter Background Interference Procedure D-scores of the experimental group with the D-Scores of the control group.

The Hypotheses

In examining the test protocols of the experimental group and the control group for evidence of the BIP Effect using the Bender Visual Motor Gestalt Test submitted to the Canter Background Interference Procedure and the Canter scoring system, the following hypotheses were tested.

1. H_o = There was no statistically significant difference between the mean difference score of the experimental group and the mean difference score of the control group on the Canter Background Interference Procedure for the Bender Gestalt Test scored according to the Canter scoring system.

2. H_o = There was no statistically significant difference between the individual design mean scores of the experimental group and the individual design mean scores of the control group on the standard Bender Gestalt sheet and the BIP sheet, respectively, scored according to the Canter scoring system.

CHAPTER IV

RESULTS

The Difference Scores (D-Scores) were tabulated for each subject showing the subject's scores within the experimental group and the control group. The original data by subject are listed in Table 5 and Table 6 in Appendix B.

Analysis of the difference in mean D-Scores with the Canter Background Interference Procedure scoring system between the experimental group and the control group was performed by using the Student's t-test for independent data. There was a statistically significant difference $t(98) = 3.93$, $p < .01$. The experimental group scored more design deviations from the control group, as indicated by t-test data presented in Table 2.

The null hypothesis of no difference in the means of the D-Scores between the experimental group and the control group was rejected. The BIP Effect per se indicated that the experimental group showed greater improvement on the BIP test mode than on the standard Bender Gestalt test mode.

Other Student's t-tests were utilized to compare group means between individual Design scores. There were no statistically significant differences on Designs A, 1, 4, and 8. The null hypotheses were accepted for these designs. However, statistically significant differences in the mean scores of Designs 2, 3, 5, 6, and 7 at $p < .01$ were found. The null

TABLE 2

Student's t-test data comparing mean difference scores of the experimental group and the control group

	Experimental		Control
	N = 50		N = 50
$\overline{X}$	8.12		.28
S. D.	13.05		5.08
S. $E._{diff.}$		2.00	
t		3.92 **	

** p <.01

hypotheses were rejected for these designs. The comparative data are presented in Table 3 and Table 4.

In all instances the experimental group, i.e., the alcohol abusers, made significantly more errors in the execution of designs than did the control group. Within the confines of this investigation, it appeared that the Canter Background Interference Procedure for the Bender Gestalt could be an effective instrument in distinguishing alcohol abusers from non-abusers.

TABLE 3

Student's t-test scores comparing the individual Design scores on the standard Bender Gestalt test mode of the experimental (E) and the control (C) group

	Design	$\bar{X}$	S.D.	t	p
(E)	A	1.04	2.15	1.02	NS
(C)	A	.24	.65		
(E)	1	1.10	1.53	1.08	NS
(C)	1	.20	.60		
(E)	2	2.66	1.77	2.56	<.01
(C)	2	1.06	1.03		
(E)	3	4.08	3.93	4.04	<.01
(C)	3	.98	.83		
(E)	4	2.10	2.93	2.08	NS
(C)	4	.52	1.15		
(E)	5	2.44	1.98	2.37	<.01
(C)	5	.96	1.62		
(E)	6	4.78	2.93	4.74	<.01
(C)	6	.84	2.16		
(E)	7	3.52	3.10	3.46	<.01
(C)	7	1.32	2.08		
(E)	8	1.72	2.27	1.68	NS
(C)	8	.64	1.20		

TABLE 4

Student's t-test scores comparing the individual Design scores on the BIP test mode of the experimental (E) and the control (C) group

	Design	$\bar{X}$	S.D.	t	p
(E)	A	1.78	3.06	1.76	NS
(C)	A	.26	.89		
(E)	1	1.68	2.44	1.67	NS
(C)	1	.20	.60		
(E)	2	4.08	2.50	3.99	<.01
(C)	2	1.60	1.55		
(E)	3	4.98	4.41	4.96	<.01
(C)	3	.62	1.33		
(E)	4	2.40	2.60	2.35	NS
(C)	4	.70	1.16		
(E)	5	2.70	3.31	2.66	<.01
(C)	5	.82	1.14		
(E)	6	6.22	3.90	6.19	<.01
(C)	6	.96	2.21		
(E)	7	5.12	3.55	5.06	<.01
(C)	7	1.52	1.92		
(E)	8	2.08	2.22	2.03	NS
(C)	8	.74	1.11		

CHAPTER V

SUMMARY, CONCLUSION, DISCUSSION, RECOMMENDATIONS

Summary

This research was designed to determine whether the Canter BIP Effect per se discriminated between individuals who were alcohol abusers and those who were not. Canter (1976) suggested that the alerting properties of the BIP Effect per se might be of value in monitoring changes in the central nervous system function due to drug intoxication.

An incidental, nonprobability sample of 50 alcohol abusers were identified; they consented to serve as participants in the experimental group. A comparable sample of 50 non-abusers were selected to serve as a control group.

The Canter Background Interference Procedure for the Bender Gestalt Test was administered to each subject. The test contained nine geometric designs which were combined in various relationships of dots, lines, angles, and curves. The subject saw, organized, and copied the designs as he perceived them. When the Canter Background Interference Procedure was

applied to the Bender Gestalt Test, the subject copied the designs twice. The first drawing was done on a blank sheet of paper which was defined as the standard Bender Gestalt mode. The second drawing was performed on the Canter background interference sheet and was known as the BIP mode. The background interference, a series of curving intersecting lines, somewhat represented a jigsaw puzzle. There was a 10 minute interpolated, conversational interval between each test session.

Each design was scored for the presence of deviations under both modes of administration. Canter modified the scoring of deviations to include a Maximum deviation score (MDS) for each design. See Appendix D for the Canter BIP system scoring sheet.

The first hypothesis in the present investigation stated that there was no statistically significant difference in performance between mean scores of the experimental group and the control group on the Canter Background Interference Procedure for the Bender Gestalt Test. The data, submitted to analysis by using Student's t-test for independent data, yielded a statistically significant difference, $t\ (98)=3.92$, $p < .01$. The experimental group made more errors on both test modes than the control group. The null hypothesis was rejected.

In order to discriminate further, each design score was submitted to analysis to test the second hypothesis that

there was no statistically significant difference between the individual group design scores of the experimental group and the control group. The null hypothesis was rejected for Designs 2, 3, 5, 6, and 7 which showed a significant difference and accepted for Designs A, 1, 4, and 8 which did not show a statistically significant difference.

Conclusion

On the basis of these results, it was concluded that the Canter Background Interference Procedure Effect per se was a decisive discriminator in identifying impairments between the experimental subjects who abused alcohol and the control subjects who did not abuse alcohol. The alerting properties of the background interference sheet which challenged the subjects to exert more effort and attention to the copying task might have created sufficient anxiety in the experimental subjects to have resulted in the highly discernible BIP Effect. The results indicated that the BIP Effect per se had diagnostic possibilities for early, positive identification of pre-alcoholism tendencies in subjects 15 years or older. In all instances more errors were displayed by the experimental group which indicated the usefulness of the instrument in distinguishing between alcohol abusers and non-abusers.

Discussion

The Canter Background Interference Procedure for the Bender Gestalt Test was a possible diagnostic tool to identify individuals who abused alcohol before they became physically dependent upon the drug. Previous research on the Bender-BIP had focused on the test's diagnostic accuracy in discriminating brain damaged patients from non-brain damaged patients. The research with the BIP had been found to be extremely sensitive and exceptionally accurate in its diagnostic capability. The test protocols showed that experimental subjects tended to make more errors on the BIP sheet than on the standard Bender Gestalt sheet. By the same token, control subjects made fewer errors over-all than the experimental subjects.

Canter suggested that the BIP Effect per se might be capable of monitoring individuals who were subject to central nervous system changes due to treatment with anticonvulsant drugs. If the BIP Effect did give a clue as to the patient's response to such drugs, then it might also hold the potential to differentiate the impact of alcohol from other impairments to the central nervous system. It discriminated and identified an impairment which might or might not be directly related to alcohol abuse. The subjects in this study had no medical history of brain damage or

psychiatric conditions. The BIP Effect suggested that some condition existed within the experimental group to warrant further investigation and classification.

Ogden (1967) and Gilbert (1978) each collated, systematized, and integrated interpretative data from several psychological tests, one of which was the Bender Visual Motor Gestalt Test. The interpretative data were collected from the research of eminent psychologists and psychiatrists which were considered as valid and reliable. A profile indicating alcoholism and pre-alcoholic tendencies was defined on the Bender Gestalt protocol. In the present study, the Canter Background Interference Procedure for the Bender Gestalt Test yielded similar results. However there were exceptions to the accepted pre-alcoholic and alcoholism profile deviations. In this study, Designs 2, 3, 5, 6, and 7 yielded significant results. Design 3 was not mentioned in any study as an indicator of pre-alcoholic tendencies or alcoholism, yet the deviations of the experimental group yielded highly significant results. The potential of the BIP still requires rigorous investigation.

Recommendations

In light of the findings and conclusions of the present study, the following recommendations were made:

1. That future investigations be conducted, replicating the present study for the purpose of verifying or refuting the results obtained in the present investigation, especially regarding the difference in those Designs which were considered indicators of pre-alcoholic and alcoholism.

2. That further study of greater breadth and scope be conducted in the same general area where a larger sample be studied with various age, socioeconomic, and racial groups represented.

3. That further study be undertaken to validate and refine the discrimination of the BIP Effect per se as related to habitual social drinkers, excessive drinkers, and alcoholics with environmental and cultural variables taken into consideration.

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APPENDIX A

Questions Asked of Community Members About Adolescents Identified as Alcohol Abusers

School Attendance
Absent twice weekly
Absent 3-4 times weekly
Absent on test days, consistently

Academic Performance
Grades dropped 1 level in 9 weeks/ 1 semester
Grades dropped 2-3 levels in 9 weeks/ 1 semester
Assignments turned in late, consistently
Assignments not turned in, 50% or more
Failure due to lack of assignments and tests not taken

Inappropriate Behavior
Consistently late to: class, work, dates, social events, etc.
Disruptive in group situations, i.e., class, church, sports function
Belligerent or rude to group members; give example
Argumentative with friends and/or family
Inconsiderate and demanding of friends and/or family; give example
Destructive actions; give example

Personality Fluctuation: Extreme
Polite -- Rude, verbally; example
Gentle -- Abusive, physically; example
Considerate -- Inconsiderate; example

Law Enforcement or Community Disciplinary Encounters
DWI or DUI warnings or charges
Traffic violations
Property damage while driving
Property damage, vandalism

Drinking Behavior
Drunk each time
Frequency of drinking
Reason for drinking, if verbalized
Amount and type of alcohol consumed

APPENDIX B

TABLE 5

Individual Data for Experimental Group

I.D.	Sex	D-Score
1	M	- 3
2	M	- 1
3	M	68
4	M	16
5	M	15
6	M	5
7	M	11
8	M	2
9	M	3
10	M	-11
11	M	3
12	M	- 2
13	M	- 2
14	M	13
15	M	3
16	M	7
17	M	6
18	M	26
19	M	1
20	M	8
21	M	- 8
22	M	11

TABLE 5

(continued)

I.D.	Sex	D-Score
23	M	14
24	M	-10
25	M	30
26	M	4
27	M	- 5
28	M	13
29	M	9
30	M	7
31	M	24
32	M	7
33	M	28
34	M	28
35	M	7
36	M	20
37	M	17
38	M	13
39	M	13
40	M	- 4
41	M	- 6
42	M	9
43	M	10
44	F	11

TABLE 5

(continued)

I.D.	Sex	D-Score
45	F	2
46	F	0
47	F	- 7
48	F	2
49	F	1
50	F	- 2

TABLE 6

Individual Data for Control Group

I.D.	Sex	D-Score
1	M	- 2
2	M	- 5
3	M	- 2
4	M	2
5	M	- 1
6	M	5
7	M	- 4
8	M	2
9	M	- 4
10	M	2
11	M	- 7
12	M	0
13	M	3
14	M	1
15	M	- 2
16	M	4
17	M	- 2
18	M	3
19	M	2
20	M	1
21	M	4
22	M	0

TABLE 6

(continued)

I.D.	Sex	D-Score
23	M	2
24	M	7
25	M	17
26	M	-27
27	F	0
28	F	0
29	F	- 1
30	F	3
31	F	4
32	F	- 2
33	F	2
34	F	4
35	F	- 4
36	F	1
37	F	- 6
38	F	4
39	F	5
40	F	1
41	F	- 6
42	F	3
43	F	- 2
44	F	- 5

TABLE 6

(continued)

I.D.	Sex	D-Score
45	F	3
46	F	0
47	F	- 5
48	F	2
49	F	1
50	F	0

APPENDIX C

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APPENDIX D