

A NONRECURSIVE SIMULTANEOUS-EQUATION MODEL
FOR PROBLEM DRINKING

BY

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Abstract of Dissertation Presented to the Graduate Council
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A NONRECURSIVE SIMULTANEOUS-EQUATION
MODEL FOR PROBLEM DRINKING

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The purpose of this dissertation is to describe, explain, and predict the conditions under which adult residents of four central Florida counties experience problem drinking as measured by a problem-drinking index. For heuristic purposes a multivariate causal model is constructed. This model includes feedback loops from problem drinking to each of the endogenous variables with which it is reciprocally related. While problem drinking is the major dependent variable it is considered to be both cause and effect of perceived value-access disjunction, general psychopathology, and anxiety. The predetermined, independent variables in the model are age, sex, marital status, residential mobility, total family income, occupational prestige, and education. In order to identify the equations, race and residence are

considered to be predetermined independent variables in the estimation equations for perceived value-access disjunction, general psychopathology, and anxiety. These variables are selected for inclusion in the model on the basis of social integration theory, current research findings in the area of problem drinking, and the available data.

This study focuses upon one aspect of an extensive social psychiatric epidemiological survey. A comprehensive 317-item structured interview schedule was administered by trained interviewers to respondents who were randomly selected by use of a multistage cluster sampling technique. Usable interviews were obtained from 3,674 persons, 86 per cent of the sample.

Two-stage least-squares is the technique used for data analysis. This technique is selected because several of the variables in the proposed model are assumed to be reciprocally related. In this case, multiple regression produces a biased estimate of the parameters and is therefore an inappropriate data analysis technique. The two-stage least-squares technique provides an estimate of the parameters that is purged of this error. The estimated standardized beta coefficients are plotted on a path diagram.

The findings support the existing theoretical formulations and clarify the reciprocal relationship among problem

drinking and the other endogenous variables in the model. Fifteen per cent of the variance in the problem-drinking score is explained by 8 of 10 variables described above. When total family income is included in the model, occupational prestige and education are not significantly associated with the problem-drinking score. In each case the standardized beta coefficient of the feedback loop from problem drinking to the variables with which it is reciprocally related--general psychopathology, anxiety, and perceived value-access disjunction--is greater than the standardized beta coefficient leading from that variable to problem drinking.

These findings verify the importance of personal and social integration in influencing drinking behavior. They also suggest that when an individual becomes a problem drinker it is likely that personal and social integration will be dramatically decreased.

CHAPTER I
INTRODUCTION

One of the major tasks of the social researcher is to describe the conditions under which a social phenomenon may be explained and predicted. Researchers from many fields, as well as journalists, philosophers, reformers, and moralists, have focused their attention on the use and abuse of alcohol.¹ Nevertheless, while there exists a plethora of assumptions and theories regarding this problem,² there is

¹The extensive interest in alcohol use is documented by the existence of national organizations such as Alcoholics Anonymous, the National Council of Alcohol Abuse and Alcoholism, The National Council on Alcoholism, and The Alcohol and Drug Problems Association of North America. National publications concerned solely or primarily with alcohol include The Quarterly Journal of Studies on Alcohol, The British Journal of Addiction, The International Journal of Addictions, and Alcohol and Health Notes. In addition, numerous articles and monographs have been written on alcohol, its use and abuse. Medline lists 4,859 articles in its file. Cahalan reports more than 70,000 professional writings on file at the Rutgers Center of Alcohol Studies. See Don Cahalan, Problem Drinkers (San Francisco: Jossey-Bass, Inc., 1970), p. 1.

²Siegler et al. describe eight models and related assumptions which have been applied to the study of alcoholism in the literature. See Miriam Siegler, Humphrey Osmond, and Stephens Newell, "Models of Alcoholism," Quarterly Journal of Studies on Alcohol 29 (September, 1968), 571-591.

limited consensus and less empirical verification for most generalizations.³

The Problem

The purpose of this research is to describe, explain, and predict the conditions under which problem drinking occurs among the adult residents of four counties in Florida. It is assumed that an understanding of problem drinking may be facilitated by constructing a model in which the interdependent reciprocal relationships among variables are explored rather than by assuming one-way causality.

Research begins and ends with existing theory and research findings. The literature review reported in Chapter II discusses the appropriate concepts for inclusion in the proposed model and suggests their relationship one with the other. The review of the literature assists in distinguishing from among the variables those which are assumed to be interdependent, reciprocal variables, termed endogenous variables, and those which are assumed to be independent, predictive variables, termed exogenous variables. Causal relationships for the proposed model are assumed and initially justified primarily on the basis of the literature review. The discussion of methodology in Chapter III

³Selden Bacon, "The Process of Addiction to Alcohol: Social Aspects," Quarterly Journal of Studies on Alcohol 34 (March, 1973), 1-27.

explores the necessary criteria for causal assumptions. The simultaneous equation model is presented in Chapter III.

The Data

The data which are utilized as a test of the model were collected in two separate but nearly identical epidemiological surveys of social psychiatric impairment. The data for the first survey were collected in 1970 and 1971, in a county of north-central Florida. The second survey was conducted in 1972 and 1973, in three counties of central Florida. Households and respondents were randomly selected, utilizing a systematic random sample and the Kish method.⁴ Members of the research team administered a comprehensive structured interview schedule to the sample of 1,645 respondents in the first survey and 2,029 respondents in the second. The schedule included items concerning the respondents' demographic characteristics, health, and use of alcohol. Chapter IV includes a more detailed description of the sample.

The Method

The review of the literature presented in Chapter II suggests the variables to be included in the model proposed in this study. Chapter III presents the methods of

⁴Leslie Kish, "A Procedure for Objective Respondent Selection Within the Household," Journal of the American Statistical Association 44 (September, 1949), 380-387.

operationalizing these theoretical concepts, building indices, and measuring the variables, as well as describing data collection and selection of the sample. The final section of Chapter III describes the methods of data analysis utilized. The descriptive characteristics of the sample are presented in Chapter IV. The descriptive statistics used are percentages, median, mean, range, and standard deviation. The statistical measure of association utilized is a method of simultaneous equations, the two-stage least-squares technique of estimation, which provides a "feedback loop" from one endogenous variable to another. Duncan introduced sociologists to the method of path analysis as a means of constructing causal models.⁵ The use of simultaneous equations and the two-stage least-squares technique may be viewed as an extension of the path model.⁶

Value of the Research

This research represents a potential contribution to our understanding of a social problem, to the sociology of deviance, to medical sociology, and to methodology.

⁵Otis Dudley Duncan, "Path Analysis: Sociological Examples," American Journal of Sociology 72 (July, 1966), 1-16.

⁶Otis Dudley Duncan, Archibald O. Haller, and Alejandro Portes, "Peer Influences on Aspirations: A Reinterpretation," American Journal of Sociology 74 (September, 1968), 119-137.

Social Problem

The abuse of alcohol is unquestionably a social problem. A 1970 report of the United States Comptroller General discusses the social costs of problem drinking in the United States. Approximately 4 to 8 per cent of the work force are estimated to have problem-drinking patterns resulting in a cost to employers of approximately 25 per cent of the employees' annual salaries.⁷ In fact, Von Wiegand points out that the abuse of alcohol at all levels interferes with productivity and, consequently, 87 companies among the 500 largest companies in the United States listed in Fortune magazine have employee alcoholism programs.⁸

Alcohol is estimated to contribute to or be associated with 50 per cent of the fatal auto accidents. In 1969, this amounted to approximately 28,000 fatalities and 300,000 to 400,000 injuries. The report estimates that 33 per cent of all arrests in 1969 were related to alcohol misuse, which resulted in unestimable expense for arrest, incarceration, and trial. The report also estimates that 30 per cent of the patients treated by state mental health programs had a pattern of problem drinking.⁹

⁷Comptroller General of the United States, "Substantial Cost Savings from Establishment of Alcoholism Program for Federal Civilian Employees" (Washington, D.C.: U.S. Government Printing Office, 1970), pp. 1-21.

⁸Ross A. Von Wiegand, "Alcoholism in Industry (U.S.A.)," British Journal of Addiction 67 (September, 1972), p. 183.

⁹Comptroller General, 1970, pp. 1-21.

A Bureau of Indian Affairs publication states that 75 to 80 per cent of all suicides among American Indians are alcohol related.¹⁰ While this represents an extreme cost to the individual, the abuse of alcohol frequently results in high personal cost, not only for the problem drinker, but for family, friends, and the community as well.

Sociology of Deviance

Clinard defines deviant behavior as a "violation of social norms."¹¹ The use of alcohol is socially controlled by norms concerning the acceptable quantity and frequency of consumption in specific social situations. For instance, drinking in moderation is acceptable and even desirable at cocktail parties, business lunches, and so on. Drinking in excess of the normative tolerance range or in proscribed situations is considered to be deviant behavior, however.

The model presented in Chapter III has been deductively formulated from theories and research findings on deviance. The major theories include the disposition toward deviance suggested in Merton's means-ends disjunction theory of

¹⁰Bureau of Indian Affairs, "Suicide, Homicide, and Alcoholism Among American Indians: Guidelines for Help," (Washington, D.C.: U.S. Government Printing Office, 1973), p. 4.

¹¹Marshall B. Clinard, Sociology of Deviant Behavior, (Third Edition; New York: Holt, Rinehart, and Winston, Inc., 1968), p. 26.

anomie,¹² and the restraint against deviance suggested in Durkheim's treatment of suicide in which group attachment reinforces norms which restrain deviant behavior.¹³ In addition, the psychological variables of anxiety and psychopathology have been associated with problem drinking in the literature.¹⁴ The model proposed by this study is a partial test of each of these competing theories of deviance. The theoretical concepts are operationalized and variance in problem drinking is predicted from each theory separately and in combination.

Medical Sociology

The abuse of alcohol, in addition to being a form of deviant behavior, represents a major health problem in our society. The First Special Report to the U.S. Congress on Alcohol and Health in 1971 labels alcohol as the most abused drug in the United States.¹⁵ Problem drinking is considered

¹²Robert K. Merton, Social Theory and Social Structure, (Enlarged Edition; New York: The Free Press, 1968), p. 229.

¹³Emile Durkheim, Suicide, translated by J. A. Spaulding and George Simpson (New York: The Free Press, 1951), pp. 171-216.

¹⁴Richard Jessor, Theodore D. Graves, Robert C. Hanson, and Shirley L. Jessor, Society, Personality, and Deviant Behavior: A Study of a Tri-Ethnic Community (New York: Holt, Rinehart, and Winston, Inc., 1968), pp. 24-25.

¹⁵Shirley Sirota Rosenberg, Editor, First Special Report to the U.S. Congress on Alcohol and Health, from the Secretary of Health, Education, and Welfare (Washington, D.C.: U.S. Government Printing Office: December, 1971), p. viii.

to be an illness and therefore within the domain of diagnosis and treatment of health care practitioners. The concepts, methods, and theories of sociology may be applied to furthering our understanding and prediction of what are basically problems with which health care practitioners are concerned. This application of sociology fits into what Straus suggests as a major division within medical sociology, sociology in medicine.¹⁶ If the health care practitioners are concerned with diagnosing and treating problem drinking, sociologists in medicine legitimately may attempt to describe, explain, and predict this problem.

Methodology

Given the extensive research literature on the use and abuse of alcohol, it becomes not only legitimate but necessary to question seriously the value to be derived from additional research. The unique contribution of this research is methodological. First, few studies have collected data from the general population. Most gathered data from persons who were caught and identified in one of the social control nets of society--offenders of legal norms such as persons arrested for public intoxication or driving while intoxicated, mental health treatment center patients, or

¹⁶Robert Straus, "The Nature and Status of Medical Sociology," American Sociological Review 22 (April, 1957), 200-204.

members of organizations such as Alcoholics Anonymous. This study utilizes data from a random sample of the general population.

Second, few existing cross-sectional studies have gathered data from respondents who live in rural or small communities. Since there is a positive relationship between rates of problem drinking and city size,¹⁷ most studies have focused upon residents of urban areas. This study focuses upon the residents of counties in which the largest cities did not exceed 70,000 in population, at the time of the survey.

Third, few studies have utilized multivariate techniques of data analysis. Most research findings have been couched in bivariate terms, which suggest single variables found to be related to problem drinking. In only a few cases did researchers introduce a third variable to test whether this association was maintained. This study is basically a test of a multivariate model which is deductively constructed from a review of the literature.

Fourth, in models which assume one-way causality, problem drinking is assumed to be the dependent variable. There has been no research which examines the interdependent, reciprocal relationships which may apply between problem drinking and other variables. This study utilizes

¹⁷Cahalan, p. 60.

a technique of data analysis which does not assume one-way causality but which assumes that at least two of the variables in the model are reciprocally related.

Within the general theoretical context described above, these four specific methodological characteristics of the present study take on significance. Understanding and explanation are enhanced by conceptual and methodological advances in the study of a phenomenon. The value of this study is largely dependent upon the impact of these four methodological factors in verifying, clarifying, or refuting the existing knowledge of problem drinking.

In addition to the above contributions to the understanding and explanation of problem drinking, a contribution of this study is exploration of the utility of the two-stage least-squares technique for examination of the reciprocal effects of two or more variables.

CHAPTER II
LITERATURE REVIEW

Research indicates that whether a person drinks depends largely on sociological and cultural factors rather than psychological ones. Significant relationships can be found between drinking and sociological variables such as sex, age, socioeconomic status, region of residence, size of community, and religion, while correlations between drinking and a number of psychological variables are low.¹

Drinking Behavior in the United States

The consumption of alcoholic beverages is typical, statistically normative behavior in the United States. Cahalan et al. conducted a national survey of drinking practices of United States adults during 1964 and 1965. While 22 per cent of the respondents report that they never drink alcoholic beverages, 68 per cent say they have drunk at least once during the year. The remaining 10 per cent have stopped drinking.² Mulford reports that approximately 71

¹Don Cahalan, Ira H. Cisin, and Helen M. Crossley, American Drinking Patterns (New Haven, Connecticut: College and University Press, 1969), p. 200.

²Ibid., pp. 184-185. This study is being used because it is most recent and comprehensive. Its findings verify previous research.

per cent of the adults he interviewed have drunk alcohol during the year.³ A 1974 Gallup Poll indicates that 68 per cent of people aged 18 and older drink alcoholic beverages. According to the survey, the use of alcohol is influenced by sex (although the discrepancy is narrowing), age, income, region of residence, occupation, education, and religion. Nearly 20 per cent of those polled report that they sometimes drink more than they should and 12 per cent report that liquor has caused trouble in their families.⁴ A Harris survey done for the National Institute on Alcohol Abuse and Alcoholism indicates that one in five persons interviewed reports that someone close to them--frequently a family member--drinks too much.⁵

Cahalan et al. classify 32 per cent of their respondents as abstainers, 15 per cent as infrequent drinkers, 28 per cent as light drinkers, 13 per cent as moderate drinkers, and 12 per cent as heavy drinkers.⁶ Drinkers are classified as escape drinkers if they report drinking for reasons such as

³Harold A. Mulford, "Drinking and Deviant Drinking, U.S.A., 1963," Quarterly Journal of Studies on Alcohol 25 (December, 1964), 634-648.

⁴George Gallup, "Alcoholism Is a National Concern," Jacksonville Times-Union and Journal (June 9, 1974), p. A-15.

⁵Shirley Sirota Rosenberg, editor, First Special Report to the United States Congress on Alcohol and Health, from the Secretary of Health, Education, and Welfare (Washington, D.C.: U.S. Government Printing Office, December, 1971), p. vii.

⁶Cahalan et al., pp. 184-185.

tension or nervousness. Thirty-two per cent of men drinkers and 26 per cent of women drinkers are escape drinkers. Of heavy drinkers, 64 per cent of women and 46 per cent of men are considered escape drinkers.⁷

There is substantial demographic variation in drinking patterns. Men (77 per cent) are more likely to drink than women (60 per cent) and are more likely to be classified as heavy drinkers (21 per cent to 5 per cent respectively). Among men, the age cohort of 30-34 has the lowest percentage of abstainers and a high rate of heavy drinkers. The age cohort 45-49 also demonstrates a high rate of heavy drinkers. The lowest percentage of heavy drinkers is found in the 65+ age cohort. Among women, the highest percentage of heavy drinkers is found in the age cohorts 21-24 and 45-49, with a rapid decline in heavy drinking after age 50.⁸

Respondents of higher socioeconomic status are much less likely to be abstainers, and are less likely to be heavy drinkers as well. This relationship is even more pronounced for women than for men.⁹ Among the upper socioeconomic status groups, there are only slight differences between men and women in the proportion of drinkers, while the difference is pronounced among the lower socioeconomic

⁷Cahalan et al., pp. 168-189.

⁸Ibid., p. 22.

⁹Ibid., p. 25.

groups. However, the difference between men and women who are heavy drinkers is not consistent among the various socioeconomic groups.¹⁰ Men and women who are married are less likely to be heavy drinkers than persons who are single or divorced. Men raised by single parents tend to develop into heavy drinkers relatively late in life.¹¹

Respondents from the South are more likely to be abstainers, but among those who drink the proportion of heavy drinkers approximates that in other regions of the country. The tendency for higher proportions of heavy drinkers to be residents of urbanized areas holds for all age and sex groups.¹²

Among men, race does not greatly affect either abstinence or heavy drinking, but black women have considerably higher rates of both abstinence and heavy drinking than do white women.¹³ Religion also exerts an impact upon drinking patterns. Jews and Episcopalians are most likely to be drinkers when sex, age, and socioeconomic status are controlled. Catholics have the highest proportion of heavy drinkers, followed by liberal Protestants. Conservative Protestants have the smallest proportion of heavy drinkers,

¹⁰ Cahalan et al., p. 27.

¹¹ Ibid., p. 37.

¹² Ibid., p. 39.

¹³ Ibid., p. 48.

10 per cent compared with 22 per cent of those who never attend church.¹⁴

The proportion of drinkers is highest among those of Italian origin (91 per cent), followed by those of Russian, Polish, or Baltic (86 per cent), and Canadian origin (79 per cent). U.S. whites (of unknown origin) have the highest proportion of abstainers (54 per cent), followed by those of Scotch-Irish origin (50 per cent). The proportion of heavy drinkers among drinkers is highest among those of Latin American, Caribbean origin (30 per cent), among U.S. non-whites (23 per cent), and among those of Italian origin (22 per cent).¹⁵

Respondents who report active participation in interpersonal recreational activities are more likely to drink than the less active. Men under age 45 and of higher socioeconomic status who are socially active are also more likely to be heavy drinkers.¹⁶

Respondents who drink are more likely to have parents who drink and approve of drinking than parents who drink infrequently or disapprove.¹⁷ Men and women drink more

¹⁴Cahalan et al., pp. 56-57.

¹⁵Ibid., p. 53.

¹⁶Ibid., p. 75.

¹⁷Ibid., p. 79.

frequently in their own homes or in friends' homes than in bars or restaurants.¹⁸

More of the heavy drinking men and moderate to heavy drinking women started drinking before age 18. Those of highest socioeconomic status started drinking later than others and have continued drinking later in life.¹⁹

Seventy-one per cent of heavy drinkers, men and women, are more likely than other drinkers to report having a drink to relieve depression and nervousness.²⁰

More respondents drink distilled spirits (57 per cent) than either beer (50 per cent) or wine (39 per cent). Heavy drinkers are more likely to drink beer (62 per cent) than spirits (49 per cent) or wine (5 per cent). However, approximately 80 per cent of heavy drinkers report drinking both beer and spirits.²¹

Bales discusses three major factors which influence group rates of problem drinking. The first of these is termed the dynamic factors described as being those anxieties, tensions, suppressed aggressions, or needs which provide the motivation for problem drinking. These factors may be characteristic of a society to a greater or lesser extent, but, combined, they affect the likelihood that problem drinking

¹⁸Cahalan et al., p. 99.

¹⁹Ibid., p. 123.

²⁰Ibid., p. 150.

²¹Ibid., p. 65.

will occur. The second set of factors is labeled alternative factors, described as the culturally defined possibilities of channeling or relieving needs, tensions, and anxieties by adopting behavior other than excessive drinking. The third set of factors is labeled orienting factors, described as the normative attitudes of the group culture toward drinking. Bales outlines four of these cultural attitudes. These are: 1) utilitarian--drinking for personal reasons such as the reduction of anxiety, conflict, and so on; 2) ritual--drinking restricted to religious, dietary, or ceremonial occasions; 3) convivial--drinking to symbolize and facilitate group interaction and solidarity; and 4) abstinence--prohibition of the use of alcohol for any purpose. Utilitarian attitudes are highly associated with high rates of problem drinking. This model has been demonstrated to have broad utility in explaining the incidence of cross-cultural problem drinking.²²

Abuse of Alcohol as Deviant Behavior

Although drinking alcoholic beverages is acceptable, perhaps even desirable, and encouraged in many contemporary social situations, drinking in excess of the normative tolerance range may be considered deviant behavior. Jessor et al. report that the respondents of the tri-ethnic

²²Robert F. Bales, "Cultural Differences in Rates of Alcoholism," Quarterly Journal of Studies on Alcohol 6 (March, 1946), 480-499.

community they studied rate the immoderate use of alcohol near the "very wrong" end of a scale, as contrasted to a number of other non-normative behaviors.²³ Blizard reports that 34 per cent of his respondents would not like to live next door to an alcoholic, 73 per cent report they would not like to work with one, 33 per cent report they want no contact with an alcoholic, while very few report they would accept close and continuous contact with an alcoholic.²⁴ Simmons finds that 46 per cent of his respondents list abuse of alcohol among responses to the question, "What is deviant?"²⁵

The primary theoretical foundation of this research falls within the functionalist tradition of Durkheim and Merton.²⁶ Deviant behavior violates the socially constructed norms considered to be binding upon persons

²³Richard Jessor, Theodore D. Graves, Robert C. Hanson, and Shirley L. Jessor, Society, Personality, and Deviant Behavior: A Study of a Tri-Ethnic Community (New York: Holt, Rinehart, and Winston, Inc., 1968), p. 41.

²⁴Peter Blizard, "The Public Image and Social Rejection of the Alcoholic in New Zealand," Quarterly Journal of Studies on Alcohol 30 (September, 1968), 696.

²⁵J. L. Simmons, "Public Stereotypes of Deviants," The Substance of Sociology, edited by Ephraim H. Mizruchi (New York: Appleton-Century-Crofts, 1967), p. 272.

²⁶This study deals with members of the community who have not already been caught in a social control net and labeled as "alcoholics" or "problem drinkers." Rather, it deals with primary deviance, or those individuals who deviate from the norms in their everyday functioning, but who have not been assigned the deviant role. Therefore, this discussion does not concern itself with labeling theory

occupying various positions within the social structure,²⁷ and is likely to mobilize social control agencies into corrective action.²⁸ Furthermore, differential rates of deviant behavior are assumed to be at least partially the result of differences in the characteristics of the social structure.²⁹

Analysis of the impact of differences within the social structure upon the occurrence of deviant behavior may be facilitated by the heuristic division of the social structure into three component substructures: the opportunity structure, the normative structure, and the social control structure. The individual is assumed to occupy a position within each of these substructures simultaneously. Relative position within each of these substructures disposes or constrains the individual with regard to deviant behavior.³⁰

because labeling theory is most interested in the process of secondary deviance. For further information see Edwin M. Lemert, Social Pathology (New York: McGraw-Hill Book Co., 1951), and Howard S. Becker, Outsiders: Studies in the Sociology of Deviance (New York: The Free Press of Glencoe, 1963).

²⁷ Robert K. Merton, "Social Problems and Sociological Theory," Contemporary Social Problems, edited by Robert K. Merton and Robert A. Nisbet (New York: Harcourt, Brace, and World, 1961), pp. 723-724.

²⁸ Kai T. Erickson, "Notes on the Sociology of Deviance," The Other Side: Perspectives on Deviance, edited by Howard S. Becker (New York: The Free Press, 1964), pp. 10-11.

²⁹ Robert K. Merton, Social Theory and Social Structure (Enlarged Edition; New York: The Free Press, 1968), p. 229.

³⁰ The researcher is indebted to Jessor et al. for this approach.

The Opportunity Structure

Merton constructs a middle-range theory to explain rates of conformity and various types of deviant behavior. This theory expands upon Durkheim's concept of anomie--a condition in which the social structure does not provide the individual with clear-cut guidelines for action. Behavior differentials are produced by characteristics of the social structure.³¹ Specifically, Merton's theory states that there are socially patterned differences in:

1. exposure to culturally emphasized goals and norms which define, regulate, and control the acceptable means of reaching these goals;
2. acceptance of these goals and norms;
3. relative access or opportunity to achieve these goals;
4. the degree of disjunction between the culturally emphasized goals and access to legitimate means of achieving the goals;
5. the degree of anomie; and
6. the rate of aberrant or deviant behavior.³²

Merton hypothesizes that deviant behavior is predisposed by disjunction between culturally emphasized goals and aspirations and a person's socially structured means of realizing

³¹Merton, Social Theory and Social Structure, pp. 224-229.

³²Ibid., p. 229.

them. From a sociological point of view, deviant behavior does not necessarily involve a violation of legal norms, nor is it always dysfunctional for society.

The theory indicates a differential in the individual's acceptance of the culturally emphasized goals or interests and the regulatory norms which control legitimate means of achieving those goals. Merton constructs a typology of five modes of individual adaptation based upon this differential. These modes of adaptation include retreatism and rebellion. In retreatism, the culturally emphasized goals and means are thoroughly assimilated by the individual, but legitimate efforts do not produce success. Unsuccessful in using legitimate means and unwilling to use illegitimate means which might be successful, the individual resolves the conflict by escape, abandoning both goals and means. Much problem drinking fits into this mode. In rebellion, the individual rejects normative goals and means and replaces them with substitute goals and means, which may include heavy drinking.³³

In his description of social stratification, Weber presents the concept of differential life chances or life fate, in which an individual's status determines opportunities to accomplish certain life goals.³⁴ For instance, the

³³Merton, Social Theory and Social Structure, pp. 241-246.

³⁴Max Weber, From Max Weber: Essays in Sociology, edited by Hans H. Gerth and C. Wright Mills (New York:

Dohrenwends' summarization of the literature on psychopathology indicates that those persons of lower socioeconomic status and from disadvantaged racial-ethnic minority groups are less likely to be able to improve their situations and demonstrate higher rates of psychopathology than persons of more advantaged status.³⁵

One's position within ". . . the opportunity structure serves as an index of degree of instigation to the use of illegitimate means in adapting to value-access disjunction."³⁶

The Normative Structure

The normative structure constrains deviant behavior. The individual's acceptance or internalization of the socially constructed norms--standards and expectations of what constitutes appropriate behavior in various social situations--serves to dispose behavior toward conformity and constrains deviance.

Durkheim, in his classic study of suicide, analyzes the societal state of anomie in which regulatory norms become inoperative and clear-cut guidelines for behavior no longer exist. This state of deregulation is pronounced in times of crisis and transition and following changes in

Oxford University Press, 1946), pp. 180-195.

³⁵Bruce P. Dohrenwend and Barbara Snell Dohrenwend, Social Status and Psychological Disorder: A Causal Inquiry (New York: John Wiley and Sons, Inc., 1969).

³⁶Jessor et al., p. 58.

social status, power, and wealth which accompany economic disaster or prosperity.³⁷

Klapp suggests that "consensus should be considered as a dimension and measure of social integration, and inversely of anomie. . . ." ³⁸ In other words, the strength of the normative system depends upon the existence of beliefs and expectations which are widely shared and strongly held by members of the social group. An individual who is well integrated into social groups which provide clear-cut expectations of what is and is not appropriate will likely conform rather than deviate from expectations.

Durkheim and Merton relate the normative structure to the opportunity structure by pointing out that when behavior deviates from the normative system but is successful, the legitimacy and force of the institutional norms for self and others are lessened or eliminated.³⁹

The Social Control Structure

The social control structure considers the individual's differential access to illegitimate means and opportunity to learn specific forms of deviance and the sanctions invoked

³⁷ Emile Durkheim, Suicide, translated by J. A. Spaulding and George Simpson (New York: The Free Press, 1951), pp. 246-258.

³⁸ Orrin Klapp, "The Concept of Consensus and Its Importance," Sociology and Social Research 41 (May-June, 1957), 341.

³⁹ Durkheim; and Merton, Social Theory and Social Structure, pp. 224-229.

by deviant behavior. Association with persons who perform deviant roles not only illustrates the possibility of performing this behavior, but when models are "significant others," the individual may develop a self-conception or self-identity which incorporates the deviant model. Integration into the nuclear family, group, and organizational network is assumed to increase the likelihood that one will be rewarded for conforming behavior and punished for deviant behavior. "The less effective the operation of the social control structure, the greater the availability of opportunities to engage in deviance and, consequently, the higher the deviance rates."⁴⁰

These three overlapping substructures have been constructed, heuristically, in order to facilitate analysis of the effects of the social structure upon behavior. It is assumed that knowledge of the individual's position within each of these substructures will provide a probabilistic estimate of behavior.

Propositional Review of the Literature

The prevalence of problem drinking is unequally distributed among various segments and subgroups. Furthermore, despite prohibitionist theories, drinking per se and problem drinking do not appear to be closely associated, as some population aggregates demonstrate high rates of drinking and low rates of problem drinking.

⁴⁰Jessor et al., p. 77.

The purpose of this section is to describe the support found in the literature for bivariate propositions suggested by the preceding social theory of deviance. This review of the literature will draw from studies on alcoholism (studies of persons who have been identified or treated as alcoholics) and on problem drinking (epidemiological studies of people in the community who have not been institutionalized). While this study deals with problem drinking, studies on alcoholism are reviewed because they may suggest significant variables to include in a model of problem drinking.

The most sophisticated of the problem drinking studies was done by Cahalan, who reports on the findings of the second stage of a longitudinal study of drinking patterns.⁴¹ These data were collected in 1967, in 1,359 personal interviews with adults representative of the total United States population.⁴²

Approximately 75 items are combined into 11 specific problem areas. These are:

- (1) frequent intoxication, or exceeding what was defined as a moderate level in a combined frequency and amount-per-occasion measure, or getting intoxicated fairly often;
- (2) binge drinking--being intoxicated for more than one day at a time;
- (3) symptomatic

⁴¹Don Cahalan, Problem Drinkers (San Francisco: Jossey-Bass, Inc., 1970).

⁴²These persons correspond to 72 per cent of the eligible respondents selected to be interviewed in the first stage of the study in 1964-1965. Ibid., p. 20.

drinking behavior (symptomatic dependence upon alcohol), as inferred from finding it difficult to stop drinking once started, blackouts or memory lapses after drinking, sneaking drinks, and so on; (4) psychological dependence upon alcohol; (5) problems with current spouse or with relatives related to one's drinking; (6) problems with friends or neighbors over one's work or employment occurring in relation to one's drinking; (9) health (for example, physician advised respondent to cut down on drinking); (10) financial problems connected with one's drinking; (11) belligerence or fighting associated with one's drinking.⁴³

Each respondent is assigned a "current problem score" based upon the respondent's experience with these 11 types of drinking-related problems during the previous three years. Fifteen per cent of the men and 4 per cent of the women--9 per cent of the total--are judged to have a high score on the index while 43 per cent of the men and 21 per cent of the women--31 per cent of the total--report some problem in the preceding three years.⁴⁴

The following propositions are written in terms of social and psychological variables and their relationship with problem drinking. The propositions simply state that there is a relationship between the variables, and the review of the literature which follows describes the nature of the relationship.

Proposition 1

There is a relationship between sex and problem drinking.

⁴³Cahalan, pp. 26-27.

⁴⁴Ibid., pp. 26-27.

In a national survey of drinking patterns Cahalan finds sex to be the most influential single factor in predicting problem drinking.⁴⁵ Encel et al., Room, Edwards et al., Jessor et al., and Mulford find support for this proposition.⁴⁶ However, Edwards et al. find no difference in the number of drinking problems between men and women who report drinking the same quantity and frequency of alcohol.⁴⁷

Between 5.5 and 6 times more men than women in this country are alcoholics. In England, the ratio is approximately 1.5 males to one female, and Scandinavian countries have a ratio of 12 to 1.⁴⁸

Lawrence and Maxwell point out that most societies are relatively intolerant toward female drunkenness while the norms are likely to be more ambiguous for men, permitting and encouraging deviance rates among men.⁴⁹ Ullman

⁴⁵Cahalan, pp. 96-97.

⁴⁶S. Encel, K. C. Kotowicz, and H. E. Resler, "Drinking Patterns in Sydney, Australia," Quarterly Journal of Studies on Alcohol Supplement #6 (May, 1972), 8; Robin Room, "Drinking Patterns in Large U.S. Cities: A Comparison of San Francisco and National Samples," Quarterly Journal of Studies on Alcohol Supplement #6 (May, 1972), 47; Griffith Edwards, Celia Hensman, and Julian Peto, "Drinking in a London Suburb: III. Comparisons of Drinking Troubles Among Men and Women," Quarterly Journal of Studies on Alcohol Supplement #6 (May, 1972), 120-128; Jessor et al., pp. 181-182; and Mulford, p. 640.

⁴⁷Edwards et al., "Drinking in a London Suburb: III," p. 128.

⁴⁸Charles R. Snyder, "A Sociological View of the Etiology of Alcoholism," Alcoholism, edited by David J. Pittman (Springfield, Illinois: Charles C. Thomas, 1959), p. 32.

⁴⁹Joseph J. Lawrence and Milton A. Maxwell, "Drinking

finds men more likely than women to become somewhat intoxicated at the time of their first drinks and suggests that men are more likely than women to experience their first drinks as socially dissonant acts.⁵⁰ This may be partly because males start drinking at younger ages, when it is less acceptable for them to drink. Wechsler and Thum, in their study of teen-age drinking and drug use, find that at the junior-high level many more boys than girls drink heavily, while there is no sex differential at the senior high level.⁵¹

Riley finds men more likely than women to drink for personal rather than social reasons. This utilitarian or affective drinking is more likely than social drinking to lead to drinking problems.⁵² Rimmer finds that women alcoholics start drinking at later ages than men,⁵³ but Ullman

and Socioeconomic Status," Society, Culture, and Drinking Patterns, edited by David J. Pittman and Charles R. Snyder (New York: John Wiley and Sons, Inc., 1962), p. 144.

⁵⁰Albert Ullman, "First Drinking Experience as Related to Age and Sex," Society, Culture, and Drinking Patterns, edited by David J. Pittman and Charles R. Snyder (New York: John Wiley and Sons, Inc., 1962), p. 263.

⁵¹Henry Wechsler and Denise Thum, "Teen-age Drinking, Drug Use, and Social Correlates," Quarterly Journal of Studies on Alcohol 34 (December, 1973), 1223.

⁵²John W. Riley, Jr., Charles F. Marden, and Marcia Lifshitz, "The Motivational Pattern of Drinking," Quarterly Journal of Studies on Alcohol 9 (December, 1948), 353-362.

⁵³John Rimmer, F. N. Pitts, Jr., T. Reich, and G. Winoken, "Alcoholism: II. Sex, Socioeconomic Status, and Race in Two Hospitalized Samples," Quarterly Journal of Studies on Alcohol 32 (December, 1971), 946.

finds that men and women start drinking at approximately the same age.⁵⁴ Child et al. find 53 of 189 societies to show differences in rates of drinking and problem drinking between men and women, showing men to have the higher rates of problem drinking.⁵⁵

In 1973, Fillmore did a follow-up study on a sample of the respondents of the Straus and Bacon study of 1953. Respondents were college students at the time of the earlier study and were of upper-middle socioeconomic status in 1973. In both studies, percentages of drinkers are similar for men and women, but of those who drank, 42 per cent of men compared with 11 per cent of women were problem drinkers in the early study. In the follow-up study, 17 per cent of men and 12 per cent of women are problem drinkers. While men have changed to moderate drinking patterns over the 20 years, the percentage of women problem drinkers remains about the same.⁵⁶

Knupfer and Room suggest that women might be more concerned than men with the consequences of intoxication. For example, sexual fidelity has been more rigidly expected of

⁵⁴Ullman, p. 263.

⁵⁵Irvin L. Child, Herbert Barry III, and Margaret K. Bacon, "A Cross-Cultural Study of Drinking: III. Sex Differences," Quarterly Journal of Studies on Alcohol Supplement #3 (April, 1965), 60.

⁵⁶Kaye Middleton Fillmore, "Drinking and Problem Drinking in Early Adulthood and Middle Age," Quarterly Journal of Studies on Alcohol 35 (September, 1974), 819-840.

of women than men, but women who are intoxicated are more likely to be vulnerable to sexual exploitation. They suggest that loss of control "costs" the woman more than the man, which has the effect of reducing problem drinking among women.⁵⁷ This may be changing, however. Kenyon points out that "[e]mancipation of the female together with the movement towards equal pay and the desire of the working wife to obtain a better standard of living for the family have all led to a significant increase in the proportion of female to male alcoholics."⁵⁸

Proposition 2

There is a relationship between age and problem drinking.

Cahalan finds drinking problems among men to be highest in the age cohort 21-29, dropping fairly sharply in the age category 30-39, gradually through age 69, and sharply dropping off after age 70.⁵⁹ Mulford finds a sharp drop in heavy drinking after age 60.⁶⁰ Knupfer and Room support these findings and suggest that older persons are more likely to

⁵⁷Genevieve Knupfer and Robin Room, "Age, Sex, and Social Class as Factors in Amount of Drinking in a Metropolitan Community," Social Problems 12 (Fall, 1964), 228.

⁵⁸W. H. Kenyon, "About the Illness Alcoholism," Alcohol and Health Notes (December, 1972), 2.

⁵⁹Cahalan, pp. 41-45.

⁶⁰Mulford, p. 640.

be concerned about their health and less likely to move in social circles which permit or encourage problem drinking.⁶¹ Encel et al. and Room find heavy drinking to decline with age,⁶² although Edwards et al. find drinking problems to increase with age.⁶³ While earlier literature on alcoholism viewed it as an ever-increasing, debilitating process, it would appear from these recent studies that drinking patterns shift to moderation with age.

The Fillmore study indicates that middle-class men who are either problem drinkers or abstainers in the late teens or early 20's shift toward moderate drinking patterns by the late 30's and early 40's. Only about one-fourth of abstainers in the early study remain abstinent, while approximately 90 per cent of drinkers are still drinkers.⁶⁴ Fillmore also points out that many of the younger persons who drink moderate amounts of alcohol infrequently experience drinking problems, while drinking problems in adults are correlated with drinking large amounts in greater frequency.⁶⁵

Cahalan finds women to have a later onset of problem drinking than men, with relatively few problem drinkers

⁶¹Knupfer and Room, "Factors in Amount of Drinking," p. 228.

⁶²Encel et al., p. 11; Room, p. 40.

⁶³Edwards et al., "Drinking in a London Suburb: III," p. 103.

⁶⁴Fillmore, p. 824. ⁶⁵Ibid., p. 829.

reported in the 20's, and a dramatic drop in the incidence after age 50.⁶⁶ Cahalan suggests that women are likely to be introduced to heavy drinking by their men friends or husbands, while men are more likely to be introduced to heavy drinking by other men while they are quite young.⁶⁷ Knupfer and Room and Encel et al. also find that women in the age cohort 30-49 are more likely to have higher rates of problem drinking.⁶⁸

Proposition 3

There is a relationship between marital status and problem drinking.

Mulford, Sadown et al., and Encel et al. find that unmarried persons are more likely to have higher rates of problem drinking than married people.⁶⁹ Williams finds a high percentage (68 per cent) of alcoholics in a treatment center to be divorced.⁷⁰ Edwards et al. does not find marital status to be significant when age is controlled,

⁶⁶Cahalan, pp. 41-45.

⁶⁷Ibid.

⁶⁸Knupfer and Room, "Factors in Amount of Drinking," p. 228; Encel et al., p. 11.

⁶⁹Mulford, p. 640; Roland Sadown, Giorgio Lolli, and Milton Silverman, Drinking in French Culture (New Brunswick, New Jersey: Rutgers Center of Alcohol Studies, 1965), p. 108; and Encel et al., p. 11.

⁷⁰James Williams, Characteristics of an Alcoholic Sample (Avon Park, Florida: State of Florida Alcoholic Rehabilitation Program, 1964), p. 3.

however.⁷¹ Lindbeck finds the incidence of divorce or separation among female alcoholics to be higher than among nonalcoholic women. These women describe marriage as a painful and disappointing experience.⁷² Married persons are likely to have greater social control over their drinking patterns than the unmarried.

Bacon, Kinsey, and others produce research to support this, but caution should be exercised in interpreting this finding due to the interactive effect of the variables. They indicate, however, that those who become alcoholic tend to be disproportionately single, separated, or divorced prior to the onset of symptoms.⁷³

Proposition 4

There is a relationship between race and problem drinking.

Maddox finds that twice as many black college students drink heavily as did the respondents in the Bacon and Straus study of college students.⁷⁴ Viamontes and Powell studied

⁷¹Edwards et al., "Drinking in a London Suburb: III," p. 105.

⁷²Vera Lindbeck, "The Woman Alcoholic: A Review of the Literature," The International Journal of the Addictions 7 (March, 1972), 575.

⁷³Selden D. Bacon, "Inebriety, Social Integration, and Marriage," Quarterly Journal of Studies on Alcohol 5 (June, 1944), 86-125; and Barry Kinsey, The Female Alcoholic: A Social Psychological Study (Springfield, Illinois: Charles C. Thomas, 1966), p. 109.

⁷⁴George L. Maddox and Jay R. Williams, "Drinking

demographic characteristics of black and white alcoholic men and find that black men begin drinking at a younger age than whites and lose control over drinking sooner. They generally seek treatment at a younger age. A greater proportion of black than white alcoholics are married.⁷⁵ Cahalan reports that black women have much higher rates of heavy drinking, among those who drink, than do white women.⁷⁶

Jessor et al. report that American Indians drink nearly seven times as much alcohol as Anglos. They are more likely to drink in order to solve personal problems, and have six times as many drinking-related problems as other groups.⁷⁷

Proposition 5

There is a relationship between religion and problem drinking.

Mulford finds the heaviest drinking to occur among Catholics, Lutherans, and Protestants of no specified denomination.⁷⁸ Encel et al. find Catholics to be heavier

Behavior of Negro Collegians," Quarterly Journal of Studies on Alcohol 29 (March, 1968), 126-127.

⁷⁵Jorge A. Viamontes and Barbara J. Powell, "Research Note: Demographic Characteristics of Black and White Male Alcoholics," The International Journal of the Addictions 9 (June, 1974), 489-494.

⁷⁶Cahalan, et al., p. 48.

⁷⁷Jessor, et al., pp. 182-183.

⁷⁸Mulford, p. 640.

drinkers than Anglicans or Presbyterians.⁷⁹ Straus and Bacon find least drinking problems among Jewish students and the most among the Mormons, Protestants, and Catholics who drink.⁸⁰

Walters and McCord and McCord report that, if parents are active church members, their children, when they drink, are more likely to become alcoholic.⁸¹ Kinsey finds that mothers of female alcoholics are religiously active and fathers are inactive.⁸² According to Walters, mothers of alcoholics are significantly more active religiously than mothers of nonalcoholics.⁸³

Proposition 6

There is a relationship between residential area and problem drinking.

Cahalan finds higher rates of problem drinking among those living in urbanized areas. He suggests that younger men and those of lower status tend to be attracted to large

⁷⁹Encel et al., p. 11.

⁸⁰Robert Straus and Selden D. Bacon, "The Problems of Drinking in College," Society, Culture, and Drinking Patterns, edited by David J. Pittman and Charles R. Snyder (New York: John Wiley and Sons, Inc., 1962), p. 253.

⁸¹Orville S. Walters, "The Religious Background of 50 Alcoholics," Quarterly Journal of Studies on Alcohol 18 (September, 1957), 407; and William McCord and Joan McCord, Origins of Alcoholism (Stanford, California: Stanford University Press, 1960), p. 52.

⁸²Kinsey, p. 110.

⁸³Walters, p. 408.

cities, increasing the effect of urbanization.⁸⁴ Mulford and Room support this finding.⁸⁵ (In the United States, the coastal cities have higher rates of problem drinking than the interior cities.⁸⁶ These cities are in the traditionally "wet" areas of the country.) Wallace finds that in countries such as France and Italy where drinking has been a long-term pattern over generations, urbanization does not produce a higher rate of problem drinking.⁸⁷

Proposition 7

There is a relationship between income and problem drinking.

Mulford and Encel et al. find that those persons with a low level of income are more likely to have higher rates of problem drinking than those with a higher level of income.⁸⁸ Jessor et al. find lower rates of problem drinking among higher income persons.⁸⁹ Cahalan et al. find higher rates of heavy drinking among the higher income

⁸⁴Cahalan, pp. 56-57.

⁸⁵Mulford, p. 640; and Room, p. 40.

⁸⁶Room, p. 40.

⁸⁷Jean G. Wallace, "Drinkers and Abstainers in Norway: A National Survey," Quarterly Journal of Studies on Alcohol Supplement #6 (May, 1972), 150.

⁸⁸Mulford, p. 640; and Encel et al., p. 11.

⁸⁹Jessor et al., pp. 182-183.

category and higher rates of problem drinking among the lower income category.⁹⁰

Proposition 8

There is a relationship between socioeconomic status and problem drinking.

Cahalan finds that men of high status at all ages have lower rates of problem drinking than those of low status. After age 40, the higher-status men demonstrate a dramatic decrease in problem drinking not shared by those in lower-status positions.⁹¹ It should be noted that these data are cross-sectional and, therefore, a competing explanation could be the drift of high-status problem drinkers to lower-status positions.

Mulford finds the heaviest drinking to be in the status categories next to the lowest and next to the highest.⁹² Knupfer and Room find heavier drinking in higher socioeconomic categories, regardless of age.⁹³ Encel et al. find the heaviest drinking among those of the highest and lowest socioeconomic status.⁹⁴ Edwards et al. report alcoholism

⁹⁰Cahalan et al., pp. 28-29.

⁹¹Cahalan, pp. 45-49.

⁹²Mulford, p. 640.

⁹³Knupfer and Room, "Factors in Amount of Drinking," p. 228.

⁹⁴Encel et al., p. 8.

to be highest among female professionals and unskilled males.⁹⁵ Lindbeck finds more identified alcoholics among the upper-middle-class women than lower class but questions whether this may simply be the result of upper-class persons seeking treatment more readily.⁹⁶ Jessor et al. find the highest rates of problem drinking among lower socioeconomic status persons. They describe fewer constraints and greater access to deviant drinking behavior as the explanation of the greater rates of problem drinking among the lower socioeconomic status persons.⁹⁷

Schuckit and Gunderson, in their study of alcoholism and job type in the Navy, find that men who drink heavily tend to have high-risk nontechnical jobs and come from lower socioeconomic backgrounds.⁹⁸

Proposition 9

There is a relationship between level of education and problem drinking.

Cahalan et al. find no consistent relationship between education and problem drinking, but report that men

⁹⁵ Edwards et al., "Drinking in a London Suburb: III," p. 89.

⁹⁶ Lindbeck, p. 568.

⁹⁷ Jessor et al., pp. 182-183.

⁹⁸ Marc A. Schuckit and E. K. Eric Gunderson, "The Association Between Alcoholism and Job Type in the Navy," Quarterly Journal of Studies on Alcohol 35 (June, 1974), 584.

and women who have completed high school or have gone to college and have not graduated have higher rates of heavy drinking.⁹⁹ Encel et al. also find high school graduate men and women who have attended college but did not graduate to have the highest rates of heavy drinking.¹⁰⁰

Proposition 10

There is a relationship between organizational integration and problem drinking.

Sadown et al. and Bahr find that persons who have limited participation in community activities are more likely to have higher rates of problem drinking than those with higher levels of participation.¹⁰¹ Less involvement in the activities of the community produces less involvement, commitment, and response to the normative drinking patterns of a community. Persons who are not responsive to the community's normative drinking patterns are likely to be excluded from the community activities. Blizard finds that very few of his respondents would accept close and continuous contact with an alcoholic; 73 per cent would not

⁹⁹Cahalan et al., p. 140.

¹⁰⁰Encel et al., p. 11.

¹⁰¹Sadown et al., p. 114; and Howard Bahr, "Lifetime Affiliation Patterns of Early and Late-Onset Heavy Drinkers on Skid Row," Quarterly Journal of Studies on Alcohol 30 (September, 1969), 655.

like to work with one, and 34 per cent would not like to live next door to one.¹⁰²

Kinsey finds that, with alcoholics, normal peer group activities are either absent or require heavy drinking.¹⁰³ Bacon finds significantly less social participation in the surrounding culture, and social activities tend to be solitary or with casual acquaintances.¹⁰⁴ Singer et al. find greater social isolation among alcoholics than non-alcoholic patients.¹⁰⁵

Kinsey reports that as loss-of-control-type drinking occurs, there is a decrease in church participation and social activities, accompanied by an increase in intra-family conflict.¹⁰⁶ Drinking groups change as efforts are made to associate with those who approve of the current drinking pattern, thereby reducing the individual-group conflict.

Proposition 11

There is a relationship between value-access disjunction and problem drinking.

¹⁰²Blizard, p. 696.

¹⁰³Kinsey, pp. 138-189.

¹⁰⁴Bacon, "Inebriety, Social Integration, and Marriage," pp. 114-120.

¹⁰⁵Estelle Singer, Howard T. Blaine, and Richard Kasschau, "Alcoholism and Social Isolation," Journal of Abnormal and Social Psychology 69 (December, 1964), 681-685.

¹⁰⁶Kinsey, pp. 110, 137.

Jessor et al. construct an index of value-access disjunction which includes measures of age, marital status, language spoken in home, occupation, education, intergenerational mobility, religion, and social participation. They report that, as the level of value-access disjunction increases, problem drinking increases among their respondents from a tri-ethnic community.¹⁰⁷

Cahalan et al. report that heavy drinkers place slightly greater emphasis upon goals of family life and friends, and on desire for emotional security and happiness, but they voice slightly lower levels of satisfaction in meeting life goals than do lighter or nondrinkers. Female heavy drinkers are more likely to express dissatisfaction with their (or husband's) occupation, neighborhood, and educational attainment, than other females.¹⁰⁸

Wechsler and Thum's study of teen-age drinkers indicates that heavy drinkers are less likely to be planning to go to college, and tend to receive lower grades, thereby cutting down their chances to attain the common status goals in American society.¹⁰⁹

Cahalan et al. and Encel et al. report that persons who have gone to college but did not graduate have higher

¹⁰⁷Jessor et al., p. 237.

¹⁰⁸Cahalan et al., p. 192.

¹⁰⁹Wechsler and Thum, p. 1224.

rates of problem drinking.¹¹⁰ These persons apparently did not attain their goal of graduating from college.

Proposition 12

There is a relationship between psychopathology and problem drinking.

Kinsey finds that alcoholic women generally tend to view self as inadequate and to define self in undesirable terms.¹¹¹ Gynther et al. also support this proposition.¹¹²

Halpern, using the Rorschach, found that alcoholic-prone persons have not sufficiently developed the usual mechanisms against threat, at least to such an extent that these mechanisms are effective.¹¹³ McCord and McCord report that boys who consciously and openly express feelings of inferiority become alcoholic significantly less frequently than those who do not.¹¹⁴ This finding may suggest the overuse of denial as a primitive mental mechanism among alcoholic persons. Both Mowrer and the McCords find

¹¹⁰Cahalan et al., p. 140; and Encel et al., p. 11.

¹¹¹Kinsey, p. 115.

¹¹²Malcom Gynther, Charles Presher, and Robert McDonald, "Personal and Interpersonal Factors Associated with Alcoholism," Quarterly Journal of Studies on Alcohol 20 (June 1959), 321-333.

¹¹³Florence Halpern, "Studies of Compulsive Drinkers: Psychological Test Results," Quarterly Journal of Studies of Alcohol 6 (March, 1946), 468-479.

¹¹⁴McCord and McCord, p. 136.

that boys who become alcoholic have earlier engaged in activities which are associated with masculinity, such as smoking or visiting prostitutes, supporting the above interpretation.¹¹⁵ Horton finds alcoholism rates to be higher in societies where anxiety is high and few substitute outlets are allowed for either anxiety or aggression.¹¹⁶

Landis, using the Rorschach, finds that individuals less able to express aggressive feelings and acts are more likely to become alcoholic.¹¹⁷ McCord et al. and Palola et al. find self-destructiveness to be related to alcoholism.¹¹⁸ If self-destructive thoughts and tendencies are interpreted as the internalization of thoughts and feelings which are not acceptable to the individual to express

¹¹⁵Harriet R. Mowrer, "Alcoholism and the Family," Journal of Criminal Psychopathology 3 (July, 1941), 90-99; and McCord and McCord, p. 154.

¹¹⁶Donald Horton, "The Functions of Alcohol in Primitive Societies: A Cross-Cultural Study," Quarterly Journal of Studies on Alcohol 4 (September, 1943), 199-320.

¹¹⁷Carney Landis, "Theories of the Alcoholic Personality," Lecture 11, Alcohol, Science, and Society (New Haven, Connecticut: Quarterly Journal of Studies on Alcohol, Inc., 1945), pp. 130-133.

¹¹⁸William McCord, Joan McCord, and Jon Gudeman, "Some Current Theories of Alcoholism: A Longitudinal Evaluation," Quarterly Journal of Studies on Alcohol 20 (December, 1959), 727-749; and Ernest Palola, Theodore Dorpat, and William Larson, "Alcoholism and Suicidal Behavior," Society, Culture, and Drinking Patterns, edited by David J. Pittman and Charles R. Snyder (New York: John Wiley and Sons, Inc., 1962), pp. 511-534.

externally, then the McCord and McCord research also supports this proposition.¹¹⁹

Witkin et al., in a series of perceptual experiments, find alcoholics to be more dependent upon external stimuli than nonalcoholics.¹²⁰ McCord and McCord support this by identifying a cluster of behaviors which indicates unmet dependency needs and resulting dependency conflict.¹²¹ Kinsey also finds a high level of dependency among female alcoholics.¹²²

Wechsler and Thum find that teen-agers who drink heavily are more likely to have used illegal drugs and to have been involved in delinquent (antisocial) activities, including trouble with the police, than light drinkers and abstainers. These teen-agers also tend to rate themselves as having "more personal problems" than their contemporaries.¹²³

Proposition 12

There is a relationship between depression and problem drinking.

¹¹⁹McCord and McCord, p. 137.

¹²⁰Herman Witkin, Stephen Karp, and Donald Goodenough, "Dependence in Alcoholism," Quarterly Journal of Studies on Alcohol 20 (September, 1959), 493-504.

¹²¹McCord and McCord, pp. 87-91.

¹²²Kinsey, p. 183.

¹²³Wechsler and Thum, pp. 1222-1225.

Overall, using the MMPI, finds the alcoholic profile to be neurotic, depressive, anxious, passive, and dependent.¹²⁴ This finding, however, is based on profiles of labeled alcoholics, and caution should be used in interpreting it as an independent variable.

Lindbeck says the alcoholic woman emerges from a frustrating, depriving background which has contributed to dependency, self-depreciation, insecurity in her sex role, feelings of inadequacy and social ineptness, and sensitivity to loss. This description is one of a depressed person.¹²⁵

Summary

The literature review serves the purpose of 1) placing the present study in the context of relevant past research, 2) indicating the range of opinion and research findings, 3) suggesting hypotheses for the present study, and 4) specifying the unique aspects of the present study.

The majority of the past research efforts have focused upon description of alcoholics under treatment or comparison of alcoholics with nonalcoholics. A few studies have focused upon persons in the community who, while not publicly labeled alcoholics, have problems as a consequence of drinking. There is considerable similarity between the findings

¹²⁴John Overall, "MMPI Personality Patterns of Alcoholics and Narcotic Addicts," Quarterly Journal of Studies on Alcohol 34 (March, 1973), 104-111.

¹²⁵Lindbeck, p. 575.

of both types of studies, but there is also support for significant differences. The etiology of problem drinking may be understood as the result of the combined effects of social structural variables and psychological factors.

The literature review further reveals that it is neither logical nor reasonable to consider the relationship between problem drinking and other variables as a simple one-way causal model. Rather, some variables may be viewed as simultaneously interdependent, exerting a reciprocal effect one on the other. For example, the relationship between perceived value-access disjunction or anxiety and problem drinking may be considered as such a reciprocal relationship in which a change in anxiety may be accompanied by a change in problem drinking, followed by a change in anxiety and so on. The researcher knows of no research in the area of problem drinking that examines the reciprocal relationship which applies among problem drinking and other variables in the model.

CHAPTER III

METHODOLOGY

The purpose of this study is to describe, explain, and predict the conditions under which adult residents of four central Florida counties experience problem drinking as measured by a problem-drinking index. In pursuit of a valid and reliable answer to this problem there are certain assumptions and criteria which serve as guides to the researcher. For various reasons these criteria may not always be met.¹ Violation of some of these criteria is more serious than violation of others, and it is incumbent upon the researcher to attempt to minimize error, to know the consequences of nonfulfillment, and to know how to test whether or not the criteria are satisfied and what methods are available when the criteria are not satisfied.² This chapter describes the decisions, operations, and methods utilized in the effort to make some valid and reliable statements about the above problem.

¹Travis Hirschi and Hanan C. Selvin, Delinquency Research: An Appraisal of Analytic Methods (New York: The Free Press, 1967), p. 6.

²J. Johnston, Econometric Methods (Second Edition; New York: McGraw-Hill Book Co., 1972), p. 160.

Specifically, the researcher follows a clearly defined series of activities which begins with an identification of the relevant existing theory and research findings and ends with a clarification, modification, support, or refutation of these existing statements, based upon an empirical test. The steps between these points include formulation of the existing theoretical statements into a series of explicit mathematical equations, operationalization of these theoretical concepts so that observable measurements may be collected, construction of an instrument for data collection, selection of an appropriate sample to whom the instrument may be administered, collection of the data, coding, scaling, and measurement of these data, selection and implementation of data analysis techniques, and report and interpretation of the findings. A description of these methodological activities follows.

Theoretical Specification

Research and theory are inextricably interdependent. Land suggests that sociologists who rely upon cross-sectional data may benefit from specifying the complex theoretical assumptions of their research in mathematical models.³ By specifying, for each dependent variable in the model, the conditions under which its value changes, results may be

³Kenneth C. Land, "Formal Theory," Sociological Methodology 1971, edited by Herbert L. Costner (San Francisco: Jossey-Bass, Inc., 1971), p. 179.

produced that correspond to those which would be observed if the researcher were able to manipulate the conditions and independent variables directly. The construction of such a model is necessarily an oversimplified representation of social reality; that is, a limited number of variables are linked together in such a way that the inferred causal linkages are assumed to operate in the real world.⁴ The value of specifying the theory in a mathematical model lies in its ability to inform or make explicit the empirical research assumptions and procedures.⁵ Knoke emphasizes the uncertainty that remains in such model building, especially in relation to causal ordering of the variables, but because of its explicit formulation it is possible for subsequent researchers to modify the model, based upon new knowledge and/or improved measurement.⁶ The following set of mathematical equations specifies the theory tested in this research. Each equation identifies those variables assumed to directly affect the value of the dependent variable:

$$(1) Y_1 = C_1 + B_1 Y_4 + B_1 X_1 + B_1 X_3 + B_1 X_5 + B_1 X_7 + B_1 X_8 + R_a$$

⁴Kenneth C. Land, "Principles of Path Analysis," Sociological Methodology 1969, edited by Edgar P. Borgatta (San Francisco: Jossey-Bass, Inc., 1969), pp. 3-4; and David R. Heise, "Problems in Path Analysis and Causal Inference," Sociological Methodology 1969, edited by Edgar P. Borgatta (San Francisco: Jossey-Bass, Inc., 1969), pp. 39-44.

⁵Land, "Formal Theory," p. 179.

⁶David Knoke, "A Causal Model for the Political Party Preferences of American Men," American Sociological Review 37 (December, 1972), 680.

$$(2) Y_2 = C_2 + B_2 Y_4 + B_2 X_1 + B_2 X_2 + B_2 X_3 + B_2 X_4 + B_2 X_6 + B_2 X_8 + B_2 X_9 + R_b$$

$$(3) Y_3 = C_3 + B_3 Y_4 + B_3 X_1 + B_3 X_2 + B_3 X_3 + B_3 X_4 + B_3 X_5 + B_3 X_9 + R_c$$

$$(4) Y_4 = C_4 + B_4 Y_1 + B_4 Y_2 + B_4 Y_3 + B_4 X_1 + B_4 X_2 + B_4 X_5 + B_4 X_6 + B_4 X_7 + \\ B_4 X_8 + B_4 X_{10} + R_d.$$

Equation (1) states that, holding constant the values of all other variables in the model, perceived value-access disjunction (Y_1) is a direct function of some constant (C_1), problem drinking (Y_4), age (X_1), race (X_3), total family income (X_5), education (X_7), marital status (X_8), and a residual term (R_a) that includes the effects of all unmeasured factors on perceived value-access disjunction.

Equation (2) states that, holding constant the values of all other variables in the model, general psychopathology (Y_2) is a direct function of some constant (C_2), problem drinking (Y_4), age (X_1), sex (X_2), race (X_3), rural residence (X_4), occupational prestige (X_6), marital status (X_8), residential mobility (X_9), and a residual term (R_b) that includes the effects of all unmeasured factors on general psychopathology.

Equation (3) states that, holding constant the values of all other variables in the model, anxiety (Y_3) is a direct function of some constant (C_3), problem drinking (Y_4), age (X_1), sex (X_2), race (X_3), rural residence (X_4), total family income (X_5), residential mobility (X_9), and a residual term (R_c) that includes the effects of all unmeasured factors on anxiety.

Equation (4) states that, holding constant the values of all other variables in the model, problem drinking (Y_4) is a direct function of some constant (C_4), perceived value-access disjunction (Y_1), general psychopathology (Y_2), anxiety (Y_3), age (X_1), sex (X_2), total family income (X_5), occupational prestige (X_6), education (X_7), marital status (X_8), attendance at a church that formally prohibits drinking alcoholic beverages (X_{10}), and a residual term (R_d) that includes the effects of all unmeasured factors on problem drinking.

In addition, it may be noted that a reciprocal relationship applies among the four dependent endogenous variables inasmuch as problem drinking is both cause and effect of perceived value-access disjunction, general psychopathology, and anxiety. These reciprocal relationships are assumed to be essentially simultaneous in their feedback one to the other. Theoretically it is possible to expect delayed feedback from problem drinking (the major dependent variable) to other variables in the model such as attendance at a church that formally prohibits drinking, occupational prestige, income, and marital status. This feedback could be examined through the introduction of lagged variables into the model. The values of these lagged variables could be obtained through the use of longitudinal data or retrospective self-reports. These data are not available in the present research.

Operationalization of the Concepts⁷

Problem Drinking

"Problem drinking is a repetitive use of beverage alcohol causing physical, psychological, or social harm to the drinker or to others."⁸ Problem drinking is measured by combining the scores on a six-item index.⁹ The scores range from 0 to 20. The mean index score is 1.7 and the standard deviation is 2.5. The overall Cronbach's Alpha is .70.¹⁰

General Psychopathology

General psychopathology is defined as general psychosocial impairment of the individual. General psychopathology is measured by scoring the eight items of an index of psychopathology presented by Warheit et al.¹¹ The scores range from 0 to 16. The mean index score is 4.8 and the

⁷See Appendix for a presentation of the items used in the following measures.

⁸Thomas F. Plaut, Alcohol Problems: A Report to the Nation by the Cooperative Commission on the Study of Alcoholism (New York: Oxford University Press, 1967), pp. 37-38.

⁹Harold A. Mulford, "Drinking and Deviant Drinking, U.S.A., 1963," Quarterly Journal of Studies on Alcohol 25 (December, 1964), 643-650; and Don Cahalan, Problem Drinkers (San Francisco: Jossey-Bass, Inc., 1970), present measures of problem drinking.

¹⁰C. J. Cronbach, Essentials of Psychological Testing (Second Edition; Harper and Brothers, 1960), p. 141.

¹¹George J. Warheit, Roger A. Bell, and John J. Schwab, Planning for Change: Needs Assessment Approaches (Washington, D.C.: The National Institute of Mental Health, 1974), p. 212.

standard deviation is 3.3. The overall Cronbach's Alpha is .71.

Anxiety

Anxiety is defined as a high degree of tension that interferes with the productive discharge of one's normal role obligations. Anxiety is measured by scoring the 11 items of an anxiety function index presented by Warheit et al.¹² The scores range from 0 to 44. The mean index score is 2.0, and the standard deviation is 4.3. The overall Cronbach's Alpha is .88.

Perceived Value-Access Disjunction

Perceived value-access disjunction is defined as the discrepancy between the individual's perception of his current status and his idealized status. Perceived value-access disjunction is measured by scoring the respondent's position on the Cantril Self-Anchoring Striving Scale.¹³ The scores range from 0 to 10. The mean score is 6.9 and the standard deviation is 2.2.

Religious Proscription

Religious proscription is defined as the formal position of the respondent's church on alcohol abstinence.

¹²Warheit et al., Planning for Change, p. 209.

¹³Hadley Cantril, The Pattern of Human Concerns (New Brunswick, New Jersey: Rutgers University Press, 1965), p. 22.

Those churches with a formal position of abstinence include Baptist, Church of Christ, Church of God, Holiness, Jehovah Witness, Methodist, Nazarene, Pentecostal, Seventh Day Adventist, United Church, and other conservative demonimations. This variable is treated as a dummy variable. Those who attend a church that formally proscribes alcoholic consumption are assigned the value of 1, all others, 0. One thousand four hundred eighty-six of the respondents attend a church that formally proscribes alcohol consumption while 2,188 do not.

Residential Mobility

Residential mobility is measured by the number of times the respondent moved in the past five years. The mean score is 1.5 and the standard deviation is 3.1.

Residence

Residence is measured by the location of the respondent's primary domicile in either a rural area or town. This dichotomy is treated as a dummy variable; rural residents are assigned the value of 1, all others, 0.

Race

Race is measured by the respondent's stated racial attribute, either white or nonwhite. This dichotomy is treated as a dummy variable; nonwhites are assigned the value of 1, all others, 0.

Education

Education is measured by the highest level of educational achievement reported by the respondent. Educational achievement is classified into 12 categories: no formal education, first grade, fourth grade or less, eighth grade or less, tenth grade or less, high school graduate, one year of college, two years of college, three years of college, college graduate, some postgraduate work, and a postgraduate degree. Missing values are assigned the median year of school completed by black and white age cohorts reported by the Bureau of the Census in 1970. Black respondents age 20 to 34 are assigned the value of high school graduate (12), age 35 to 54 are assigned some high school (10), age 55 to 64 are assigned eighth grade (8), while age 65 and over are assigned the value of fourth grade (4). White respondents age 20 to 54 are assigned the value of high school graduate (12), age 55 to age 64 are assigned some high school (10), while those age 65 and over are assigned an eighth grade education (8).¹⁴ Education levels of the respondents range from 0 to 18 years. The median year completed is 12, the mean, 12.3, and the standard deviation is 4.7.

Total Family Income

Total family income is measured by the total household

¹⁴U.S. Department of Commerce, Bureau of the Census, The Social and Economic Status of Negroes in the United States, 1970 (Washington, D.C.: U.S. Government Printing Office, 1971), p. 79.

income reported by the respondent. Missing values are assigned the median total family income of Southern black and white families as reported by the Bureau of the Census in 1970. Black families are assigned the value of \$5,226, while white families are assigned the value of \$9,240.¹⁵ The mean total family income is \$9,453, and the standard deviation is \$7,400.

Occupational Prestige

Occupational prestige is defined as the status evaluation given an occupation by members of society based upon the education, income, and other attributes associated with it.¹⁶ This variable is operationalized by assigning the 1950¹⁷ status scores constructed by Nam and Powers to the occupations reported by the respondents. These prestige scores are computed by

(a) arraying occupations (actually, occupation-industry combinations) according to the median educational level of males 14 years old and over in the experienced civilian labor force, (b) arraying

¹⁵U.S. Department of Commerce, Bureau of the Census, p. 27.

¹⁶Charles B. Nam and Mary G. Powers, "Changes in the Relative Status Level of Workers in the United States, 1950-60," Social Forces 47 (December, 1968), 158.

¹⁷Verbal communication between Charles B. Nam and Charles E. Holzer III on November 20, 1974, informs us that the 1970 prestige scores have not yet been completed. However, a correlation coefficient of .96 is reported between the 1950 and 1960 scores (Nam and Powers, p. 160). It is reasonable to assume that minimal bias is introduced by utilizing the 1950 scores.

occupations separately according to the median income level of the same population, (c) using the number of persons engaged in each occupation, determining the cumulative interval of persons in each occupation for each of the two arrays, and (d) averaging the midpoints of the two cumulative distributions of occupants and dividing by the total experienced civilian labor force to get a status score for the occupation.¹⁸

Employed males and employed single females are allocated present occupational status scores. Married female respondents are assigned the status scores of their husbands' occupations. Student respondents are assigned their fathers' status scores and retired, disabled, or unemployed respondents are assigned the status scores of their last full-time jobs.¹⁹ Missing values are assigned a value of 33 as suggested by Nam and Powers.²⁰ The prestige scores have a theoretical range of 0 to 99. The actual range of scores in this study is 2 to 99. The median score is 51 and the mean is 53.8 with a standard deviation of 27.3.

Sex

Sex is measured by the respondent's stated sexual attribute. The attribute is treated as a dummy variable. Females

¹⁸Nam and Powers, p. 159.

¹⁹This allocation procedure follows that suggested by Kenneth J. Hodge and Marjorie F. Spencer in an unpublished paper, "Measures of Social Stratification: A Preliminary Report for 'Evaluating Southern Mental Health Needs and Services,'" National Institute of Mental Health #15900, Gainesville, Florida: Department of Psychiatry, University of Florida, pp. 15-16.

²⁰Nam and Powers, p. 170.

are assigned the value of 1, males, 0. There are 1,588 male and 2,086 female respondents.

Age

Age is measured by the respondent's stated age. The respondents' ages range from 18 to 96. The mean age is 44.4 and the standard deviation is 18.5.

Marital Status

Marital status is measured by the respondent's stated present marital status. The status is dichotomized into married and nonmarried status and treated as a dummy variable; married respondents are assigned the value of 1, others 0. There are 2,385 married and 1,289 unmarried respondents.

The Instrument

This study focuses upon one aspect of a more extensive social psychiatric epidemiological survey.²¹ The items used to measure the concepts described above are part of a 317-item interview schedule. This interview schedule is designed to elicit information concerning:

- (1) demographic data and a comprehensive social history,
- (2) items concerning familial and other interpersonal relations,
- (3) questions concerning life

²¹These data were collected as one aspect of the Florida Health study "Evaluating Southern Mental Health Needs and Services," NIMH Grant #15900-05 and of the "Southern Health and Family Life Studies," NIMH Contract HSM 42-73-9 (OC) and Community Mental Health Center and Winter Haven Hospital.

satisfactions, both interpersonal and other, (4) indices concerning religion, racial distance, anomie, perceptions of social change and social aspirations, (5) a medical systems review and detailed physical symptom data, (6) a detailed inventory of mental symptomatology . . . and (7) a series of items concerning attitudes toward and utilization of health services.²²

A complex combination of theoretical and statistical processes was performed in an effort to construct items and indices that are reliable and valid. This process was initiated by pooling a large number of items from textbooks and research literature on social psychiatric impairment. Clinicians rendered an expert judgment on whether these items were significant in diagnosing and differentiating between specific types of social psychiatric impairment. These items were then administered to a known patient population and to a subsample of the general population.

Subsets of items were selected on the basis of face validity from the pool as a measure of specific social psychiatric impairment, such as psychopathology, anxiety and depression. Factor analysis was utilized to generate tentative subscales. Items which appeared in more than one subscale were eliminated from one or both and questions which appeared to be duplicates were eliminated.

²²George Warheit, John J. Schwab, Charles E. Holzer III, and Steven Nadeau, "New Data From the South on Race, Sex, Age, and Mental Illness" (paper presented at the Annual Meeting of the American Sociological Association, New York, August 28-30, 1973), p. 5.

The Sample

The universe consists of the residents age 18 or over in four central Florida counties. A sample of approximately 5 per cent was desired. Although essentially identical and comparable, the study includes two multistage cluster subsamples. The sampling frame was provided by the electrical utilities serving the counties. In each, the sampling frame consisted of a listing of households. From each frame a sample was selected. In subsample one, 2,315 households were selected and in subsample two, 2,400 households were selected.

Since a random sample was desired, the Kish technique was used to select the respondent within each household. A face sheet was assigned to each household. It contained the address of the residence, interviewer's name, date, time, and type of each attempt to secure the interview, date and time that the interview occurred, time taken to complete the interview, a form for listing household members, separately for males and females in descending rank by age, and a Kish table for selection of the respondent within the household. A number was assigned to each adult age 18 and over. The interviewer consulted the Kish table to determine which adult in the household to interview.²³

²³Lynn Robbins, "Sampling Processes and Organization of Field Work" (unpublished paper; Gainesville, Florida: Department of Psychiatry, University of Florida, February, 1972).

The nonresponse rate in subsample one is 16.07 per cent and in subsample two, 11.9 per cent. A comparison of the major demographic variables with the 1970 census was made and confirmed that the sample was representative.²⁴

Data Collection

These data were collected between July, 1970, and December, 1973. Person-to-person interviews were conducted by trained interviewers. The respondents were notified of the impending interview seven to ten days before the interview. During the two-hour interview the interviewer recorded the respondent's answers on the precoded questionnaire. These data were then placed on IBM data cards for data analysis. When the respondent was not at home the interviewer made as many as three call-backs at different times in an effort to interview the respondent.

Data Analysis Techniques

The literature review reveals a set of variables which may explain and predict problem drinking. The major task of the research is to construct a model based upon existing substantive theory and research findings which makes explicit the linkage of these variables in a valid, reliable

²⁴Charles E. Holzer III, "Social Status and Psychological Disorder: An Examination of Two Competing Hypotheses" (unpublished master's thesis; Gainesville, Florida: University of Florida, 1973), p. 15.

causal system. Duncan introduced path analysis into the sociological literature as a technique which holds the promise of meeting this objective.²⁵ This technique was developed by the geneticist Sewall Wright in 1921 and is well integrated into the field of econometrics.²⁶

The advantages of path analysis are interpretative and do not add to the statistics of the regression model. These advantages are as follows: (1) The model is an explicit, consistent expression of the underlying theory. (2) The estimate of the parameters is a direct test of the model. (3) The model is readily decomposed into the direct and indirect effects of the independent variables.²⁷

The structural equations of the path model permit estimation of the parameters. The results of this empirical test of the model either support the formulation or lead to a reformulation of the model. Finally, the model may either verify, clarify, modify, or refute the substantive theory that originally provided the model.²⁸

Despite the advantages of using path analysis to accomplish the above objective there are rather stringent

²⁵Otis Dudley Duncan, "Path Analysis: Sociological Examples," American Journal of Sociology 72 (July, 1966), 1-16.

²⁶Kenneth C. Land, "Principals of Path Analysis," Sociological Methodology 1969, edited by Edgar P. Borgatta (San Francisco: Jossey-Bass, Inc., 1969), pp. 5-7.

²⁷Duncan, "Path Analysis," pp. 1-16.

²⁸Ibid, pp. 3-4.

assumptions, the violation of which must be minimized to reduce bias. Nygreen lists eight basic assumptions of the path model. These are:

1. Interval scale measurement on all variables.
2. Homoscedasticity assumption.
3. Low multicollinearity assumption.
4. Effects between variables are linear and additive.
5. One-way causation. . . .
6. Residuals are uncorrelated with an independent variable directly affecting the dependent variable upon which it acts. . . .
- [7.] High degree of measurement reliability and validity.
- [8.] "Undebatable" rankings of the chosen variables in terms of their causal priorities--that is, a clearly defined causal scheme.²⁹

Blau and Duncan observe that the researcher may frequently be unable to know when the tolerance level has been exceeded or what the consequences of violating the assumptions may be.³⁰ Nevertheless, Johnston states that the researcher ought to know the consequences of violating the assumptions, how to test whether the assumptions are adequately met, and the alternative techniques available when the assumptions are unmet.³¹ The following section briefly addresses this problem for each of the above assumptions.

²⁹G. T. Nygreen, "Interactive Path Analysis," The American Sociologist 6 (February, 1971), 41.

³⁰Peter M. Blau and Otis Dudley Duncan, The American Occupational Structure (New York: John Wiley and Sons, Inc., 1967), p. 116.

³¹Johnston, p. 160.

Assumptions

Interval Scale Measurement of All Variables³²

Labovitz, Boyle, and Lyons note that the assumption of equal intervals on some underlying scale of X is difficult to meet in social research. The researcher may 1) assume that the ordered categories conform in approximation to an underlying monotonic scale; 2) decompose the ordered categories into dummy variables; or 3) create an effects-proportional scale.³³ Boyle shows that there is little difference between the regression and path coefficient when these alternatives are applied to identical data.³⁴ However, the use of dummy variables may involve some loss of data,³⁵ and the effects-proportional scale does not necessarily apply when a third variable is introduced into the model.³⁶ For these reasons it seems reasonable to treat ordered categories as interval scale data by assuming that these

³²Nygreen, p. 41.

³³Sanford Labovitz, "The Assignment of Numbers to Rank Order Categories," American Sociological Review 35 (June, 1970), 515-524; Richard P. Boyle, "Path Analysis and Ordinal Data," American Journal of Sociology 75 (January, 1970), 461-480; and Morgan Lyons, "Techniques for Using Ordinal Measures in Regression and Path Analysis," Sociological Methodology 1971, edited by Herbert L. Costner (San Francisco: Jossey-Bass, Inc., 1971), pp. 147-171.

³⁴Boyle, pp. 476-479.

³⁵Labovitz, p. 523.

³⁶Lyons, p. 168.

ordered categories conform in approximation to an underlying interval scale and to treat nominal attributes as dummy variables in the regression model.

Homoscedasticity

Homoscedasticity is defined as equal variance of the dependent variable, Y, for any given value of the independent variable, X. Blalock states that the regression model is robust, tolerating moderate departures from equality of variances.³⁷ Bohrnstedt and Carter demonstrate that significance tests, estimates of the intercept and regression coefficients remain unbiased regardless of the degree of heteroscedasticity.³⁸ When heteroscedasticity is extreme, the use of transformations of the original variable will tend to equalize the variances.³⁹

Low Multicollinearity Assumption

This assumption states that the intercorrelation among the independent variables is not high. In the case of highly intercorrelated independent variables it is likely that each explains the same portion of the variation in the

³⁷Hubert M. Blalock, Jr., Social Statistics (Second Edition; New York: McGraw-Hill Book Co., 1972), p. 325.

³⁸George Bohrnstedt and T. Michael Carter, "Robustness in Regression Analysis," Sociological Methodology 1971, edited by Herbert L. Costner (San Francisco: Jossey-Bass, Inc., 1971), pp. 123-125.

³⁹Blalock, p. 325.

dependent variable. Second, highly intercorrelated independent variables cause the regression and beta coefficients to be susceptible to sampling and measurement error. Large samples and accurate measurement are essential when the independent variables are highly related.⁴⁰ Blalock notes that in creating a new variable--the cross-product interaction term--multicollinearity is an obvious result since the new variable will be highly correlated with the two from which it was constructed.⁴¹ Iutaka advises that the unique variance explained by each independent variable may be determined by controlling the entry of each variable into a stepwise regression model.⁴²

Effects Between Variables Are Linear and Additive

Heise shows that when the relationship between variables is not linear the use of mathematical transformations to create a new variable will assist the researcher to meet this assumption. The major problem involved is the inspection of the data and selection of the appropriate transformation. In the case of interaction--the lack of additivity--a new variable may be created by the cross products

⁴⁰Blalock, pp. 456-458.

⁴¹Ibid., p. 464.

⁴²Sugiyama Iutaka, personal communication, November, 1974.

of the independent variables.⁴³ However, as discussed above, the problem of multicollinearity becomes pronounced when cross products are used to create new variables.

One-way Causation (Recursive Model)

When there is reciprocal interdependence among the variables--when the variables are both cause and effect of each other--the estimate will be biased inasmuch as the error term and the independent variables will be correlated. In this case the multiple regression model is inappropriate.

In their paper on "Peer Influences on Aspirations" Duncan et al. introduce sociologists to a technique for analyzing the reciprocal influences which apply when two or more dependent variables in a model are simultaneously interdependent.⁴⁴ This technique is called two-stage least-squares and is an extension of the regression model and path analysis. It is an appropriate technique to apply in data analysis when the reciprocal influences have become relatively crystallized such as when cross-sectional data have been obtained.

⁴³Heise, p. 65.

⁴⁴Otis Dudley Duncan, Archibald O. Haller, and Alejandro Portes, "Peer Influences on Aspirations: A Reinterpretation," American Journal of Sociology 74 (September, 1968), 119-137; and Robert Mason and Albert N. Halter, "The Application of a System of Simultaneous Equations to an Innovative Diffusion Model," Social Forces 47 (December, 1968), 182-195.

Residuals Are Uncorrelated with Any Independent Variables Directly Affecting the Dependent Variable

". . . When measurement errors are present in the observed values, we guarantee that the disturbance terms will be correlated with the independent variables and with themselves. Further, this insures that our estimates of the path coefficients themselves will be biased."⁴⁵ The problem is that we cannot be confident that the estimates are either attenuated or increased. Bohrnstedt and Carter present a series of equations for correcting the path coefficients when random measurement error is present.⁴⁶

Measurement Reliability and Validity

The most serious assumption concerns measurement error. Random measurement error may be corrected but nonrandom error introduces a serious potential bias into the findings. As Bohrnstedt and Carter note, sociologists have been little concerned with the problem of measurement error, ". . . yet it is measurement error which produces the most serious distortions in our regression estimates."⁴⁷ Heise and Bohrnstedt state that "sociologists almost always rely

⁴⁵ Bohrnstedt and Carter, p. 139.

⁴⁶ Ibid., pp. 139-140.

⁴⁷ Ibid., pp. 142-143.

on fallible measuring instruments in attempting to estimate parameters."⁴⁸

Causal Ordering of the Model

The construction of a causal model is never a completed exercise. Seldom is the researcher able to completely and unequivocally defend the causal inferences made in model construction. However, the problem of causal order among the variables must be faced. The necessary criteria for reasonably inferring the existence of a causal relationship are 1) concomitant variation; 2) temporal sequence; and 3) the elimination of spurious causal factors.⁴⁹ In other words, X may be inferred as a cause of Y when there is a statistically significant relationship between the variables, when X can be demonstrated to precede Y in occurrence and when the association between X and Y persists when the effects of variables temporally prior to both X and Y are controlled. In this research the focus is upon multiple factors which combine to "cause" a particular phenomenon, problem drinking, with a particular probability.

⁴⁸David R. Heise and George W. Bohrnstedt, "Validity, Invalidity, and Reliability," Sociological Methodology 1970, edited by Edgar P. Borgatta and George W. Bohrnstedt (San Francisco: Jossey-Bass, Inc., 1970), pp. 104.

⁴⁹Claire Selltitz, Marie Johoda, Morton Deutsch, and Stuart Cook, Research Methods in Social Relations (Revised Edition; New York: Holt, Rinehart, and Winston, 1959), pp. 80-94.

It is obvious that the researcher who is able to manipulate the independent variables in an experimental laboratory is in a more secure position in making causal inferences than the researcher who analyzes cross-sectional survey data. However, this research, as most social research, is an analysis of cross-sectional survey data. Selltiz et al. state that the inferences of causality drawn in nonexperimental studies remain tenuous and the assumption of the time order may rest primarily upon logical considerations.⁵⁰ Heise states that model building without complete information on the causal ordering to the variables may be justified as a method of summarizing present knowledge in order to promote future research efforts.⁵¹

Summary

The research problem of this study is to describe, explain, and predict the conditions under which adult residents of four central Florida counties experience problem drinking. This study is one facet of a larger social psychiatric epidemiological survey. Interview questions are selected from textbooks and research literature on social psychiatric impairment on the basis of face validity, factor analyzed and Crombach's Alpha calculated to enhance the validity and reliability of the measures. Respondents

⁵⁰Selltiz et al., p. 423.

⁵¹Heise, p. 66.

were selected by utilizing a multistage cluster sample technique, and trained interviewers administered an extensive interview schedule to the respondents. The data were coded and placed on IBM tapes for data analysis. The existing theory and research findings pertinent to this study are specified in a series of mathematical equations which make explicit the theoretical assumptions. The statistical technique utilized for estimation of the parameters in this study is two-stage least-squares, a technique which is appropriate when two or more of the endogenous variables in the model are interdependent. The findings of this analysis are presented in the next chapter.

CHAPTER IV
DATA ANALYSIS AND FINDINGS

Introduction

This study utilizes one aspect of a larger social psychiatric epidemiological survey. The purpose of this study is to describe, explain, and predict the conditions under which adult residents of four central Florida counties experience problem drinking as measured by a problem-drinking index. Particularly, the researcher wishes to analyze the reciprocal relationship that theoretically applies between four of the dependent variables. The respondents are a representative sample of the adult residents of these counties. Holzer compares the major demographic variables of one of the counties in the sample with the 1970 U.S. Census and confirms its representativeness.¹

The purpose of this chapter is to describe the characteristics of the sample and the findings of the data analysis. This description provides the basis for the interpretations and conclusions which follow in Chapter V.

¹Charles E. Holzer III, "Social Status and Psychological Disorder: An Examination of Two Competing Hypotheses" (unpublished master's thesis, Gainesville, Florida: University of Florida, 1973), p. 15.

Characteristics of the Sample

Those characteristics which may have an effect upon rates of problem drinking as suggested in the review of the literature are described in this section.

A majority of the respondents, 56.8 per cent, are women, while 43.2 per cent are men. The literature review suggests that women will experience a considerably lower rate of problem drinking than men.

The majority of the respondents, 82.3 per cent, are white, 17 per cent are black, 0.6 per cent are Oriental, and 0.1 per cent report a racial identity other than white, black, or Oriental. The literature review suggests that nonwhites will demonstrate a higher level of problem drinking than whites.

The majority of the respondents, 64.9 per cent, are married, 13.4 per cent are single, 21.3 per cent are widowed, separated, or divorced, and 0.4 per cent are married under common law arrangements. According to the literature review, the 34.7 per cent who are not currently married are more likely than married persons to experience problem drinking.

Essentially all of the respondents, 3,668, reported their ages. The median age is 43.1 years and the mean is 44.4 years, with a standard deviation of 18.5 years. The general distribution of those who report their ages is as follows: 5.2 per cent are younger than age 20, 13.1 per

cent are age 20 to 24, 10 per cent are age 25 to 29, 8.1 per cent are age 30 to 34, 7.6 per cent are age 35 to 39, 7.7 per cent are age 40 to 44, 7.4 per cent are age 45 to 49, 8.2 per cent are age 50 to 54, 6.1 per cent are age 55 to 59, 7.1 per cent are age 60 to 64, and 19.8 per cent are over the age of 64. The literature review suggests a sharp drop-off of problem drinking after the age of 60, and 26.9 per cent of the current sample fall within that group.

Nearly all the respondents, 3,657, report whether they live in a rural area or in town. The majority, 79.7 per cent, live in town, while 20.3 per cent report living in rural areas. The literature review suggests that problem drinking increases with the size of the city in which the respondents live. However, none of the respondents live in a large urban area, the largest city in the area studied having a population of less than 70,000 at the time of the survey.

A majority of the 3,674 respondents, 60.6 per cent, presently attend church. Most of these persons, 52 per cent, attend church at least once a week. However, most of the respondents, 60 per cent, do not attend a church that formally proscribes drinking alcoholic beverages.

The largest proportion of those who attend a church that formally proscribes drinking alcoholic beverages (15.2 per cent of the total sample), attend the Baptist Church. The largest proportion of those who attend a church

that does not proscribe drinking (12.4 per cent of the total sample), attend the Catholic Church; 0.7 per cent attend a synagogue, while 3.5 per cent did not report their church affiliation.

Nearly all of the respondents, 3,652, report their level of educational achievement. The mean level of educational achievement is 12.3 years, with a standard deviation of 4.7 years. Less than 7 per cent of the respondents have no formal education, 17.5 per cent have an eighth grade education or less, 60.7 per cent have at least some college credit, 31.6 per cent of the respondents have at least graduated from college, and 12.2 per cent have some post college work or a post graduate degree. It should be noted that the high level of education reflects the presence of a major state university in one of the counties. Heavy drinking may be expected to be higher among those of higher educational levels, while problem drinking is expected to be more prevalent among respondents with lower educational achievement.

The mean level of total family income is \$9,453, with a standard deviation of \$7,400. A fairly large proportion of the respondents, 15.9 per cent, did not provide information on their total family income. Of those who reported their total family income, 16 per cent have an income of less than \$3,000, 21.4 per cent have an income of between \$3,000 and \$4,999, 24.1 per cent earn between \$6,000 and

\$9,999, 20.9 per cent earn between \$10,000 and \$14,999, and 17.6 per cent have a total family income over \$15,000. The research suggests that higher rates of heavy drinking may be expected among lower income respondents.

A level of occupational prestige is also assigned each respondent, on the basis of present job, husband's job for married women, father's job for students, and past job if retired, disabled, or unemployed. The mean prestige score is 53.8, with a standard deviation of 27.3. Of the respondents, 14.1 per cent rank in the range of 0 to 19, 30.4 per cent in the range 20 to 29, 8.5 per cent in the range 40 to 59, 23 per cent in the range 60 to 79, and 24 per cent rank over 80 in their relative occupational prestige. Occupational prestige can be expected to have the same general effect on drinking patterns as the above two socioeconomic variables.

This study examines the impact of these three separate measures of socioeconomic status upon problem drinking. The product moment correlation between education and total family income is .09; between education and occupational prestige it is .12; and between total family income and occupational prestige it is .31. It is assumed that each of these measures taps a different aspect of socioeconomic status, and consequently they are treated separately rather than in a composite socioeconomic status score.

Psychosocial Characteristics of the Sample

Three of the variables in the model, perceived value-access disjunction, general psychopathology, and anxiety, are considered to be reciprocal in their relationship with problem drinking. These four variables are the dependent, endogenous variables to be explained.

The mean score on the measure of perceived value-access disjunction is 6.9, with a standard deviation of 2.3. Cantril reports a mean score on the Cantril Self-Anchoring Striving Scale of 6.2 for American respondents in 1963, 6.3 for whites and 5.2 for black respondents.² The existing theory suggests that the greater the perceived value-access disjunction, the greater the disposition toward problem drinking and vice versa.

The mean score on the measure of general psychopathology is 4.8, with a standard deviation of 3.4. The existing theory suggests that the greater the level of general psychopathology, the greater the disposition toward problem drinking, and vice versa.

The measure of anxiety is highly skewed toward the upper end of the index. The mean score is 2.0, with a standard deviation of 4.4. It should be noted in subsequent analysis that significance tests based upon this skewed measure are subject to error. However, this error is minimized statistically by the large number in the sample and, theoretically, by the emphasis in this research on model building rather

²Hadley Cantril, The Pattern of Human Concerns (New Brunswick, New Jersey: Rutgers University Press, 1965), p. 43.

than hypothesis testing. A major suggestion for further study is the construction of a less skewed measure of anxiety.

Drinking Patterns of the Sample

The measure of problem drinking is also skewed toward the upper end of the index. The comment above concerning the measure of anxiety applies to this measure as well. The majority of the respondents report a low consumption of alcohol and no resultant problems. The mean score on the measure is 1.7 and the standard deviation is 2.5.

The drinking patterns of the respondents may be described in the following way. A large proportion of the respondents, 40.5 per cent, state that they do not drink alcohol. This is a higher rate of abstinence than would be expected in light of national surveys; Cahalan et al. and the Gallup Poll report an abstinence rate of 32 per cent of the adult population.³ Of the respondents, 13.6 per cent drink often or every day, 23.5 per cent seldom drink, and 22.4 per cent drink sometimes.

Of those who drink, 66.7 per cent are never intoxicated, while 1.0 per cent are drunk every week. Of those who drink, 33.3 per cent report being drunk at some time during the previous year, and 3.9 per cent report being drunk at least

³Don Cahalan, Ira H. Cisin, and Helen M. Crossley, American Drinking Patterns (New Haven, Connecticut: College and University Press, 1969), p. 200; and George Gallup, "Alcoholism Is a National Concern," Jacksonville Times-Union and Journal (June 9, 1974), p. A-15.

several times a month. The great majority of those who drink, 97.8 per cent, never have too much to drink for several days at a time, and 93.4 per cent of those who drink have no problems as a result of drinking. Of those who drink, 90.8 per cent don't think that they drink too much for their own good. However, 10.5 per cent of those who drink use alcohol to help face their problems and 5.1 per cent do so to face their problems sometimes, often, or everyday.

This description suggests that the great majority of the respondents consume alcohol in a controlled, normative fashion. However, a significant portion of the sample drink excessively, drink in a utilitarian manner, and get into trouble as a result of drinking.

The Theoretical Model

The theory and research findings presented in the literature review were specified in a series of mathematical equations in Chapter III. This set of equations follows:

$$(1) Y_1 = C_1 + B_1 Y_4 + B_1 X_1 + B_1 X_3 + B_1 X_5 + B_1 X_7 + B_1 X_8 + R_a$$

$$(2) Y_2 = C_2 + B_2 Y_4 + B_2 X_1 + B_2 X_2 + B_2 X_3 + B_2 X_4 + B_2 X_6 + B_2 X_8 + B_2 X_9 + R_b$$

$$(3) Y_3 = C_3 + B_3 Y_4 + B_3 X_1 + B_3 X_2 + B_3 X_3 + B_3 X_4 + B_3 X_5 + B_3 X_9 + R_c$$

$$(4) Y_4 = C_4 + B_4 Y_1 + B_4 Y_2 + B_4 X_3 + B_4 X_1 + B_4 X_2 + B_4 X_5 + B_4 X_6 + B_4 X_7 + B_4 X_8 + B_4 X_{10} + R_d.$$

Multiple regression was considered as a possible data analysis technique because of its relative power to make

use of all the available data in estimating the parameters. However, the above model shows that Y_4 is theoretically considered to be both cause and effect of each of the other endogenous variables. In such cases, the use of multiple regression is inappropriate because it produces a biased, inconsistent estimate of the parameters inasmuch as the explanatory exogenous variable will be associated with the residual error term.⁴ Consequently, the technique of two-stage least-squares was selected from the field of econometrics for use as an appropriate method for a relatively unbiased estimation of parameters in a set of equations where the assumed relationship is reciprocal rather than unidirectional.

Identification of the Model

Prior to estimation of the parameters in the model, it is necessary to ascertain whether or not sufficient constraints have been placed on the set of equations so that the parameters can be identified. An equation may be considered just identified when the number of variables excluded from any equation is equal to one less than the number of equations in the model. An equation may be considered overidentified when variables excluded are equal to more than one less than the number of equations. Both just

⁴J. Johnston, Econometric Methods (Second Edition; New York: McGraw-Hill Book Co., 1972), p. 376.

identified and overidentified equations are identifiable and present no problem in the next step of estimation of parameters.⁵ The first three of these equations are overidentified by this rule while the fourth equation is just identified. The system may be estimated by two-stage least-squares.

The Reduced-Form Model

In the first stage of two-stage least-squares, the above theoretical model is transformed into reduced-form equations where each endogenous variable (Y_i) is expressed as a function of all the exogenous variables (X_1, \dots, X_{10}) in the system. Then, by using these coefficients and the observed values of the exogenous variables, estimates of the values of the endogenous variables are obtained. The purpose of this first stage is to attempt to "purge" each endogenous variable of the effects of all others with which it is reciprocally related by estimating what the respondent's score on that variable would have been if the other variables had not had an opportunity to affect it.⁶ The reduced-form model follows:

⁵Robert Mason and Albert N. Halter, "The Application of a System of Simultaneous Equations to an Innovative Diffusion Model," Social Forces 47 (December, 1968), 183-195.

⁶Melvin L. Kohn and Carmi Schooler, "Occupational Experience and Psychological Functioning: An Assessment of Reciprocal Effects," American Sociological Review 38 (February, 1973), 111.

$$(5) \quad y_1 = c_1 + b_1x_1 + b_1x_2 + b_1x_3 + b_1x_4 + b_1x_5 + b_1x_6 + b_1x_7 + b_1x_8 + b_1x_9 + b_1x_{10} + R_a$$

$$(6) \quad y_2 = c_2 + b_2x_1 + b_2x_2 + b_2x_3 + b_2x_4 + b_2x_5 + b_2x_6 + b_2x_7 + b_2x_8 + b_2x_9 + b_2x_{10} + R_b$$

$$(7) \quad y_3 = c_3 + b_3x_1 + b_3x_2 + b_3x_3 + b_3x_4 + b_3x_5 + b_3x_6 + b_3x_7 + b_3x_8 + b_3x_9 + b_3x_{10} + R_c$$

$$(8) \quad y_4 = c_4 + b_4x_1 + b_4x_2 + b_4x_3 + b_4x_4 + b_4x_5 + b_4x_6 + b_4x_7 + b_4x_8 + b_4x_9 + b_4x_{10} + R_d$$

These equations can be estimated by the multiple regression technique because there is only one endogenous variable in each equation. The estimated values obtained from the reduced-form equations provide an efficient and relatively unbiased estimate of the endogenous variables.

The Structural Model

The original system of equations--(1), (2), (3), and (4)--can now be estimated using multiple regression by inserting the values of the estimated endogenous variables, \hat{y}_1 , \hat{y}_2 , \hat{y}_3 , and \hat{y}_4 and using the observed values of the exogenous variables. The structural equation model follows:

$$(9) \quad \hat{y}_1 = c_1 + b_1\hat{y}_4 + b_1x_1 + b_1x_3 + b_1x_5 + b_1x_7 + b_1x_8 + R_a$$

$$(10) \quad \hat{y}_2 = c_2 + b_2\hat{y}_4 + b_2x_1 + b_2x_2 + b_2x_3 + b_2x_4 + b_2x_6 + b_2x_8 + b_2x_9 + R_b$$

$$(11) \quad \hat{y}_3 = c_3 + b_3\hat{y}_4 + b_3x_1 + b_3x_2 + b_3x_3 + b_3x_4 + b_3x_5 + b_3x_9 + R_c$$

$$(12) \hat{y}_4 = c_4 + b_4 \hat{y}_1 + b_4 \hat{y}_2 + b_4 \hat{y}_3 + b_4 x_1 + b_4 x_2 + b_4 x_5 + b_4 x_6 + b_4 x_7 + b_4 x_8 + b_4 x_{10} + R_d.$$

These equations may be interpreted as an explicit formulation of the existing theory. Equation (9) states that perceived value-access disjunction \hat{y}_1 may be estimated as a function of some constant c_1 , the estimated value of problem drinking when not affected by the variables with which it is reciprocally related, \hat{y}_4 , age x_1 , race x_3 , total family income x_5 , education x_7 , marital status x_8 , and a residual error term R_a .

Equation (10) states that general psychopathology can be estimated as a function of some constant c_2 , the estimated value of problem drinking when not affected by the variable with which it is reciprocally related, \hat{y}_4 , age x_1 , sex x_2 , race x_3 , residence x_4 , occupational prestige x_6 , marital status x_8 , residential mobility x_9 , and a residual error term R_b .

Equation (11) states that anxiety can be estimated as a function of some constant c_3 , the estimated value of problem drinking when not affected by the variables with which it is reciprocally related, \hat{y}_4 , age x_1 , sex x_2 , race x_3 , residence x_4 , total family income x_5 , residential mobility x_9 , and a residual error term R_c .

Finally, equation (12) states that problem drinking can be estimated as a function of some constant c_4 , the estimated

value of perceived value-access disjunction \hat{y}_1 , general psychopathology \hat{y}_2 , and anxiety \hat{y}_3 , when these are not affected by the influence of problem drinking, and age x_1 , sex x_2 , total family income x_5 , occupational prestige x_6 , education x_7 , marital status x_8 , religious proscription x_{10} , and a residual error term R_d .

The Path Model

In the schematic presentation of the path model, it is customary to use one-way arrows on a straight line leading from each exogenous variable to the endogenous variable dependent on it. Two-headed arrows on a curved line are drawn between variables that may be related but which are not analyzed in the model. These are the predetermined exogenous variables.⁷ The path or beta coefficients are written on the lines with one-way arrows and represent the sign and the proportion of the standard deviation of the endogenous variable for which a one standard deviation change in the designated exogenous variable is directly responsible when all other variables in the model including the residual term are controlled.⁸ A residual term (R_a) is directly linked to each endogenous variable.

⁷Otis Dudley Duncan, "Path Analysis: Sociological Examples," American Journal of Sociology 72 (June, 1966), 3.

⁸Kenneth C. Land, "Principles of Path Analysis," Sociological Methodology 1969, edited by Edgar P. Borgatta (San Francisco: Jossey-Bass, Inc., 1969), p. 9.

. . . it may be helpful to think of the residual as a dummy variable having unit variance and zero mean and as representing all unmeasured variables which cause variation in the endogenous variable. The residual path coefficient, then, represents the proportion of the standard deviation . . . of the endogenous variable that is caused by all measured variables outside the set under consideration in the path model.⁹

The residual path coefficient may be computed by the formula

$$R_a = 1 - R^2. \text{ }^{10}$$

The simple correlation coefficients may be written on the curved two-headed line.¹¹ However, in this presentation the correlation coefficients are presented in the zero-order correlation matrix in Table 1, because the large number of variables would produce an unintelligible tangle of curved lines.

The path model illustrated in Figure 1 indicates that the variables in the model explain 15 per cent of the variance of the scores on the problem-drinking index. As anticipated, when all other variables in the model are controlled, the most important single predictor is sex, with males scoring higher on the problem-drinking index.

The second most important predictor is the respondent's score on the general psychopathology index, $r = .20$. A breakdown of the relationship shows that, while there is a gradual increase in the problem-drinking scores with an

⁹Land, "Principles of Path Analysis," p. 12.

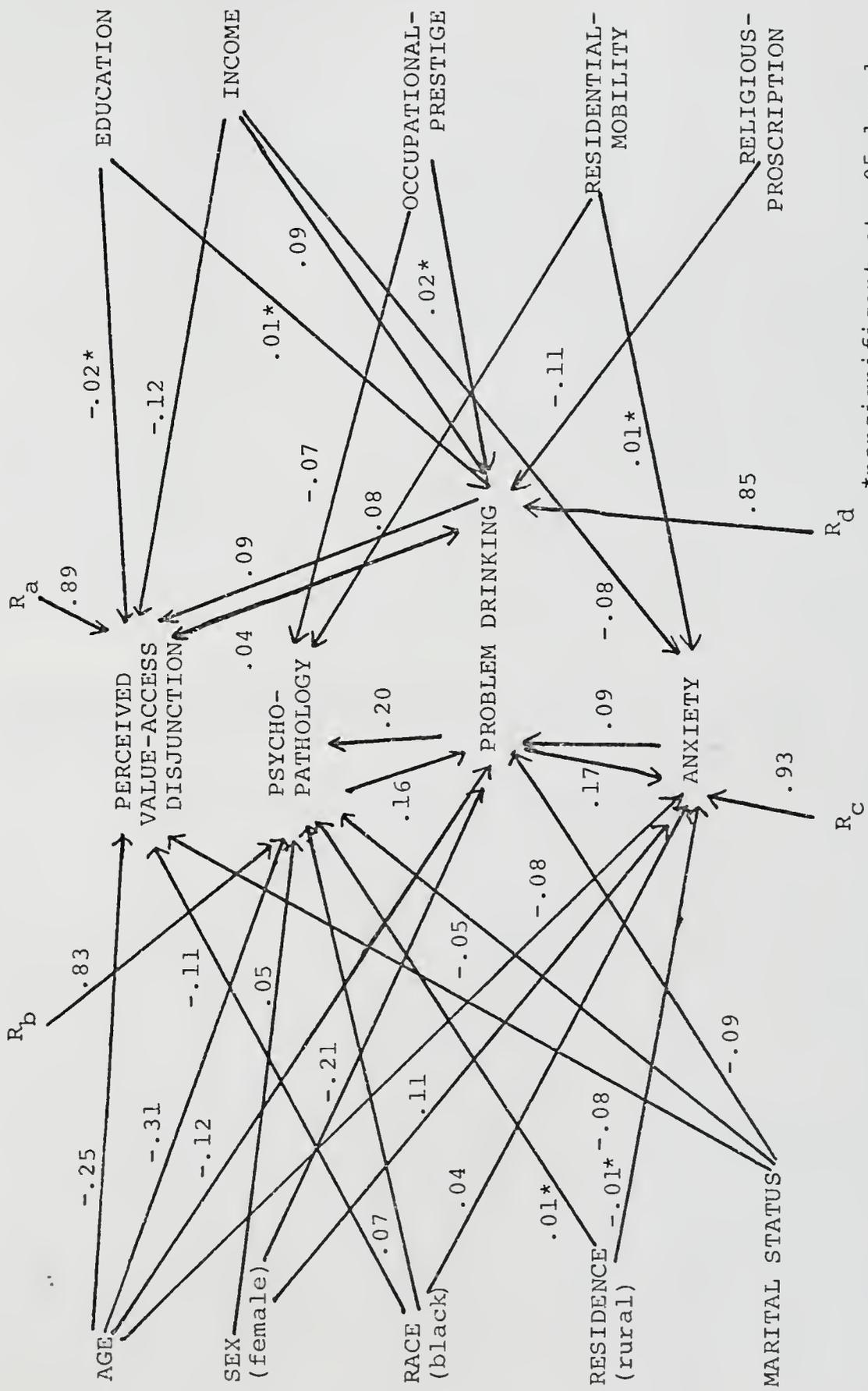
¹⁰Ibid., p. 13.

¹¹Duncan, "Path Analysis," p. 3.

Table 1. Zero-Order Correlation Matrix

	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	X ₉	X ₁₀	Y ₁	Y ₂	Y ₃	Y ₄	
X ₁ Age	1.00	.05	.00	.05	-.12	-.17	-.25	.00	-.33	-.18	-.23	-.32	-.10	-.16	
X ₂ Sex		1.00	.03	-.02	-.11	-.06	.02	-.11	-.05	.11	-.04	.05	.11	-.23	
X ₃ Race			1.00	.00	-.24	-.33	-.17	-.16	-.11	.16	.16	.10	.05	-.06	
Rural Residence				1.00	.00	-.09	-.08	.08	-.07	.01	-.03	-.01	-.03	.05	
Total															
X ₅ Family Income					1.00	.31	.09	.28	-.05	.02	-.14	-.03	-.09	.11	
Occupational Prestige						1.00	.12	.14	.09	-.08	-.11	-.05	-.06	.07	
X ₇ Education							1.00	.04	.09	-.13	.01	.04	.00	.05	
X ₈ Married								1.00	-.05	.01	-.13	-.08	-.10	-.04	
X ₉ Mobility									1.00	-.17	.12	.16	.11	.14	
Religious															
X ₁₀ Proscription										1.00	-.09	-.07	-.04	-.15	
Perceived Value-											1.00	.31	.26	.13	
Y ₁ Access Disjunction												1.00	.45	.23	
Y ₂ Psychopathology													1.00	.16	
Y ₃ Anxiety														1.00	
Y ₄ Problem Drinking															1.00

Note: Coefficients greater than .02 significant at the .05 level, one-tailed t test.



*nonsignificant at .05 level.

Figure 1. Schematic Representation of the Structural Model of Problem Drinking

increase in psychopathology, the most significant impact of psychopathology is at the upper end of the index with those who rate high on the psychopathology index ranking high on problem drinking.

The third most important variable is age, $r=-.16$. Compatible with other recent findings, young people are found to rank highest in problem drinking, while there is a gradual drop-off until age 60, after which problem-drinking scores drop dramatically.

The fourth ranking variable is attendance at a church that proscribes drinking. People who attend churches which formally proscribe alcohol consumption are less likely to experience a high degree of problem drinking.

Anxiety follows as the next most important variable, $r=.17$. The pattern described above for the relationship between general psychopathology and problem drinking applies as well to anxiety and problem drinking. Those respondents who rank high on the anxiety index are likely to rank high on the problem-drinking index.

Total family income is the next most significant variable, $r=.11$. There is a gradual increase in the problem-drinking score as the total family income increases. This finding is at variance with the majority of existing research, which indicates that problem drinking increases with lower income levels and heavy drinking increases as income increases. This finding may be explained by the dependence

of the present measure of problem drinking upon the quantity and frequency of alcoholic consumption.

Marital status comes next in significance in predicting the problem-drinking score. The unmarried person is more likely than the married respondent to rank high on the problem-drinking index.

Perceived value-access disjunction ranks next, $r=.09$. Those who demonstrate high value-access disjunction are likely to score high on problem drinking. Most of the variation in the relationship is at both ends of the index.

Occupational prestige and education are only slightly related to problem drinking with an $r=.07$ and $.05$ respectively. When the other variables in the model are controlled, neither prestige nor education is significantly associated with problem drinking.

One of the purposes of this study is to examine the interdependent reciprocal relationships among the four endogenous variables. In order to estimate the parameters, it is necessary to construct an equation for each of the endogenous variables.

The existing theory suggests that the relationship between perceived value-access disjunction and problem drinking is reciprocal. Analysis of the relationship reveals that when other variables in the model are controlled, a one standard deviation change in the measure of perceived value-access disjunction causes a $.04$ standard deviation

change in problem drinking, with a feedback of .09 standard deviation change in perceived value-access disjunction.

The theory also suggests that the relationship between general psychopathology and problem drinking is reciprocal. Analysis of this relationship reveals that a one standard deviation change in psychopathology causes a .16 standard deviation change in problem drinking with a feedback of .20 standard deviation change in psychopathology.

Anxiety and problem drinking are assumed to be reciprocal in their relationship as well. A one standard deviation change in the anxiety score causes a .09 standard deviation change in problem drinking with a feedback of .17 standard deviation change.

The test of the model verifies the existing theory that, for the most part, those integrated into the social system and socialized to norms of social control are less likely to be problem drinkers. Females are more likely to be socialized to a norm of moderation in drinking, as this research verifies. Older persons are more likely to be responsible for families, businesses, and community affairs, which seems to constrain them from excessive drinking. In all probability, the major reason for low to moderate drinking in the age cohort 60-plus is health reasons. Attendance at a church that formally proscribes drinking is a strong constraint on drinking, lending support to the general theoretical formulation of the study.

Race and rural residence have little impact on the rate of problem drinking, and, while the correlation between the three socioeconomic variables is not high, whatever variance is explained by total family income is essentially the same as that part of the variance explained by education and occupational prestige inasmuch as neither is significant when introduced into the multiple regression model. The relationship between perceived value-access disjunction and problem drinking is low and suggests either the presence of other significant unmeasured variables or inadequate operationalization of perceived value-access disjunction.

The model also demonstrates that personal integration is a constraint against immoderate drinking. Those respondents with high scores on the anxiety and psychopathology measure are also likely to rank high on the problem-drinking index. In both cases, it is interesting to note that the feedback from problem drinking to the personal variable is somewhat greater than the impact of that variable on problem drinking; in other words, problem drinking has significant implications for the social psychological state of the individual. Certainly the social and psychodynamics of problem drinking are complex and highly interrelated. However, this finding suggests that "drying out" the problem drinker will have a significant impact on some of those psychosocial factors considered to dispose one toward problem drinking.

Summary

In this chapter, the characteristics of the sample are described. It is noted that for the great majority of respondents the use of alcohol is not problematic and appears to be within normative bounds. Six and six-tenths per cent of those respondents who drink report some problems as a result of their drinking and 10.5 per cent of those who drink report that they do so to help face their problems.

The data are analyzed using two-stage least-squares, a technique suitable for estimation of the parameters when two or more of the endogenous variables are interrelated. As anticipated, the explained variance is rather low, 15 per cent. However, the most influential explanatory variables in the model are sex, general psychopathology, anxiety, age, and religious proscription. An examination of the reciprocal relationship between problem drinking and the personal variables in the model reveals that problem drinking has significant implications for the individual's psychosocial state as well as the usually assumed influence of psychosocial dynamics on problem drinking.

CHAPTER V

SUMMARY AND CONCLUSIONS

The Problem Statement

The purpose of this study is to describe, explain, and predict the conditions under which adult residents of four central Florida counties experience problem drinking as measured by a problem-drinking index. The vast majority of previous research studies have depended upon alcoholics rather than random samples of the population; few examine multivariate relationships that influence drinking and none examine the reciprocal relationship between drinking patterns and other psychological or social variables. This study constructs and tests a multivariate causal model of problem drinking which includes feedback loops from problem drinking to each of the reciprocally related endogenous variables.

The Theoretical Foundation

The major theoretical foundation for this research is social integration theory. It is anticipated that those persons who are poorly integrated into the social structure, such as the poor and those who have not been strongly socialized to conformity to specific norms, are less likely to

demonstrate drinking in conformity with the usual dietary and social customs of the community than those persons who are more integrated into the social system and its constraints. For instance, those who do not attend church or those who attend a church that does not clearly prescribe drinking behavior patterns are expected to be more likely to display non-normative drinking patterns. In addition, this research explores the impact of psychosocial functioning as measured by psychopathology, anxiety, and perceived value-access disjunction on problem-drinking patterns and vice versa.

The literature review explores the support for 12 bivariate hypotheses suggested by the general underlying theory. These variables are sex, age, marital status, race, religious affiliation, residential area, socioeconomic status, education, income, organizational integration, value-access disjunction, psychopathology, and depression.

The Data and Data Analysis

The data utilized for this research are part of a larger social psychiatric epidemiological survey. A multi-stage cluster technique is used to sample adults age 18 and over from the residents of four central Florida counties. Trained interviewers administered the questionnaire to 3,674 respondents. The data were coded and placed on magnetic tape for computer analysis.

The data were analyzed using a technique from the field of econometrics, two-stage least-squares. This technique is an extension of the multiple regression technique and is appropriate when two or more of the variables in the model are reciprocally interdependent. In this research, problem drinking is considered to be both cause and effect of perceived value-access disjunction, general psychopathology, and anxiety.

Findings

The findings of this research support the existing theoretical formulations and clarify the reciprocal relationships among problem drinking and the other endogenous variables. In order of the magnitude of the association, sex, general psychopathology, age, religious proscription, anxiety, marital status, residential mobility, perceived value-access disjunction, total family income, occupational prestige, race, education, and residence are significantly associated with problem drinking.

When 10 of these variables are entered into a multiple regression equation, age, sex, marital status, total family income, religious proscription, perceived value-access disjunction, general psychopathology, and anxiety are significantly associated with problem drinking when all other variables in the model are controlled. This finding verifies the existing theoretical formulation of personal social

integration as a constraint against problem drinking, with one exception. Total family income is positively related to problem drinking, although the degree of association is low. Its existence may be explained as a result of the partial dependence of the present problem-drinking measure on quantity and frequency of alcohol consumption.

Education and occupational prestige are not significantly associated with problem drinking when the other variables in the model are controlled. Total family income apparently explains the same portion of the variance in problem drinking as do education and occupational prestige.

The standardized beta coefficient of the feedback loop from problem drinking to all other endogenous variables in the model is greater than the standardized beta coefficient leading from that endogenous variable to problem drinking. This finding verifies the significance of social psychological variables as causal factors of problem drinking but also suggests that drinking behavior has a greater impact on one's psychosocial state than has heretofore been explicitly identified. Dramatic changes in the total life situation of problem drinkers may result following "drying out" or greater moderation in drinking.

Strengths and Limitations

One of the major strengths of this research is the source of the data. The probability sample permits generalization of the findings beyond the respondents to adult

residents of four counties. To the extent that the residents of these counties differ from residents of other areas the reader is cautioned against generalizing these findings to other areas of the country. The large number of respondents and low refusal rate increases confidence in the findings. In addition, the probability sample provides a view of drinking behavior and its corollaries which is not provided by studies of identified alcoholics. This research, by focusing upon the prevalence of particular symptoms and problems in the community, provides a contribution to the literature made by only a few previous studies.

A second strength of this study lies in the technique selected for data analysis. The two-stage least-squares technique is a relatively simple extension of the multiple regression technique and is appropriate when two or more of the endogenous variables are reciprocally interdependent. This technique could prove a valuable addition to the sociologist's data analysis techniques when it is appropriate to examine the feedback from one variable to another. In the absence of longitudinal or experimental data which are both difficult and expensive to obtain, this technique permits the researcher to assess the simultaneous reciprocal effects of the variables under observation.

The major weaknesses of this study may be subsumed under the heading of measurement error. While efforts have been made to construct a valid and reliable measuring

instrument, there is an undetermined bias introduced by the response style of the respondents. To the extent that "yea saying" and positive response style are random in their occurrence, the problem is not so serious. However, if these response styles are not random, the total findings of this study are suspect. Secondly, several measures are highly skewed away from the "normal" side of the index. While the t test is relatively robust, excessive disturbances of normality bias the findings of significance. Third, the association between several of the variables is sufficiently nonlinear as to cause one to suspect highly attenuated coefficients. In other words, the degree of association is underestimated by the nonlinear form of the relationship. The fourth measurement error, the assumption of interval scale data, has been discussed earlier and is not considered serious by the researcher.

A second major weakness of this study lies in specification error. The causal assumptions in the model are presented to invite challenges. This particular model is a heuristic one based upon existing knowledge and logical assumptions and modified by the existing data, which may be constructively criticized and reconceptualized.

The third major weakness is related to the above two problems. The explained variance of problem drinking is low. Nonlinear transformations and more adequate specification of the model would be productive in increasing the

explained variation. However, it is instructive to note that Cahalan, in a study specifically designed to study problem drinking, explained only 7 per cent of the variance using social variables and 18 per cent of the variance using a set of social and social psychological variables.¹

Recommendations for Further Study

The first recommendation concerns the substance of this research and the second deals with the method of data analysis. The present research is limited by the available data. A causal model of problem drinking is an invalid exercise if appropriate variables are not specified in the model, and if those specified are incompletely operationalized. Further study is needed to obtain data on other variables associated with problem drinking, and a more precise operationalization of problem drinking would facilitate research. The introduction of different variables into the model and different operationalization of the existing variables may contribute to the explained variance. The model constructed in this study must be tested on a different set of data in order to modify or verify it.

The method of two-stage least-squares holds promise as a technique used in analysis of cross-sectional data when two or more of the endogenous variables are reciprocally interdependent and when the researcher is interested in the

¹Don Cahalan, Problem Drinkers (San Francisco: Jossey-Bass, Inc., 1970).

feedback from one variable to another. It is apparent that this phenomenon applies in much social psychological research inasmuch as change in a person's attitude or perception on one phenomenon is likely to influence his report on another phenomenon. When the researcher is willing to make the assumptions necessary for the use of parametric statistics it is not problematic to use the two-stage least-squares technique.

Summary

The researcher has attempted to describe, explain, and predict problem drinking among residents of four central Florida counties by constructing a heuristic model based on the existing theoretical knowledge and previous research. The data were analyzed by means of the two-stage least-squares technique, which provides a feedback loop to determine the degree of reciprocity between problem drinking and several endogenous variables.

The findings of this research verify and clarify the existing research findings and the theoretical formulation of social integration. The more integrated the individual, in personal and social spheres of activity, the more likely that person is to be constrained from non-normative drinking behavior. Furthermore, those persons who are problem drinkers are likely to be disposed toward poor personal and social integration.

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APPENDIX

The following questions represent only a portion of the total social psychiatric questionnaire administered to each of the respondents. These questions are those which provided the data described in the present study. A complete questionnaire may be obtained by writing to Dr. George Warheit, Florida Health Survey, Department of Sociology, University of Florida.

- | | |
|---|--|
| 4. RACE | 1 White
2 Black
3 Other _____ |
| 5. SEX | 1 Male
2 Female |
| 6. WHAT WAS YOUR AGE ON YOUR
LAST BIRTHDAY? | 97 Don't know
98 Not answered |
| 7. WHAT WAS THE LAST YEAR OF
SCHOOL YOU COMPLETED? | 01 No formal schooling
02 Less than 4th grade
03 5th-8th grade
04 Some high school
05 High school graduate
06 Some college
07 Jr. college graduate
08 Nursing school
graduate
09 Trade or business
school graduate
10 College graduate
11 Some post graduate
work
12 Post graduate degree
13 Other _____
97 Don't know |

- 98 Not answered
99 Not applicable
9. WHAT IS YOUR PRESENT MARITAL STATUS?
- 01 Single
02 Married
03 Widowed
04 Separated
05 Divorced
06 Common living arrangements
07 Other _____
97 Don't know
98 Not answered
26. HOW LONG HAVE YOU LIVED IN _____?
- 1 Farm
2 Rural non-farm
3 In town (any built-up area)
33. HOW MANY TIMES HAVE YOU MOVED IN THE LAST FIVE YEARS? (Changed homes)
- 97 Don't know
98 Not answered
99 Not applicable
39. WHAT DO YOU CONSIDER YOUR MAIN JOB OR OCCUPATION?

(specific occupation)
- 97 Don't know
98 Not answered
99 Not applicable
40. ARE YOU PRESENTLY EMPLOYED?
- 01 Yes, full time (30 hours +)
02 Yes, part time
03 No, housewife
04 No, student
05 No, unemployed
06 No, retired
07 No, disabled
97 Don't know
98 Not answered
99 Not applicable
- (for unemployed, retired, or disabled only)
85. WHAT WERE YOUR LAST THREE JOBS? (List 1st job back, first.)
- ____ (1st job back)
____ (2nd job back)
____ (3rd job back)
- _____
(specific occupation)
- _____
(specific occupation)

 (specific occupation)

97 Don't know
 98 Not answered
 99 Not applicable

(for separated, widowed, divorced, or never married only.)

93. CAN YOU TELL ME YOUR APPROXIMATE TOTAL HOUSEHOLD INCOME?

00007 Don't know
 00008 Not answered
 00009 Not applicable

(for presently married only)

100. CAN YOU TELL ME YOUR APPROXIMATE TOTAL FAMILY INCOME FROM ALL SOURCES?

00007 Don't know
 00008 Not answered
 00009 Not applicable
 1 Yes, full time
 2 Yes, part time
 3 No
 7 Don't know
 8 Not answered
 9 Not applicable

111A. If yes, WHAT IS HIS/HER OCCUPATION?

97 Don't know
 98 Not answered
 99 Not applicable

 (specific occupation)

134. DO YOU ATTEND ANY CHURCH AT THE PRESENT TIME?

1 Yes
 2 No
 7 Don't know
 8 Not answered
 9 Not applicable

134A. If yes, WHAT IS THE NAME OF THE CHURCH?

97 Don't know
 98 Not answered
 99 Not applicable

 (exact church name)

136. ABOUT HOW OFTEN DO YOU ATTEND THE MAIN WORSHIP SERVICE OF YOUR CHURCH/ SYNAGOGUE?

01 Every week
 02 2-3 times a month
 03 Once a month
 04 Several times a year
 05 Only once or twice a year
 06 Less than once a year

07 Never
 97 Don't know
 98 Not answered
 99 Not applicable

Problem Drinking Index

278. HOW OFTEN DO YOU DRINK ALCOHOL (BEER, WINE, WHISKEY)? WOULD YOU SAY:
- 5 Everyday
 4 Often
 3 Sometimes
 2 Seldom
 1 Never
 7 Don't know
 8 Not answered
281. HOW OFTEN IN THE PAST YEAR HAVE YOU BEEN INTOXICATED (DRUNK)? WOULD YOU SAY:
- 5 Every week
 4 Several times a month
 3 Several times a year
 2 Very seldom
 1 Never
 7 Don't know
 8 Not answered
 9 Not applicable
282. IN THE LAST YEAR HAVE YOU HAD TOO MUCH TO DRINK FOR SEVERAL DAYS AT A TIME?
- 1 Yes
 2 No
 7 Don't know
 8 Not answered
 9 Not applicable
- 282A. If yes, HOW MANY TIMES?
- 97 Don't know
 98 Not answered
 99 Not applicable
283. HAS DRINKING CAUSED ANY TROUBLE OR PROBLEMS FOR YOU?
- 1 Yes
 2 No
 7 Don't know
 8 Not answered
 9 Not applicable
- 383A. If yes, WHAT KIND?
 (Circle as many as apply.)
- 1 Health, injury
 2 Family
 3 Neighbors, friends
 4 Work
 5 Law
 6 Marital problems
 7 Don't know
 8 Not answered
 9 Not applicable
- Other _____

284. DO YOU THINK YOU DRINK TOO MUCH FOR YOUR OWN GOOD?
- 1 Yes
2 No
7 Don't know
8 Not answered
9 Not applicable
285. HOW OFTEN WOULD YOU SAY YOU USE ALCOHOL TO HELP YOU FACE YOUR PROBLEMS? WOULD YOU SAY:
- 5 Everyday
4 Often
3 Sometimes
2 Seldom
1 Never
7 Don't know
8 Not answered
9 Not applicable

Perceived Value-Access Disjunction Index

315. HERE IS A PICTURE OF A LADDER. SUPPOSE THE TOP OF THE LADDER REPRESENTS THE BEST POSSIBLE LIFE FOR YOU. WHERE ON THE LADDER DO YOU FEEL YOU STAND AT THE PRESENT TIME? Circle the correct response.
- 00 01 02 03 04 05 06 07
08 09 10

10
9
8
7
6
5
4
3
2
1
0

The Anxiety Function Scale

- 1) During the last year, did worry or nervousness get you down physically?
- 2) During the last year, did worry or nervousness cause problems with your family life?
- 3) During the last year, did worry or nervousness interfere with your social activities?
- 4) During the last year, have you ever had to stay at home or in bed because of worry or nervousness?
- 5) During the last year, were you unable to do your usual work because of worry or nervousness?
- 6) In the last year, how often did you feel that you might have a nervous breakdown or that you might lose your mind?
- 7) Does this feeling get you down physically?
- 8) During the last year, has this feeling caused problems with your family/personal life?
- 9) Does this feeling interfere with your social activities?
- 10) During the last year, have you ever had to stay at home or in bed because of this feeling?
- 11) During the last year, were you unable to do your usual work at any time because of feeling that you might have a nervous breakdown?

General Psychopathology Scale

- 1) How often do you have unwelcome or strange thoughts or thoughts that frighten you?
- 2) How often do you find yourself doing the same things over and over to be sure they are right?
- 3) How often do you get upset, uptight, or irritable with those around you?
- 4) How often do you feel that people are trying to pick quarrels or start arguments with you?
- 5) How often do you think people are following you or plotting against you?

- 6) How often do you get really angry?
- 7) How often do things not seem real to you or do you have feelings that you are not really here?
- 8) How often do you see or hear things that other people don't think are there?

BIOGRAPHICAL SKETCH

Clair Eugene Martin was born May 29, 1944, at Lancaster, Pennsylvania. His parents are Vernon C. and Edith L. Martin. In June, 1966 he received the degree of Bachelor of Science in Nursing from Goshen College, Goshen Indiana. From May, 1966, to September, 1966, he worked as a staff nurse at Elkhart General Hospital in Indiana. In September, 1966, he enrolled in the Graduate School of the University of Florida and received the degree of Master of Nursing, with a specialty in psychiatric nursing in August, 1967. He was then employed by the University of Florida College of Nursing, Psychiatric Nursing Section, until September, 1969. At that time he again enrolled in the Graduate School of the University of Florida to pursue the degree of Doctor of Philosophy with a major in sociology. In March, 1971, he received the degree of Master of Arts with a major in sociology.

From September, 1970, until June, 1973, Clair Martin was employed as associate professor and head of the Department of Nursing at Western Carolina University. During this time he continued his doctoral studies as a part-time student. In September, 1973, he enrolled full time in the Graduate School at the University of Florida in order to

complete the degree requirements. He was employed as a teaching assistant in the Department of Sociology. In January, 1975, he accepted an appointment as associate professor of nursing in the School of Nursing, University of North Carolina at Greensboro.

Clair Eugene Martin is married to the former Guenn Carole Stoltzfus and is the father of a daughter, Sonja Marie. He is a member of the American Sociological Association, the American Nurses Association, the National League for Nursing, the National Council of Family Relations, Alpha Kappa Delta, and Sigma Theta Tau.

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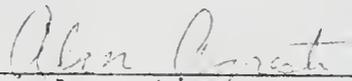
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I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



Gerald R. Leslie, Chairman
Professor of Sociology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



Alan Agresti
Assistant Professor of Statistics

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



Pauline H. Barton
Professor of Nursing

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



Felix M. Berardo
Professor of Sociology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality as a dissertation for the degree of Doctor of Philosophy.

George J. Warheit

George J. Warheit
Associate Professor of Sociology

This dissertation was submitted to the Graduate Faculty of the Department of Sociology in the College of Arts and Sciences and to the Graduate Council, and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

June, 1975

Dean, Graduate School