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THE PREVALENCE OF DUAL DIAGNOSIS OF GENERALIZED ANXIETY
DISORDER AND ALCOHOLISM IN THE LITERATURE:
A CRITICAL META-ANALYTIC REVIEW

by

Joseph B. Stone

A thesis submitted in partial fulfillment
of the requirements for the degree

of

MASTER OF SCIENCE

in

Psychology

Approved:

UTAH STATE UNIVERSITY
Logan, Utah

1993

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Joseph B. Stone

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ABSTRACT

The Prevalence of Dual Diagnosis of Generalized Anxiety
Disorder and Alcoholism in the Literature:
A Critical Meta-Analytic Review

by

Joseph B. Stone, Master of Science

Utah State University, 1993

Major Professor: David M. Stein, Ph.D.
Department: Psychology

The relationship between alcoholism and generalized anxiety disorder (GAD) has been discussed in two research areas: research on the prevalence of GAD in alcoholics, and the prevalence of alcoholism in individuals diagnosed with GAD. Studies indicate that between 6 to 26% of alcoholics have a current diagnosis of GAD, with a lifetime prevalence rate of up to 51%. In the general population, 4% would currently receive a diagnosis of GAD, with a lifetime prevalence of 8%.

This meta-analytic review of the empirical literature examines the relationship between GAD and alcoholism. The author used percentages to compare the results of various studies. The averaged results of these various studies suggested there is a 25% comorbidity rate of GAD and

alcoholism. Critical review of the studies examined in this review revealed substantial methodological errors. Based on a critical review of the research methodology in the studies cited, the author proposed further research.

(61 pages)

INTRODUCTION

Generalized Anxiety Disorder and Alcoholism: A Critical Meta-Analytic Review

Individuals diagnosed with a substance abuse disorder or other mental health disorders experience behavioral difficulties, problematic and distressful interactions with family members, or difficulty fulfilling a productive role in society (Bootzin & Acocella, 1988; Coleman, Butcher, & Carson, 1980). The National Council on Alcoholism (1986) estimated that alcoholism cost the American economy 116 billion dollars in 1983. Kiesler and Simpkins (1991) reported that 2,618,352 hospitalizations for mental and substance abuse disorders cost about 52 billion dollars (i.e., at 20,000 dollars per hospitalization). Monahan (1992) reported the following percentages of violent behavior from each disorder mentioned: no disorder, 2.1; mania or bipolar disorder, 11; major depression, 11.7; schizophrenia, 12.7; alcohol abuse or dependence, 24.6; and drug abuse or dependence, 34.7.

These descriptive statistics suggest that the behavior of individuals with either a substance abuse or mental disorder contributes to family discord, social problems, and economic costs to taxpayers in American society. However, these statistics do not describe the economic costs and other social problems related to comorbidity of substance

abuse and mental health disorders, a new area of interest in the field of mental health (Slaby, 1991). The author defines alcoholism, GAD, and comorbidity, discusses the importance of understanding the issues raised by comorbidity, and develops a general model of comorbidity. The author uses the general model of comorbidity to analyze the relationship of GAD and alcoholism.

Definition of Alcoholism

In 1991, Nace and Isbell stated that alcoholism exists when an individual continues to use alcohol despite significant impairment in social and physical functioning. The impairments in social functioning include significant difficulties in employment, in marital and family relationships, and in legal problems secondary to alcohol use, such as charges of driving while intoxicated. The impairments to physical health often include liver damage, central and peripheral nervous system dysfunction, and hematological abnormalities. D. Stein (personal communication, June, 1993) stated that alcoholism is a complex, multivariate phenomenon, characterized by the excessive use of beverage alcohol, with correlating sociological, cultural, and physical components. Alcoholism is functional in nature and is best understood through careful application of a bio-psycho-social theoretical orientation.

Definition of GAD

According to the DSM-III-R, GAD is "unrealistic or excessive worry about two or more life circumstances for a period of 6 months or longer, during which the person has been bothered more days than not by these concerns, unrelated to another Axis I disorder, does not occur during the course of a Mood Disorder or psychotic disorder, is not related to organicity or toxic reaction, and includes at least 6 of 18 symptoms" (p. 252). A complete discussion of the entire diagnostic category for GAD exceeds the needs of this thesis, but can be found in the DSM-III-R.

Definition of Comorbidity

Polcin (1992) suggested that an increasing number of individuals are receiving multiple diagnoses, based on the Diagnostic and Statistical Manual of Mental Disorders [DSM-III-R] (3rd ed., rev., American Psychiatric Association, 1987), that fit the criteria for both mental health and substance abuse disorders. The term comorbidity (i.e., dual diagnosis or dual disorder) is defined by Evans and Sullivan (1990) as the coexistence and interaction of two or more distinct, clinically significant psychological syndromes or behavior patterns. The terms comorbidity, dual diagnosis, and dual disorder are used interchangeably in this thesis.

The Issues of Comorbidity

Understanding the issues related to comorbidity of substance abuse disorders and mental health disorders is important to workers in the mental health field. Slaby (1991) noted that most practitioners lack the training and clinical acumen to serve clients with a dual diagnosis. There are substantial social, political, and economic pressures to simplify the diagnosis and treatment of individuals with dual disorders. Slaby (1991) asserted that oversimplified misdiagnosis of dual disorders leads to inappropriate care and unnecessary, repeat hospitalizations. Individuals who should receive a dual diagnosis are typically labeled as substance abusers, and then treated repeatedly in hospital settings for substance abuse. Per se, these individuals relapse and must be rehospitalized, in part, because of their undiagnosed and untreated mental health disorder. Conversely, other individuals, who should receive a dual diagnosis, are labeled with a mental health disorder, and then treated repeatedly in hospital settings for that mental health disorder. Often, these individuals can not improve and must be rehospitalized because of their undiagnosed and untreated substance abuse disorder (Slaby, 1991).

A Model of Comorbidity

Bell and Khantzian (1991) articulated one school of

thought about dual diagnosis. Dual diagnosis results from individuals with mental health disorders using substances, such as alcohol, as a form of self-medication. Adherents of the self-medication theory believe that individuals use substances in an adaptive manner. Individuals are thought to manage their lives, solve problems, and cope with internal feeling states and external reality by using substances as a means of coping. Certainly, individuals can use substances to calm down, relax, cover up painful feelings, soothe the self, or to wake up, remove a feeling of inner emptiness, or relieve boredom (Khantzian, Mack, & Schatzberg, 1974; Khantzian, 1985).

Dackis and Gold (1991) articulated a second school of thought about dual-diagnosis. Dual-diagnosis results from substance abuse leading to the precipitation of a mental health disorder. The following mental health disorders can result from the effects of substance abuse: depression, anxiety, psychosis, and personality disorders (Dackis & Gold, 1991). In the case of depression, alcohol can induce organic affective syndrome (APA, 1987). Other authors suggest that withdrawal from benzodiazepines can induce severe anxiety (MacKinnon & Parker, 1982; Schopf, 1983).

Dackis and Gold (1991) discussed a third school of thought about dual diagnosis. Dual diagnosis results from the simultaneous existence of an independent substance abuse

disorder and an independent mental health disorder. For example, an individual might have a bipolar disorder and a heroin addiction that are etiologically unrelated.

Therefore, dual diagnosis is a bidirectional interaction between substance abuse and psychopathology (Kranzler & Liebowitz, 1988).

In the model of comorbidity used in this thesis, the first two separate theories of conceptualizing dual diagnosis, discussed previously, are used. First, substance abuse may result entirely from attempts to self-medicate the symptoms of a mental health disorder. Second, a mental health disorder might be the result of substance abuse. The third theory, that etiologically independent mental health and substance abuse disorders might coexist, is not used in this paper because the research methodology in the studies cited did not rely on this theory. The first two concepts of dual diagnosis, discussed in this paragraph, will be used as a theoretical model for analyzing the relationship of GAD and alcoholism.

REVIEW PROCEDURES

Literature Search

The author found the studies reviewed in this paper with a computer search of the CD ROM Psychlit and Medline for the years 1987 through 1992. In addition, the author used the reference lists of recent books, several review articles, and various studies, and also manually searched the most recent journals.

Keywords

The author used the following keywords in the computer search: alcohol, alcohol use, alcohol abuse, alcohol dependence, alcoholism, generalized anxiety, and generalized anxiety disorder. The author located 33 studies that discussed the relationship between generalized anxiety or GAD and alcohol or alcoholism. These studies and several other studies on the comorbidity of substance abuse and mental health disorders were coded for possible inclusion into this thesis.

Criteria for Inclusion/Exclusion and Data Collection Methods

The articles included in this review met several criteria. Authors included epidemiological information about GAD and alcoholism, discussed the relationship between

GAD and alcoholism in theoretical terms, or presented an empirical study of the relationship between GAD and alcoholism in their studies. A coding sheet was developed and used to analyze the studies used in this thesis (see appendix). Researchers who published studies coded for the meta-analysis must have directly discussed the relationship between GAD and alcoholism in the study. Studies coded for the meta-analysis must have included numerical information about the relationship between GAD and alcoholism that could form the basis of calculated percentages for comparative purposes. Articles that did not meet the inclusion criteria were excluded from this paper. Of the original sample of 33 articles, only 12 included information about the relationship between GAD and alcoholism that offered percentages. The other 21 studies in the original sample included information about GAD and alcoholism, but did not directly describe the relationship between GAD and alcoholism.

Methodology

The meta-analytic review was conducted to ascertain the percentage of the reported scores that represented a dual diagnosis of GAD and alcoholism. A large percentage was thought to indicate a viable relationship between GAD and alcoholism for the study. Several of the studies in the

meta-analytic review were methodologically weak and, thus, any conclusions based on these studies are suspect. The author critiques the weaknesses in the literature discussed in this thesis.

Review and Meta-Analysis of the Literature

GAD is a common, mildly incapacitating anxiety disorder (APA, 1987). The authors of a recent National Institute of Mental Health (NIMH)-sponsored study reported GAD 1-year prevalence rates of 4% and lifetime prevalence rates of 8% (Robins, Locke, & Regier, 1990). The central features of this anxiety disorder are unrealistic fears or worries about two or more life situations for a period of 6 months or more. Despite the fact that published studies indicate that GAD appears to have a fairly consistent prevalence, little research has been done on this disorder (Glass & Jackson, 1988). Other authors have published studies reporting prevalence rates of GAD ranging from current rates of 6% in a clinical sample of inpatient alcoholics to lifetime prevalence rates of 9% in a sample of unhospitalized urban alcoholics (Weissman, Myers, & Harding, 1980; Weiss & Rosenberg, 1985).

Recent research has shown that individuals with a diagnosis of GAD are often diagnosed with concurrent

alcoholism. Bowen, Cipywnyk, D'Arcy, and Keegan (1984) reported that 23% of a sample of inpatient alcoholics suffered from GAD. Researchers have reported, in several recent studies, that the prevalence rates of GAD in alcoholics are higher than the prevalence rates reported for nonalcoholics. Prevalence rates of GAD among alcoholics ranged between current rates of 6-25% to lifetime rates of up to 51% (Hasin, Grant, & Endicott, 1988; Hesselbrock, Meyer, & Keener, 1985; Penick, Powell, Liskow, Jackson, & Nickell, 1988; Ross, Glaser, & Germanson, 1988). The researchers reported that patients with GAD are not likely to come to the attention of mental health professionals unless they also experience a substance abuse problem, such as alcoholism. Alcoholic subjects who also experienced other psychiatric disorders, including GAD, were more likely to attempt suicide than alcoholics who did not experience other psychiatric disorders (Roy, Lamparski, DeJong, Moore, & Linnoila, 1990). Obviously, a dual diagnosis of GAD and alcoholism represents a severe problem that is difficult for the individual to cope with in a healthy manner.

In 1989, Cox, Norton, Swinson, and Endler stated that the high rates of comorbidity of panic attacks and substance abuse indicated the possibility that many people initially do not seek treatment for these disorders. By following this logic, it is possible that the high comorbidity rates

of GAD and alcoholism reported in some studies indicated that many people do not seek treatment for these disorders, initially. Many researchers indicated in their studies that individuals with many types of anxiety disorders, including GAD, might seek to cope with their anxiety symptoms by self-medicating, rather than seeking mental health services (Bibb & Chambless, 1986; Bowen et al., 1984; Cappell, 1975; Hesselbrock et al., 1985; Johnson & O' Malley, 1986; Mullaney & Trippet, 1979; Weiss & Rosenberg, 1985). Individuals with a dual diagnosis of GAD and alcoholism might present for treatment following the acquisition of an alcohol habit based on a habit of medicating GAD with alcohol that evolves into alcoholism.

The present meta-analytic review will focus on 12 studies that form the body of evidence indicating that GAD is frequently associated with alcoholism. Two broad areas of research on the relationship of GAD to alcoholism appear to be differentiated primarily in terms of the temporal relationship of the disorders in terms of onset. The first area of research concerns the incidence of alcoholism in subjects with GAD. The second area of research concerns the incidence of GAD in subjects with alcoholism.

Research into the Relationship of GAD and Alcoholism

Because of the pervasive fears and worries that accompany GAD, many afflicted individuals are likely to abuse alcohol as a form of self-medication designed to help them cope with their condition (Bolo, 1991). Three out of four of the subjects with a dual diagnosis of substance abuse (e.g., either alcohol abuse or dependence or drug abuse) and an anxiety disorder reported that their anxiety disorder developed before their substance abuse problem (Christie et al., 1988). Thus, it may be that in some cases GAD precedes the development of alcoholism.

On the other hand, alcohol may lead to the development of anxiety disorders, including GAD. Some researchers assert that panic disorders can be developed through a process in the brain known as "kindling," characterized by biochemical and histological changes in the brain (Abraham, 1986; Linniola, Mefford, Nutt, & Adinoff, 1987). Thus, it may be that in some cases GAD develops because of the habitual use of alcohol. Another way of discussing the implications of comorbidity is in terms of the relative predominance or severity of symptoms of GAD relative to symptoms of alcoholism and the reciprocal of this relationship between the predominance or severity of symptoms of alcoholism relative to symptoms of GAD.

The Meta-Analytic Approach to Reviewing the
Literature on the Dual Diagnosis of
Alcoholism and GAD

The authors of several recent books discussed the advantages of a meta-analytic approach to reviewing scientific literature (Cook et al., 1992; Glass, McGraw, & Smith, 1981; Hedges & Olkin, 1985; Hunter & Schmidt, 1990; & Wachter & Straf, 1990). A meta-analytic review of the studies that examine the relationship of GAD and alcoholism might help answer several important questions about this relationship. The author of this thesis analyzes the published empirical data on the relationship of GAD and alcoholism, in order to estimate the overall prevalence of the comorbidity of alcoholism and GAD. In the next section, the author recommends several research questions to guide the proposed meta-analytic review of this literature.

Research Questions

1. Does the previous research reveal a valid and reliable relationship between GAD and alcoholism, that can be quantified by an overall global estimate of comorbidity?
2. Can the temporal relationship between GAD and alcoholism be estimated, based on the previous research?
3. Does the previous research reveal an increased risk for relapse among individuals with both GAD and alcoholism?

4. What are the methodological strengths and weaknesses of the quality of the research into the relationship between GAD and alcoholism?

5. Does the severity of GAD symptoms seem to correlate with measurable drinking parameters?

6. Does the previous research suggest directions for future research into the relationship between GAD and alcoholism?

FINDINGS

Does the Previous Research Reveal a Valid and
Reliable Relationship Between GAD and
Alcoholism, That Can Be Estimated
Based on the Previous Research?

Overall Global Prevalence
of Alcoholism in Individuals
Initially Diagnosed with
GAD: A Valid and Reliable
Relationship

Because of the pervasive fears and worries that accompany GAD, many afflicted individuals are likely to abuse alcohol as a form of self-medication designed to help them cope with their condition. Three out of four of the individuals with a dual diagnosis of substance abuse (either alcohol abuse or dependence or drug abuse) and an anxiety disorder reported that their anxiety disorder developed before their substance abuse problem (Christie et al., 1988). Table 1 summarizes the percentage of individuals with GAD and alcoholism in four studies and the total percentage of individuals with GAD and alcoholism across these four studies. In these four studies, the individuals were initially diagnosed with GAD, then were diagnosed with alcoholism.

Table 1

Percentages of Subjects with GAD: Subsequently Diagnosed with Alcoholism

Study	n	% with Alcoholism
Noyes et al. (1987)	20	15 (3)
Skekim et al. (1990)	31	32 (10)
Thyner et al. (1987)	26	0 (0)
Thyner et al. (1986)	18	11 (2)
Total <u>N</u>	95	16 (15)
^a Corrected Total <u>N</u>	51	25 (13)

^aDue to methodological weaknesses, the Thyner et al. (1986, 1987) results were removed before making an adjusted estimate of the total prevalence of GAD and alcoholism. Methodological weaknesses in these two studies are discussed elsewhere in this paper.

Table 1 summarizes the total number of subjects diagnosed with GAD, followed by the total number of subjects diagnosed with alcoholism in each study. The total percentage of subjects with a dual diagnosis of GAD and alcoholism was specified. Next, the four studies summarized in Table 1 are briefly reviewed.

Noyes Jr., Clarkson, Crowe, Yates, and McChesney (1987)

interviewed a sample of 20 individuals for a family study. They based their diagnoses of GAD and alcohol abuse on DSM-III-R criteria as determined by the clinical experience of the two psychiatrists conducting the interviews. Three of the 20 individuals (15%) with GAD were subsequently diagnosed with alcohol abuse.

Shekim, Asarnow, Hess, Zaucha, and Wheeler (1990) interviewed a sample of 56 (48 men and 8 women) subjects referred for diagnostic work-up and treatment for adult hyperactivity. They used several scales to assess for adult hyperactivity, but that area of their research is not important for this review so it will not be discussed. According to scores from the Symptom Checklist Ninety - Revised (SCL-90-R), the Schedule for Affective Disorders and Schizophrenia (SADS), the Global Assessment of Functioning Scale from the DSM-III-R, and a clinical interview, 31 adults in the sample with ADHD suffered from GAD. Test scores revealed 10 of the subjects with GAD as also having alcoholism.

Thyner et al. (1986) assessed a total of 156 subjects for anxiety disorders via the DSM-III-R criteria based evaluation and screening procedures of the Anxiety Disorders Program at the University of Michigan hospitals. From this sample, a smaller sample of 18 (12 female and 6 male) met the above criteria for GAD. According to a Michigan

Alcoholism Screening Test (MAST) score of 5, two of the subjects assessed with GAD also met the criteria for alcoholism.

Thyner, McNeece, and Miller (1987) used the scores from the MAST and a questionnaire as the basis of a study of alcoholism in 164 members of a midwestern metropolitan community anxiety disorders self-help group. One hundred thirty-one members of the group indicated through self-report that they had received a diagnostic label from a mental health professional: 63 (50 female) reported being agoraphobic, 26 (21) reported having GAD, and 12 (11) reported having panic disorder. Based on a one-way ANOVA and post-hoc Scheffe comparison, the researchers reported that the GAD subjects were significantly older than the agoraphobics or panic disorder subjects. In this study, none of the GAD subjects were assessed as alcoholic, based on their MAST scores. The magnitude of the relationship between GAD and alcoholism in this study is zero.

Following the removal of data from the two studies done by Thyner et al. (1986, 1987) (for lack of methodological rigor), an overall prevalence figure (25%) for a dual diagnosis of alcoholism and GAD was specified. The resulting percentages of dual diagnosis of alcoholism and GAD reported in this section were based on an initial diagnosis of GAD, followed by a subsequent diagnosis of

alcoholism. It appears that the order of diagnosis was based on the researcher's arbitrary choice, and the order of diagnosis did not affect the overall global prevalence figure reported here.

Overall Global Prevalence of GAD
in Individuals Initially Diagnosed
with Alcoholism: A Valid and
Reliable Relationship

The use of alcohol is thought to lead to the development of anxiety disorders, including GAD. Some researchers assert that panic disorders can be developed through a process in the brain known as "kindling," characterized by biochemical and histological changes in the brain (Abraham, 1986; Linniola et al., 1987). Table 2 summarizes the percentages of individuals with alcoholism and GAD in eight studies and the total percentage of individuals with alcoholism across the eight studies. In the eight studies summarized in Table 2, the individuals were diagnosed with alcoholism initially, and were subsequently diagnosed with GAD. The total percentage of individuals diagnosed with both alcoholism and GAD is specified. Next, the eight studies listed in Table 2 are briefly reviewed.

Table 2

Percentages of Subjects with Alcoholism: Subsequently
Diagnosed with GAD

Study	<u>n</u>	% with GAD
Bowen et al. (1984)	48	22.9 (11)
Blankfield (1986)	50	78 (39)
Brown et al. (1991)	171	4 (7)
Roy, Lamparski et al. (1990)	298	23 (69)
Roy, DeJong, Lamparski, George, et al. (1991)	339	22 (73)
Roy, DeJong, Lamparski, Adinoff, et al. (1991)	249	19 (48)
Ross et al. (1988)	279	51 (141)
Weiss & Rosenberg (1985)	84	8 (7)
Total <u>N</u>	1613	25 (410)
^a Corrected Total <u>N</u>	1035	24 (253)

^aThe Blankfield (1986) and Brown, Irwin, & Schuckit (1991) studies produced outlier data points, which were removed to estimate total prevalence of GAD and alcoholism.

Bowen et al. (1984) studied a sample of 48 (35 males and 13 females, mean age = 39 years [range 22 - 62 years]) inpatient alcoholics. All of the subjects met the RDC criteria for either alcohol abuse or dependence. Based on scores from the SADS-L, RDC, and the Brief Standard Rating for Phobic Patients, the following number and percentage of individuals in the sample were diagnosed with anxiety disorders: 16 (33%) with phobias, 10 (20.8%) with panic disorder, and 11 (22.9%) with GAD.

Blankfield (1986) studied 50 (40 males and 10 females) detoxification patients, assessed as alcoholic based on their MAST scores. She diagnosed 39 of the subjects with anxiety, which she categorized as a secondary psychiatric symptom of withdrawal from alcohol. However, Blankfield did not describe the methodology used for the diagnosis of anxiety, nor did she use the clinical term GAD as a diagnostic label.

Brown et al. (1991) used scores from the State Trait Anxiety Inventory (STAI) to assess anxiety among 171 alcoholic males (age range 22 - 74 years) at the Alcoholism Treatment Program at the San Diego V.A. Medical Center. The subjects completed the Alcohol Research Center Interview and additional questions to determine DSM-III-R anxiety disorder symptoms. Subjects who reported meeting DSM-III-R criteria for a mental disorder prior to the development of alcoholism

were dropped from the study sample. According to the researchers, seven subjects developed GAD subsequent to the development of alcoholism.

Roy et al. (1990) studied 298 (male = 213 female = 85) inpatient alcoholics. Forty-two percent of the sample were married, 25% were widowed, separated, or divorced, and 25% were single. The racial composition of the sample was 88% Caucasian and 12% Black. All subjects met the RDC for alcoholism, based on their SADS-L and MAST scores. Scores from the SADS-L were used to determine the diagnosis of GAD (which met RDC based criteria). Sixty-nine (23%) of the 298 alcoholics studied met the RDC-based criteria for a diagnosis of GAD.

The results of two studies reviewed in this thesis were apparently based on the same data set (Roy, DeJong, Lamparski, Adinoff, et al., 1991; Roy, DeJong, Lamparski, George, & Linniola, 1991). Roy, DeJong, Lamparski, George, et al. (1991) categorized the 339 subjects who meet the RDC criteria for alcoholism as either depressed (111) or never depressed (229) in the first study. According to their SADS-L scores, 73 (22%) of the total sample of 339 depressed and never depressed alcoholics met the RDC criteria for GAD.

Roy, DeJong, Lamparski, Adinoff, et al. (1991) studied the relationship of GAD to alcoholism in 249 male alcoholic subjects out of a total sample of 339 (90 female) alcoholic

subjects. The male alcoholic subjects were categorized with either primary alcoholism ($n = 202$), primary major depression, or antisocial personality disorder, and the percentage of male alcoholics in each category was presented. For the purposes of this review, these categories were collapsed and the total number of male alcoholics with a diagnosis of GAD was generated. Forty-eight (19%) of the sample of 249 male alcoholics were also diagnosed with GAD.

Ross et al. (1988) studied 501 (260 male and 241 female) alcohol- and drug-abusing subjects at the Clinical Institute of Addiction Research in Toronto, Canada. Based on their scores on the National Institute of Mental Health Diagnostic Interview Schedule (NIMH-DIS) and MAST, 279 of the subjects were diagnosed as alcoholics. One hundred forty-one (51%) of these alcoholic subjects were also diagnosed with lifetime GAD according to their NIMH-DIS scores.

Weiss and Rosenberg (1985) studied a sample of 84 subjects admitted to one of three university-affiliated hospitals for alcohol detoxification. No other criteria or test scores, other than the subject's willingness to participate in the study, were used to establish the diagnosis of alcoholism. Scores from the Structured Clinical Interview for DSM-III-R (SCID) were used to

diagnose GAD. Seven (8%) of the subjects were diagnosed with GAD and alcoholism in this study.

Following the removal of outlier data points from the Blankfield (1986) and Brown et al. (1991) studies, an overall global prevalence of rate of 24% was reported. The resulting percentages of dual diagnosis of GAD and alcoholism reported in this section were based on a diagnosis of alcoholism first, followed by a diagnosis of GAD. It appears that the order of diagnosis was an arbitrary choice of the researchers and did not affect the overall global percentage figure.

Total Overall Percentage of
Dual Diagnosis of GAD and
Alcoholism

Figure 1 graphically demonstrates a common metric: the overall percentage rate of dual diagnosis of GAD and alcoholism. The overall percentage rate of the dual diagnosis in Figure 1 was calculated by the following method:

1. Let X equal the total number of individuals assessed with both GAD and alcoholism in the 12 studies reviewed, let Y equal the total number of individuals in the 12 studies reviewed, then let the common metric equal Z (e.g., the relative percentages of individuals with a dual diagnosis of GAD and alcoholism).

A. $Z = X/Y$, or Z equals X divided by Y.

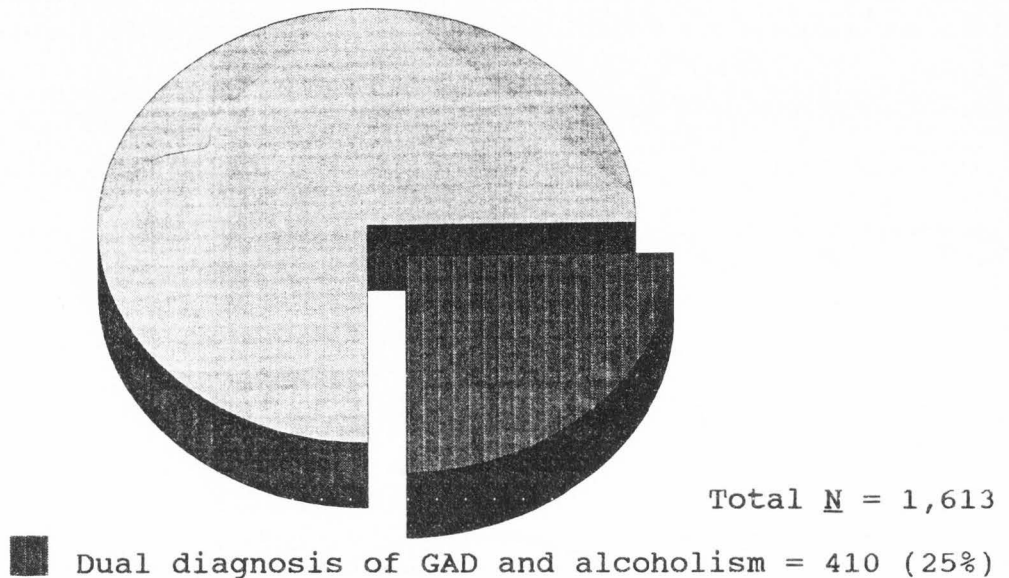


Figure 1. Percentage of the total sample with a dual diagnosis of GAD and alcoholism.

The estimated prevalence of dual diagnosis is 0.25 or 25% of the total clinical population of individuals initially diagnosed with either GAD or alcoholism, who are subsequently diagnosed with an additional diagnosis of GAD or alcoholism. This figure based on dividing the number of individuals with a dual diagnosis of GAD and alcoholism (410) divided by the total number of individuals in the sample (1,613).

After the removal of the Thyner et al. (1986, 1987) studies (due to a lack of experimental rigor) and the removal of the outlier data points from the Blankfield

(1986) and Brown et al. (1991) studies, the total overall percentage of dual diagnosis of GAD and alcoholism in the remaining eight studies is 24.49%. If the resulting percentages from the methodologically weak studies and the outlier data points are not removed, the total overall percentage of dual diagnosis of alcoholism and GAD across the 12 studies is 25%.

Can the Temporal Relationship Between GAD and
Alcoholism Be Estimated, Based on
Previous Research?

Four of the Studies Reviewed
Provided Information about the
Temporal Relationship Between
GAD and Alcoholism

Researchers in four of the studies reviewed in this paper provided information about the temporal relationship between GAD and alcoholism (Bowen et al., 1984; Brown et al., 1991; Roy et al., 1990; Shekim et al., 1990). Next, the information provided in these studies is briefly reviewed.

Shekim et al. (1990) stated that these subjects might have been self-medicating symptoms of GAD resulting from ADHD and subsequently developed alcoholism, or might have been self-medicating symptoms of ADHD with alcohol and subsequently developed GAD. Further studies in this population might reveal the direction of causality for GAD

and alcoholism in this population, as it relates to the primary diagnosis of adult ADHD.

Bowen et al. (1984) wrote that the mean age for the development of a phobia was 16.3 years and the mean age for the development of alcoholism was 25.3 years. Six of the 10 panic disorders developed before alcoholism and 4 of the panic disorders developed after alcoholism. The responses of the subjects indicated that GAD developed before alcoholism, but the sequence of development for individuals is highly variable.

In 1990, Roy et al. reported results that did not indicate causality or provide evidence that GAD influences relapse in alcoholics. However, the authors reported that they suspect GAD is causal for some types of alcohol abuse, as well as relapse in alcoholics.

Brown et al. (1991) stated that, based on individual retrospective reports, GAD was found to develop secondary to the onset of alcoholism in 7 subjects, a total of 4%, out of a sample of 171. Therefore, it appears that empirical evidence exists supporting the hypothesis that GAD can be acquired as a result of drinking excessive amounts of alcohol.

In one study, the authors stated that 4% of the sampled participants reported that GAD developed secondarily to excessive drinking of alcohol (Brown et al., 1984). In

contrast, Bowen et al. (1984) reported that GAD preceded the development of alcoholism. The authors of the other two studies reviewed in this section stated that a temporal relationship between GAD and alcoholism existed, but that it was not clear which disorder preceded the other. In these four studies, there is no clear evidence for a temporal relationship between GAD and alcoholism.

Does the Previous Research Reveal an Increased Risk
for Relapse among Individuals with
both GAD and Alcoholism?

Three of the Studies Reviewed
Provided Information about the
Relationship of a Dual Diagnosis
of GAD and Alcoholism to Relapse

Researchers, in all of the studies cited, mentioned the complexity of the relationship between GAD and alcoholism. However, the researchers in only three of the studies cited herein discussed relapse as a possible consequence of the dual diagnosis of GAD and alcoholism (Brown et al., 1991; Shekim et al., 1990; & Ross et al., 1988).

Ross et al. (1988) reported that the interrater reliability was low for the diagnosis of GAD in their study. These researchers did not directly discuss the relationship of GAD to relapse among alcoholics. However, they stated that there is a possible relationship between psychopathology and alcohol use that might be related to the

use of alcohol as a form of self-medication.

Skekim et al. (1990) noted that 32% of the individuals assessed with GAD in their study were subsequently assessed as alcoholic. They stated that these results do not indicate a causal relationship or provide evidence that GAD influences relapse in alcoholism. Further, the relationship between GAD and alcoholism quantified by this percentage can only be generalized to a population with primary diagnosis of adult hyperactivity and attention deficit disorder.

Brown et al. (1991) reported that 11% of the subjects initially assessed with GAD were subsequently assessed with alcoholism in their study. These results do not indicate a direction of causality or provide evidence that GAD influences relapse in alcoholism. At a 3-month follow-up testing, the state anxiety scores of alcoholics with an additional diagnosis of GAD were comparable to the state anxiety scores of alcoholics without an anxiety disorder. The State-Trait Anxiety Inventory (STAI) scores among all subjects were checked weekly and decreased rapidly during treatment. Following treatment, 43%, or 3 of the 7 alcoholics with an additional diagnosis of GAD, relapsed, as did 42% or 66 of the 157 alcoholics without an additional anxiety disorder diagnosis. The authors concluded that GAD beginning after the onset of alcoholism does not put the alcoholic at additional risk for relapse during the first 3

months following treatment.

In one study, Skekim et al. (1991) reported that a dual diagnosis of alcoholism and GAD could not be correlated with relapse. Brown et al. (1991) concluded that GAD beginning after the onset of alcoholism does not put the individual at risk for relapse for the first 3 months following treatment. However, Ross et al. (1988) stated that psychopathology, such as GAD, might contribute to relapse caused by self-medication of the symptoms with alcohol.

What are the Methodological Strengths and Weaknesses
of the Quality of Research into the Relationship
Between GAD and Alcoholism

Methodological Strengths
of the Previous Research

Eight of the studies cited have methodological strengths in the areas of design, instrumentation, and sample size (Bowen et al., 1984; Brown et al., 1991; Ross et al., 1988; Roy et al., 1991; Roy et al., 1991; Roy et al., 1990; Skekim et al., 1990; Weiss & Rosenberg., 1985). A brief review of these methodological strengths follows.

Bowen et al. (1984) used the following valid and reliable instruments and diagnostic criteria: The National Institute of Mental Health (NIMH) Research Diagnostic Criteria (RDC) for a Selective Group of Functional Disorders, and The Schedule for Affective Disorders and

Schizophrenia (SADS). The authors used a correlational design based on between 5 and 10 previous studies. Finally, they had an adequate sample of 48 hospitalized alcoholics.

Brown et al. (1991) used the following valid and reliable instruments and diagnostic criteria: DSM-III-R criteria, the Alcohol Research Center Interview, and the State-Trait Anxiety Inventory (STAI). The authors used a correlational design based on more than 10 previous studies, and had an adequate sample of 171 hospitalized male alcoholics.

Ross et al. (1988) used the following valid and reliable instruments and diagnostic criteria: DSM-III-R criteria, the NIMH Diagnostic Interview Schedule (DIS), and the Alcohol Dependence Scale. These researchers used a correlational design based on more than 10 previous studies. They had a sample of 501 patients seeking treatment for alcohol and other drug problems.

Roy, DeJong, Lamparski, George, et al. (1991) used the following valid and reliable instruments and diagnostic criteria: NIMH RDC, the SADS-L, a lifetime drinking questionnaire, and a modified Michigan Alcoholism Screening Test (MAST). They used a correlational design based on more than 10 previous studies, and had a sample of 249 alcoholics subsequently assessed for GAD.

Roy, DeJong, Lamparski, Adinoff, et al. (1991) used the

following valid and reliable instruments and diagnostic criteria: NIMH RDC, the SADS-L, and a modified MAST. These authors used a correlational design based on more than 10 previous studies, and had a sample of 339 subjects.

In 1990, Roy et al. used the following valid and reliable instruments and diagnostic criteria: NIMH RDC, the SADS-L, and a modified MAST. Roy et al. (1990) used a correlational design based on between 5 and 10 previous studies. Finally, they had a sample of 298 subjects.

Shekim et al. (1990) reported the results of research into the clinical and demographic characteristics of adults with attention deficit disorder and hyperactivity. This study was not designed to investigate the relationship between GAD and alcoholism, but it has several methodological strengths. First, the instruments, SADS and SCL-90-R, are valid and reliable assessment instruments for GAD and alcoholism. Second, the authors based their use of a correlational design and use of assessment instruments on between 5 and 10 previous citations in the literature. Finally, the researchers had a sample of 54 subjects.

Weiss and Rosenberg (1985) used valid and reliable instruments and diagnostic criteria: DSM-III-R criteria, the Structured Clinical Interview for DSM-III-R (SCID), and admission to a university-affiliated hospital for alcohol detoxification. They used a correlational design based on

less than five previous studies. Finally, they had a sample of 84 subjects.

An in-depth review of the methodological strengths of the studies cited would be extensive and exceeds the needs of this thesis. The most important strengths reviewed included the use of valid and reliable instrumentation and diagnostic criteria, empirically based correlational designs, and large enough samples. Large enough samples support the statistical process of collapsing the studies and dividing the results to generate an overall global percentage figure.

Methodological Weaknesses of the Previous Research

Six of the studies cited have methodological weaknesses in design, instrumentation, or theoretical basis (Blankfield, 1986; Noyes et al., 1987; Ross et al., 1988; Shekim et al., 1990; Thyner et al., 1986; Thyner et al., 1987). A brief review of these methodological weaknesses follows.

One weakness of the 1990 study conducted by Shekim et al. is that the results emerged as an artifact of research dedicated to diagnosis and treatment of adult ADHD. The subjects assessed with GAD and alcoholism were all also assessed with a primary diagnosis as ADHD adults. The results reported by Skekim et al. (1990) cannot be

generalized to individuals with a dual diagnosis of GAD and alcoholism, who are not diagnosed with adult ADHD.

Thyner et al. (1986) designed a study to measure alcohol abuse among anxious subjects. The researchers did not cite adequate previous literature to justify their assessment procedures or their use of assessment instruments. The reported procedure for using DSM-III-R based criteria for assessment and evaluation in the Anxiety Disorder Program at the University of Michigan hospitals is not described. Although the MAST is often used in clinical settings for assessing alcoholism, better alcoholism assessment instruments exist for research purposes. A larger sample of GAD subjects would be desirable in further research. Finally, the information in the final table of the published study (GAD $n = 20$) is not consistent with the information in the methods section (GAD $n = 18$). This discrepancy makes it impossible to estimate the magnitude of the relationship between GAD and alcoholism.

Thyner et al. (1986) designed this study to measure the relationship between anxiety and alcoholism, but it has several methodological weaknesses. First, the independent variable, having an anxiety disorder, is assessed through the subject's self-report of a mental health professional's diagnostic label. Second, the MAST is often used in clinical settings, but better alcoholism assessment

instruments exist for research purposes. The basic design of this study is simple and should be effective with better instrumentation and assessment procedures. The study should be replicated with better methodological control and the addition of control or comparison groups.

Blankfield (1986) described the psychiatric conditions that characterize the withdrawal syndrome for alcohol dependence. The methodology was extremely weak, with no use of valid diagnostic instruments or procedures for the diagnosis of anxiety reported. Seventy-eight percent of the subjects initially diagnosed alcoholic were subsequently diagnosed with a dual diagnosis of GAD. However, because of the lack of a strong research methodology in this study, the magnitude of the relationship between GAD and alcoholism reported is suspect.

Ross et al. (1988) stated that low interrater reliability deterred confidence in this lifetime prevalence of GAD result. The strength of the research methodology and use of the valid and reliable instruments is confounded by the researchers' low index of interrater reliability. The magnitude of relationship between GAD and alcoholism reported in this study must be interpreted with caution.

Noyes et al. (1987) reported that they are not entirely confident in the reliability of the diagnostic criteria for GAD. The diagnoses were not made blindly, so a possibility

of examiner bias exists. The subjects with GAD were volunteers, which might have introduced bias and influenced the results.

An in-depth review of the methodological weaknesses of the studies cited would be extensive and exceeds the needs of this thesis. The methodological weaknesses reviewed include design flaws, lack of proper instrumentation or diagnostic criteria, and a weak theoretical basis for the study. Minor modifications would improve the Thyner et al. (1986, 1987) studies and might make the replication of these studies important.

Does the Severity of GAD Symptoms Seem to Correlate with Measurable Drinking Parameters?

The Relationship Between GAD and the Severity of Drinking

Authors of two of the studies reviewed mentioned the effect of GAD on the severity of drinking (Brown et al., 1991; Ross et al., 1988; Thyner et al., 1986). The severity was discussed in terms of drinking frequency, magnitude of test scores representative of drinking, and the researchers' opinion about the severity of drinking.

Brown et al. (1991) reported that from a group of 14 alcoholic men, 7 with an additional diagnosis of GAD and 7 with an additional diagnosis of panic attacks, a total of 4 relapsed. Three of the four men were diagnosed with GAD and

alcoholism and one was diagnosed with panic attacks and alcoholism. No further differentiation in diagnosis between the relapsed men was made. Three of the four drank in limited fashion (4 or fewer days out of a 30-day period) following their relapse. One of the four men drank heavily (30 days out of a 30-day period) following his relapse.

Ross et al. (1988) reported that individuals with psychiatric disorders, including GAD (diagnosed according to the NIMH DIS criteria), had higher drug abuse and alcoholism diagnosis instrument scores. For individuals without a diagnosis, mean scores for the MAST, Drug Abuse Screening Scale (DAST), and Alcohol Dependence Scale (ADS) were 17.4, 12.8, and 4.5, respectively. For individuals with a NIMH DIS criteria-based psychiatric diagnosis, the mean scores for the MAST, DAST, and ADS were 26.1, 19.9, and 7.6, respectively. Thus, it appears that higher scores on drinking diagnosis instruments correlate with psychiatric diagnosis, including GAD.

The Relationship Between the Severity of Drinking and Symptoms of GAD

Researchers in two of the studies reviewed reported that alcohol use affected the severity of GAD symptoms (Blankfield, 1986; Brown et al., 1991). There is little evidence that the severity of alcohol use correlates with the severity of GAD symptoms in the studies cited.

Brown et al. (1991) reported that the mean state anxiety scores of 171 alcoholic men dropped steadily over the 4 weeks these men were in treatment for alcoholism (e.g., week 1 = 39.02, week 2 = 35.87, week 3 = 33.58, and week 4 = 32.72). These alcoholic men were tested for trait anxiety at intake (mean = 45.38). The mean trait anxiety score of the men who remained abstinent at a 3-month follow-up was 33.52. Based on their test scores, it appears that the alcoholics in this study experienced a reduction in their symptoms of both trait and state anxiety during abstinence from alcohol.

Blankfield (1986) reported that the symptoms of alcohol withdrawal are similar to the symptoms of GAD. Often abrupt cessation of drinking causes withdrawal symptoms that might be misdiagnosed as GAD.

A reduction in the mean trait and state anxiety scores reported in one study appears to indicate that alcoholics experience a reduction in symptoms of anxiety during abstinence from alcohol (Brown et al., 1991). Withdrawal from alcohol often causes withdrawal symptoms similar to symptoms of GAD.

Does the Previous Research Suggest Directions for Further
Research into the Relationship Between
GAD and Alcoholism?

In nine of the studies reviewed, the researchers suggested six general topic areas for additional research (Bowen et al., 1984; Brown et al., 1991; Noyes et al., 1987; Ross et al., 1988; Roy et al., 1990; Roy et al., 1991; Shekim et al., 1990; Thyner et al., 1986; Weiss & Rosenberg, 1985). The six general topic areas are sequence of development, quick and effective diagnosis, the role of GAD in relapse, efficacy of differential treatment, prevalence of other forms of comorbid disorders, and differential diagnosis.

Bowen et al. (1984) and Weiss and Rosenberg (1985) recommended that further research be conducted into the etiology and the sequence of development of GAD and alcoholism. Ross et al. (1988) suggested development of quick, but effective method of diagnosis for comorbidity of GAD and alcoholism. Brown et al. (1991) argued for an investigation into the role of GAD in alcoholic relapse. Thyner et al. (1987) urged that the efficacy of differential treatment models for those dually diagnosed with GAD and alcoholism be tested. Noyes et al. (1987) and Roy et al. (1991) wrote that the prevalence and comorbidity of other psychiatric disorders with the dual diagnosis of alcoholism

and GAD should be a topic of research. Shekim et al. (1990) decided that differentiating the symptoms of GAD from the symptoms of adult hyperactivity and attention deficit disorder would be an important research project. Roy et al. (1990) reported that alcoholics with a diagnosis of GAD were at greater risk of suicide than alcoholics without a diagnosis of GAD. These researchers suggested that the effects of treating GAD among alcoholics at risk for suicide be evaluated. The authors of nine of the studies reviewed suggested six general topic areas for research, with seven different studies in these areas recommended. Based on careful review, the author will propose a modified replication of the design used in 2 of the 12 studies discussed in this thesis.

CONCLUSIONS

The magnitude of the relationship of GAD to alcoholism ranges from 0% to 78% in the 12 studies reviewed in this thesis. Percentages are noted in the better designed studies, indicating that a relationship between GAD and alcoholism does exist. Based on the reported dual diagnosis percentages of GAD and alcoholism in the 12 studies cited, the overall prevalence of the dual diagnosis of GAD and alcoholism is estimated to be 25%. However, the direction of causality between GAD and alcoholism cannot be estimated from the studies reviewed in this thesis. It can be noted, however, that in at least one study, the onset of alcoholism predated the onset of GAD in 4% of the individuals interviewed (Brown et al., 1991). Brown et al. (1991) also presented evidence that alcoholics with a dual diagnosis of GAD did not relapse at a higher rate than alcoholics without a dual diagnosis, during the first 3 months of abstinence. Also, there was no evidence that GAD influenced relapse among alcoholics in the other studies reviewed.

There were several methodological weaknesses in the studies reviewed. Different researchers used widely varied criteria to establish the diagnoses of alcoholism and GAD. In several of the studies, the criteria underlying the diagnosis for either alcoholism or GAD were weak. None of

the researchers used control or comparison groups.

On the other hand, there are several methodological strengths in the research reviewed in this thesis. Several of the authors used the scores of well developed research instruments. Thyner et al. (1987) used a strong research design, but did not use scores from reliable and valid assessment instruments as the basis of their reported results.

Replication of the research design used by Thyner et al. (1986, 1987) as the basis of further study might lead to the uncovering of fascinating results. However, the design would require modification and the addition of valid and reliable instruments as the basis of scores for the diagnosis of GAD and alcoholism. The use of control groups, random sampling, and better diagnostic instrumentation within the research design developed by Thyner et al. (1986, 1987) should provide valid and reliable estimates of the prevalence of the dual diagnosis of GAD and alcoholism.

REFERENCES

- Abraham, H.D. (1986). Do psychostimulants kindle panic disorder? (letter). American Journal of Psychiatry, 143, 1627.
- American Psychiatric Association. (1987). Diagnostic and statistical manual of mental Disorders, (3rd ed. revised). Washington, DC: Author.
- Bell, C.M., & Khantzian, E.J. (1991) Drug use and addiction as self-medication: a psychodynamic perspective. In M.S. Gold & A.E. Slaby (Eds.), Dual diagnosis in substance abuse (pp. 185-204). New York: Marcel Dekker, Inc.
- Bibb, J.L., & Chambless, D.L. (1986). Alcohol use and abuse among diagnosed agoraphobics. Behavior Research Therapy 24, 49-58.
- Blankfield, A. (1986). Psychiatric symptoms in alcohol dependence: diagnostic and treatment implications. Journal of Substance Abuse, 3, 275-278.
- Bolo, P.M. (1991). Substance abuse and anxiety disorders. In M.S. Gold & A.E. Slaby (Eds.), Dual diagnosis in substance abuse (pp. 45-57). New York: Marcel Dekker, Inc.
- Bootzin, R.R., & Acocella, J.R. (1988). Abnormal psychology: Current perspectives (5th ed.). New York: Random House.
- Bowen, R.C., Cipywnyk, D., D'Arcy, C., & Keegan, D. (1984). Alcoholism, anxiety disorders, and agoraphobia. Alcoholism: Clinical and Experimental Research, 8, 48-50.
- Brown, S.A., Irwin, M., & Schuchit, M.A. (1991). Changes in anxiety among abstinent male alcoholics. Journal of Studies on Alcohol, 52(1), 55-61.
- Cappell, H. (1975). An evaluation of tension models of alcohol and consumption. In E. Gottheil, K.A. Druley, S. Pashko, & P. Weinstein (Eds.), Stress and addiction (pp. 237-247). New York: Brunner & Mazel, Inc.

- Christie, K.A., Burke, Jr., J.D., Regier, D.A., Rae, D.S., Boyd, J.H., & Locke, B.Z. (1988). Epidemiologic evidence for early onset of mental disorders and higher risk of drug abuse in young adults. American Journal of Psychiatry, 145(8), 971-975.
- Coleman, J.S., Butcher, J.N., & Carson, R.C. (1980). Abnormal psychology and modern life (6th. ed.). Glenville, IL: Scott, Foresman and Company.
- Cook, T.D., Cooper, H., Cordray, D.S., Hartmann, H., Hedges, L.V., Light, R.J., Louis, T.A., & Mosteller, F. (1992). Meta-Analysis for Explanation: A Casebook, New York, NY: Russell Sage Foundation.
- Cox, B.J., Norton, G.R., Swinson, R.P., & Endler, N.S. (1990). Substance abuse and panic-related anxiety: A critical review. Behavior Research and Therapy, 28, 385-393.
- Dackis, C.A., & Gold, M.S. (1991). Psychopathology resulting from substance abuse. In M.S. Gold & A.E. Slaby (Eds.), Dual diagnosis in substance abuse (pp. 205-225). New York: Marcel Dekker, Inc.
- Evans, K., & Sullivan, J.M. (1990). Dual diagnosis: Counseling the mentally ill substance abuser. New York: The Guilford Press.
- Glass, I. B., & Jackson, P. (1988). Maudsley Hospital Survey: prevalence of alcohol problems and other psychiatric disorders in a hospital population. British Journal of Addiction, 83, 1105-1111.
- Glass, G.V., McGraw, B., & Smith, M.L. (1981). Meta-analysis in social research. Beverly Hills, CA: Sage Publications.
- Hasin, D., Grant, B., & Endicott, J. (1988). Treated and untreated suicide attempts in substance abuse patients. Journal of Nervous and Mental Diseases, 176, 289-294.
- Hedges, L.V., & Olkin, I. (1985). Statistical methods for meta-analysis, Orlando, FL: Academic Press, Inc.
- Hesselbrock, M.N., Meyer, R.E., & Keener, J.J. (1985). Psychopathology in hospitalized alcoholics. Archives of General Psychiatry, 42, 1050-1055.

- Hunter, J.E., & Schmidt, F.L. (1990). Methods of meta-analysis: Correcting error and bias in research findings. Newbury Park, CA: Sage Publications.
- Johnson, L.D., & O'Malley, P.M. (1986). Why do the nation's students use drugs and alcohol? self-reported reasons from nine national surveys. Journal of Drug Issues, 16(1), 29-66.
- Khantzian, E.J. (1985). The self-medication hypothesis of addictive behaviors: Focus on heroin and cocaine dependence. American Journal of Psychiatry, 142, 1259-1264.
- Khantzian, E.J., Mack, J.E., & Schatzberg, A.A. (1974). Heroin use as an attempt to cope: Clinical observations. American Journal of Psychiatry, 131, 160-164.
- Kiesler, C.A., & Simpkins, C. (1991). The de facto national system of psychiatric inpatient care: Piecing together the national puzzle. American Psychologist, 46, 579-584.
- Kranzler, H.R., & Liebowitz, N.R. (1988). Anxiety and depression in substance abuse: clinical impressions. Medical Clinics of North America, 72(4), 867-885.
- Linnoila, M, Mefford, I., Nutt, D., & Adinoff, B. (1987). Alcohol withdrawal and noradrenergic function. Annals of Internal Medicine, 107, 875-889.
- MacKinnon, G.L., & Parker, W.A. (1982). Benzodiazapine withdrawal syndrome: A literature review and evaluation. American Journal of Drug and Alcohol Abuse, 9, 19-33.
- Monahan, J. (1992). Mental disorder and violent behavior: Perceptions and evidence. American Psychologist, 4, 511-521.
- Mullaney, J.A., & Trippett, C.J. (1979). Alcohol dependence and phobias: Clinical description and relevance. British Journal of Psychiatry, 135, 565-573.
- Nace E.P. & Isbell J.L. (1991). Alcohol. New York: Guilford Press.
- National Council on Alcoholism (1986). Facts on alcoholism. New York: Author.

- Noyes, R., Jr., Clarkson, C., Crowe, R.R., Yates, W.R., & McChesny, C.M. (1987). A family study of generalized anxiety disorder. American Journal of Psychiatry, 144(8), 1019-1024.
- Penick, E.C., Powell, B.J., Liskow, B.S., Jackson, J.D., & Nickell, E.J. (1988). The stability of co-existing psychiatric syndromes in alcoholic men at one year. Journal of Studies on Alcohol, 49, 395-405.
- Polcin, D.L. (1992). Issues in the treatment of dual diagnosis clients who have chronic mental illness. Professional Psychology: Research and Practice, 23, 30-37.
- Robins, L.N., Locke, B.Z., & Regier, D.A. (1990). Overview: Psychiatric disorders in America. In L.N. Robins & D.A. Regier (Eds.), Psychiatric disorders in America (pp. 213-245). New York: Free Press.
- Ross, H.E., Glaser, F.B., & Germanson, T. (1988). The prevalence of psychiatric disorders in patients with alcohol and other drug problems. Archives of General Psychiatry, 45, 1023-1031.
- Roy, A., DeJong, J., Lamparski, D., Adinoff, B., George, T., Moore, V., Garnett, D., Kerich, M., & Linnoila, M. (1991). Mental disorders among alcoholics, relationship to age of onset and cerebro spinal fluid neuropeptides. Archives of General Psychiatry, 48, 423-427.
- Roy, A., DeJong, J., Lamparski, D., George, T., & Linnoila, M. (1991). Depression among alcoholics: Relationship to clinical and cerebrospinal fluid variables. Archives of General Psychiatry, 48, 228-234.
- Roy, A., Lamparski, D., DeJong, J., Moore, V., & Linnoila, M. (1990). Characteristics of alcoholics who attempt suicide. American Journal of Psychiatry, 147(6), 761-765.
- Schopf, J. (1983). Withdrawal phenomena after long-term administration of benzodiazapines: A review of recent investigations. Journal of Pharamacopsychiatria, 16, 1-8.
- Shekim, W.O., Asarnow, R.F., Hess, E., Zaucha, K., & Wheeler, N. (1990). A clinical and demographic profile of a sample of adults with attention deficit hyperactivity disorder, residual state. Comprehensive Psychiatry, 31 (5), 416-425.

- Slaby, A.E. (1991). Dual diagnosis: Fact or fiction. In M.S. Gold & A.E. Slaby (Eds.), Dual diagnosis in substance abuse (pp. 3-29). New York: Marcel Dekker, Inc.
- Thyner, B.A., McNeece, C.A., & Miller, M.A. (1987). Alcohol abuse among agoraphobics: A community based replication. Alcoholism Treatment Quarterly, 4(1), 61-67.
- Thyner, B.A., Parrish, R.T., Himle, J., Cameron, O.G., Curtis, G.C., & Nesse, R.M. (1986). Alcohol abuse among clinically anxious patients. Behavior Research and Therapy, 24(3), 357-359.
- Wachter, K.W., & Straf, M.L. (1990). The future of meta-analysis. New York: Russell Sage Foundation.
- Weiss, K.J., & Rosenberg, D.J. (1985). Prevalence of anxiety disorder among alcoholics. Journal of Clinical Psychology, 46, 3-5.
- Weissman, M.M., Myers, J.K., & Harding, P.S. (1980). Prevalence and psychiatric heterogeneity of alcoholism in a United States urban community. Journal of Studies on Alcohol, 41, 672-681.

APPENDIX

META-ANALYSIS OF THE ALCOHOLISM / GENERALIZED
ANXIETY COMORBIDITY LITERATURE
CODING SHEET

SECTION ONE: JOURNAL
ARTICLE DEMOGRAPHICS

DATE: _____

ARTICLE
NUMBER: _____

REVIEWER: _____

JOURNAL ARTICLE AUTHORS/RESEARCHERS: _____

JOURNAL ARTICLE TITLE: _____

YEAR: _____ VOLUME: _____ PAGES: _____

SECTION TWO: METHODOLOGY

A.) GENERALIZED ANXIETY OR GENERALIZED ANXIETY DISORDER
DEFINED ACCORDING TO THE FOLLOWING CRITERIA:

- 1.) DSM-III-R CRITERIA
- 2.) RESEARCH DIAGNOSTIC CRITERIA (RDC) FOR A SELECTIVE
GROUP OF FUNCTIONAL DISORDERS
- 3.) NATIONAL INSTITUTE OF MENTAL HEALTH EPIDEMIOLOGICAL
CATCHMENT AREA (ECA) CRITERIA
- 4.) OTHER CRITERIA, SPECIFY: _____

B.) ALCOHOLISM DEFINED ACCORDING TO THE FOLLOWING CRITERIA:

- 1.) DSM-III-R CRITERIA
- 2.) RESEARCH DIAGNOSTIC CRITERIA (RDC) FOR A SELECTIVE
GROUP OF FUNCTIONAL DISORDERS
- 3.) NATIONAL INSTITUTE OF MENTAL HEALTH EPIDEMIOLOGICAL
CATCHMENT AREA (ECA) CRITERIA
- 4.) OTHER CRITERIA, SPECIFY: _____

- C.) THE RELATIONSHIP BETWEEN GENERALIZED ANXIETY OR GENERALIZED ANXIETY DISORDER AND ALCOHOLISM IS DISCUSSED IN THE STUDY:
- 1.) YES
 - 2.) NO
- D.) THE BASIS FOR THE ASSESSMENT METHODOLOGY AND/OR ASSESSMENT INSTRUMENTS USED IN THE JOURNAL ARTICLE, STUDY, OR REVIEW:
- 1.) NO CITATIONS OF ASSESSMENT METHODOLOGY AND/OR ASSESSMENT INSTRUMENTS USED IN PREVIOUS RESEARCH
 - 2.) LESS THEN 5 CITATIONS OF ASSESSMENT METHODOLOGY AND/OR ASSESSMENT INSTRUMENTS USED IN PREVIOUS RESEARCH
 - 3.) BETWEEN 5 AND 10 CITATIONS OF ASSESSMENT METHODOLOGY AND/OR ASSESSMENT INSTRUMENTS USED IN PREVIOUS RESEARCH
 - 4.) MORE THEN 10 CITATIONS OF ASSESSMENT METHODOLOGY AND/OR INSTRUMENTS USED IN PREVIOUS RESEARCH
 - 5.) OTHER, SPECIFY: _____
-
- E.) TREATMENT, EXPERIMENTAL OR ASSESSMENT SETTINGS:
- 1.) PRIVATE TREATMENT CENTER
 - 2.) VETERAN'S ADMINISTRATION (V.A.) TREATMENT CENTER
 - 3.) PRIVATE MENTAL HEALTH CENTER
 - 4.) COMMUNITY MENTAL HEALTH CENTER
 - 5.) UNIVERSITY FACILITY:
 - 5.1) MENTAL HEALTH
 - 5.2) ADDICTIVE BEHAVIOR TREATMENT
 - 5.3) DEDICATED RESEARCH FACILITY
 - 5.4) OTHER, SPECIFY: _____
-
- G.) TREATMENT, EXPERIMENTAL OR ASSESSMENT SUBJECT (S):
- a.) ETHNICITY
 - 1.) CAUCASIAN _____%
 - 2.) BLACK _____%
 - 3.) ASIAN _____%
 - 4.) HISPANIC _____%
 - 5.) AMERICAN INDIAN _____%
 - 6.) OTHER _____%
 - b.) MARITAL STATUS
 - 1.) MARRIED _____%
 - 2.) SINGLE _____%
 - 3.) WIDOW (ED) _____%
 - 4.) DIVORCED _____%
 - c.) GENDER
 - 1.) MALE _____%
 - 2.) FEMALE _____%

d.) AGE

- | | | |
|--------------------|-------|---|
| 1.) UNDER 18 YEARS | _____ | % |
| 2.) 19 - 30 YEARS | _____ | % |
| 3.) 31 - 40 YEARS | _____ | % |
| 4.) 41 - 50 YEARS | _____ | % |
| 5.) 51 - 60 YEARS | _____ | % |
| 6.) 61 - 70 YEARS | _____ | % |
| 7.) OVER 70 YEARS | _____ | % |

H.) CONTROL GROUP SUBJECT (S):

- 1.) NO
- 2.) YES

a.) ASSIGNMENT METHOD:

- 1.) RANDOM
- 2.) MATCHED ON PREDETERMINED VARIABLES
- 3.) OTHER, SPECIFY: _____

b.) ETHNICITY

- | | | |
|---------------------|-------|---|
| 1.) CAUCASIAN | _____ | % |
| 2.) BLACK | _____ | % |
| 3.) ASIAN | _____ | % |
| 4.) HISPANIC | _____ | % |
| 5.) AMERICAN INDIAN | _____ | % |
| 6.) OTHER | _____ | % |

c.) MARITAL STATUS

- | | | |
|----------------|-------|---|
| 1.) MARRIED | _____ | % |
| 2.) SINGLE | _____ | % |
| 3.) WIDOW (ED) | _____ | % |
| 4.) DIVORCED | _____ | % |

d.) GENDER

- | | | |
|------------|-------|---|
| 1.) MALE | _____ | % |
| 1.) FEMALE | _____ | % |

e.) AGE

- | | | |
|--------------------|-------|---|
| 1.) UNDER 18 YEARS | _____ | % |
| 2.) 19 - 30 YEARS | _____ | % |
| 3.) 31 - 40 YEARS | _____ | % |
| 4.) 41 - 50 YEARS | _____ | % |
| 5.) 51 - 60 YEARS | _____ | % |
| 6.) 61 - 70 YEARS | _____ | % |
| 7.) OVER 70 YEARS | _____ | % |

I.) COMPARISON GROUP SUBJECT (S):

- 1.) NO
- 2.) YES

a.) ASSIGNMENT METHOD

- 1.) RANDOM
 - 2.) MATCHED ON PREDETERMINED VARIABLES
 - 3.) OTHER, SPECIFY: _____
-

- b.) ETHNICITY
- | | | |
|---------------------|-------|---|
| 1.) CAUCASIAN | _____ | % |
| 2.) BLACK | _____ | % |
| 3.) ASIAN | _____ | % |
| 4.) HISPANIC | _____ | % |
| 5.) AMERICAN INDIAN | _____ | % |
| 6.) OTHER | _____ | % |
- c.) MARITAL STATUS
- | | | |
|----------------|-------|---|
| 1.) MARRIED | _____ | % |
| 2.) SINGLE | _____ | % |
| 3.) WIDOW (ED) | _____ | % |
| 4.) DIVORCED | _____ | % |
- d.) GENDER
- | | | |
|------------|-------|---|
| 1.) MALE | _____ | % |
| 2.) FEMALE | _____ | % |
- e.) AGE
- | | | |
|--------------------|-------|---|
| 1.) UNDER 18 YEARS | _____ | % |
| 2.) 19 - 30 YEARS | _____ | % |
| 3.) 31 - 40 YEARS | _____ | % |
| 4.) 41 - 50 YEARS | _____ | % |
| 5.) 51 - 60 YEARS | _____ | % |
| 6.) 61 - 70 YEARS | _____ | % |
| 7.) OVER 70 YEARS | _____ | % |

K.) INDEPENDENT VARIABLE:

a.) ASSESSED AS ALCOHOLIC:

- 1.) DSM-III-R CRITERIA
- 2.) SELF-REPORT TEST RESULTS
- 3.) RESEARCH DIAGNOSTIC CRITERIA (RDC) FOR A SELECTIVE GROUP OF FUNCTIONAL DISORDERS
- 4.) NATIONAL INSTITUTE OF MENTAL HEALTH EPIDEMIOLOGICAL CATCHMENT AREA (ECA) CRITERIA
- 5.) OTHER, SPECIFY: _____

b.) ASSESSED AS EITHER EXPERIENCING GENERALIZED ANXIETY OR WITH A GENERALIZED ANXIETY DISORDER:

- 1.) DSM-III-R CRITERIA
- 2.) SELF-REPORT TEST RESULTS
- 3.) RESEARCH DIAGNOSTIC CRITERIA (RDC) FOR A SELECTIVE GROUP OF FUNCTIONAL DISORDERS
- 4.) NATIONAL INSTITUTE OF MENTAL HEALTH EPIDEMIOLOGICAL CATCHMENT AREA (ECA) CRITERIA
- 5.) OTHER, SPECIFY: _____

L.) DEPENDENT VARIABLE OR MEASURE:

- 1.) INTERVIEW RESULTS
 - 1.1) STRUCTURED INTERVIEWS
 - 1.2) CLINICAL INTERVIEWS; METHODOLOGY NOT SPECIFIED
- 2.) SELF-REPORT TEST SCORES

M.) DEPENDENT INSTRUMENTATION:

- 1.) STRUCTURED INTERVIEWS:
 - 1.1.) NATIONAL INSTITUTE OF MENTAL HEALTH DIAGNOSTIC INTERVIEW SCHEDULE (DIS)
 - 1.2.) RESEARCH DIAGNOSTIC CRITERIA (RDC) FOR A SELECTIVE GROUP OF FUNCTIONAL DISORDERS
 - 1.3.) SCHEDULE FOR AFFECTIVE DISORDERS AND SCHIZOPHRENIA (SADS)
 - 1.4.) ALCOHOL RESEARCH CENTER (ARC) INTAKE INTERVIEW
 - 1.5.) STRUCTURED CLINICAL INTERVIEW FOR DSM-III-R
 - 1.6.) PRESENT STATE EXAMINATION (PSE)
 - 1.7.) CLINICAL INTERVIEW: METHODOLOGY NOT SPECIFIED
 - 1.8.) OTHER, SPECIFY: _____

2.) SELF-REPORT QUESTIONNAIRES:

- 2.1.) SYMPTOM CHECKLIST NINETY-REVISED (SCL-90-R)
- 2.2.) PROFILE OF MOOD STATES
- 2.3.) EYSENCK PERSONALITY INVENTORY
- 2.4.) FEAR SURVEY SCHEDULE
- 2.5.) AGORAPHOBIA SYMPTOM RATING SCALE
- 2.6.) BRIEF STANDARD SELF-RATING FOR PHOBIC PATIENTS
- 2.7.) BECK DEPRESSION INVENTORY (BDI)
- 2.8.) FEAR OF NEGATIVE EVALUATION QUESTIONNAIRE
- 2.9.) STATE-TRAIT ANXIETY INVENTORY
- 2.10.) SOCIAL PHOBIA SUBSCALE OF FEAR INVENTORY
- 2.11.) GAMBELL AND RICHY ASSERTION INVENTORY
- 2.12.) AGORAPHOBIA COGNITIONS QUESTIONNAIRE
- 2.13.) BODY SENSATIONS QUESTIONNAIRE
- 2.14.) MOBILITY INVENTORY FOR AGORAPHOBIA
- 2.15.) PANIC FREQUENCY
- 2.16.) SEVERITY OF ALCOHOL DEPENDENCE QUESTIONNAIRE
- 2.17.) CLINICAL RATING SCALES
- 2.18.) ROSENBERG SELF-ESTEEM SCALE
- 2.19.) ATTRIBUTIONAL STYLE QUESTIONNAIRE
- 2.20.) HAMILTON RATING SCALE FOR ANXIETY
- 2.21.) HAMILTON RATING SCALE FOR DEPRESSION
- 2.22.) MINNESOTA MULTIPHASIC PERSONALITY INVENTORY
- 2.23.) BASIC PERSONALITY INVENTORY
- 2.24.) THE ADDICTION SEVERITY SCALE

2.25.) MICHIGAN ALCOHOLISM SCREENING TEST

2.26.) OTHER, SPECIFY: _____

3.) PHYSIOLOGICAL MEASURES, SPECIFY: _____

N.) RELIABILITY AND VALIDITY OF DEPENDENT MEASURES:

a.) TEST - RETEST RELIABILITY COEFFICIENTS:

1.) NO

2.) YES, SPECIFY: _____

b.) INTERNAL CONSISTENCY RELIABILITY COEFFICIENTS:

1.) NO

2.) YES, SPECIFY: _____

c.) VALIDITY COEFFICIENTS:

1.) NO

2.) YES, SPECIFY: _____

O.) DESIGN OF THE STUDY:

1.) CORRELATIONAL

2.) EXPERIMENTAL DESIGN, SPECIFY: _____

3.) QUASI-EXPERIMENTAL DESIGN, SPECIFY: _____

SECTION THREE: RESULTS

A.) MAGNITUDE OF THE RELATIONSHIP BETWEEN GAD AND ALCOHOLISM

1.) RELATIVE PERCENTAGE:

a.) ALCOHOLICS OR ALCOHOL DEPENDENT WITH GAD: _____

b.) INDIVIDUALS WITH GAD, ALSO ASSESSED AS
ALCOHOLIC OR ALCOHOL DEPENDENT: _____