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A Meta-Analysis of the Alcohol Treatment Outcome Literature: 1993 to 2000

Anthony Phillip Tranchita
Utah State University

A META-ANALYSIS OF THE ALCOHOL TREATMENT OUTCOME LITERATURE: 1993 TO 2000

by

Anthony Phillip Tranchita

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ABSTRACT

A Meta-analysis of the Alcohol Treatment

Outcome Literature: 1993 to 2000

by

Anthony Phillip Tranchita, Master of Science

Utah State University, 2002

Major Professor: Dr. David Stein
Department: Psychology

Alcohol misuse is a very common problem with high financial and personal costs. Treatment requires allocation of limited resources for optimal impact. Responsible decision making in this area should be based upon reasoned weighing of research evidence. Miller and colleagues completed a meta-analytic review of all controlled studies published before 1992 to help clinicians do just that. The coding system they employed examined methodological quality, as well as outcome, to obtain a rank-ordering of treatments that seem to have the most quality research support. The current study attempts to extend this work utilizing the same coding on studies published since 1992, and combine both databases of articles. Revised rank orderings of treatments and conclusions regarding variables related to outcomes are reported. Implications are discussed, along with limitations of this review. An upward trend in methodological quality over time was also discovered.

(144 pages)

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Anthony Phillip Tranchita

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INTRODUCTION

Alcohol abuse and dependence adversely affect the work habits, social relations. and psychological and physical health of those who face these afflictions. Helping people achieve effective treatment is an important goal for psychologists and all involved in treatment services. Weisner, Greenfield, and Room (1995) found that the number of people with alcohol disorders utilizing treatment services every day rose to 563,000 in the 1980s. As such, it is tremendously important that these people receive the best treatment possible. Given limited resources available for treatment, it would seem that applying treatments shown by research to be the most cost-effective would be the best way of accomplishing this goal.

The field of alcohol misuse treatment, along with the rest of psychological treatment, has been moving toward accountability for outcomes. The research literature on the effectiveness of specific treatments has not only grown in the number of studies, but has also improved in sophistication and scientific rigor. Methodological advances such as standardized diagnostic criteria, thorough description of study samples, training of treatment providers, standardization of treatments often by the use of manuals, quality control checks, and longitudinal assessments have pushed the field of alcoholism treatment research further along and allowed for investigation of more complex issues (Carroll, 1997).

However, while certain treatments have been shown to be effective in the literature, there exists a gap between empirically tested treatments and common practice in the United States (Miller et al., 1995). It is imperative that the process of applying

scientific rigor to treatment choices and practice be continued and, in the case of some newer treatments, begun. One way of addressing this problem is to summarize the outcome literature in a meaningful way so that is more readily accessible to clinicians. A good way to achieve this goal is applying meta-analytical procedures to the outcome literature.

A search of the literature by the present author revealed a number of reviews and meta-analyses of the outcome literature published in the last 10 years. These reviews focused specifically on the efficacy of alcohol treatments and the cost effectiveness of treatments. However, the available reviews and meta-analyses had their shortcomings. Several focused on only one treatment modality such as relapse prevention. While this type of analysis was helpful, it did not fully synthesize treatment literature at a level which aided in treatment decisions across modalities. Meta-analyses that have compared treatment modalities are somewhat dated. The most recent comprehensive meta-analysis covered articles only up to 1993. DeRubeis and Crits-Christoph (1998) criticized one of the meta-analyses by Holder, Longbaugh, Miller, and Rubonis (1991), which included studies through 1990, for the fact that most studies "predate the arrival of treatment manuals for therapy research" (p. 47). Treatment manuals were used in therapy research to ensure the standardization of treatment across subjects, and are becoming common in outcome research studies. This is one example of how the published studies did not necessarily reflect current research. Furthermore, an update of alcohol treatment outcome research is important, as patterns of results in research can change over time. For example, Finney and Monahan (1996) noted that "because of the small number of

studies of individual treatment modalities, patterns of findings across studies can change over time as more studies are considered" (p. 241).

For this literature to be optimally accessible to clinicians, it must be continually updated to reflect the current trends in the research literature. This study was an attempt to update the outcome literature by using meta-analytic procedures on the outcome studies completed since 1992. This study should help identify which treatment modalities have received the most support from research.

In the section that follows, a brief review of the literature published to date is presented to orient the reader to themes and apparent outcome trends. Particularly emphasized is the meta-analysis by Miller et al. (1995). This study included some quantitative procedures for examining the effects of treatments across studies. However, most importantly, this review will provide an orientation to the reader and help justify the premise that an updated meta-analysis based on the methodology used by Miller et al. is needed.

REVIEW OF THE LITERATURE

The literature review that follows will be separated into three categories. Studies which reviewed or applied meta-analytical procedures to pharmacological treatments for alcohol misuse, those which focused on only one nonpharmacological treatment, and those which compared multiple modalities. The purpose of this section is to review what has been done by past investigators to synthesize the alcohol treatment literature and to highlight some of the findings.

Reviews of Pharmacological Treatments

Several studies were located by the present writer that evaluated the use of psychopharmacological treatments for alcohol misuse. While each of these articles reviewed studies of more than one medication, they were included in this section because no comparison of pharmacological interventions and psychosocial interventions was conducted.

Batel (1995) reveiwed randomized controlled trials of alcohol treatment with medications between 1960 and 1993. He found support for the use of certain medications in the treatment of alcoholism, such as citalopram, fluoxetine (Celexa and Prozac, both selective seratonin reuptake inhibitors), naltrexone (narcotic antagonist), and acamprosate, a gamma-aminobutyric acid (GABA) agonist. On the other hand, certain other drugs appeared to be of little or no benefit, such as zimeldine, tetrabamate, L-Dopa, and viloxazine. It is important to keep in mind that these conclusions were based on only two or three published evaluations of each of the medications.

A second review by O'Brien and McKay (1998) reviewed the use of medication for treating several substance use disorders including nicotine, cocaine, opioids, and alcohol. Their review of medication for treating alcohol misuse included 27 studies on the use of antidisotropic agents, seratonergic agents, acamprosate, and opioid antagonists. They found mixed results for the use of antidisotropics (i.e., only 2 of 7 studies found positive results), but noted studies that included behavioral contracting with a significant other found better results. The studies in their review found little support for the use of seratonergic agents, with the exception of clients with comorbid anxiety disorders (Buspirone) or depression (tricyclics). Acamprosate, which seems to act as a GABA receptor agonist, was supported by all six studies reviewed. Their review also found support for the use of opioid antagonists such as naltrexone and nalmefene in the treatment of alcohol use disorders (3 out of 5 studies showed lasting positive results).

Swift (1999) reviewed evidence for the use of pharmacotherapy for alcohol dependence and briefly explained how each of the drugs purportedly worked to counteract alcohol use and misuse. This study concluded that the empirical evidence supported the use of opioid antagonists (naltrexone, nalmefene), Acamprosate, and dopaminergic-antagonists such as tiapride. However, the author also noted the mixed nature of the findings for and against the use of opioid antagonists, listing a number of studies that did not find a positive effect for naltrexone. Swift also concluded there was little support for the use of aversion drugs (such as disulfiram and calcium carbimide), mood stabilizers (lithium, carbamazepine), sedatives like benzodiazapines, or for seratonergic drugs (SSRIs, Buspirone, Ondansetron, and Ritanserin). Further discussion was given to the treatment of alcohol dependence in the presence of a comorbid disorder

such as depression, anxiety, or schizophrenia. While Swift (1999) included fewer studies in his review than his contemporaries, he concluded that treating the comorbid disorder with medication was indicated, and would in turn have some effect on alcohol consumption.

This conclusion was also reached by Litten and Allen (1995) and Malec, Malec and Dongier (1996). Litten and Allen reviewed the literature and found support for the use of tricyclic antidepressants and seratonin reuptake inhibitors for the treatment of depressed alcoholics and for the use of buspirone in treating anxious alcoholics. Malec, Malec and Dongier reviewed five trials of the use of buspirone for treating alcohol dependence and found some evidence for its use for treating anxious alcoholics. They concluded buspirone primarily reduced the comorbid anxiety symptoms.

The most recent review of the use of pharmacotherapy, by Garbutt, West, Carey, Lohr, and Crews (1999), used a meta-analytical technique to review 41 studies and 11 follow-up or subgroup studies of five subgroups of medications including disulfiram, naltrexone and nalmefene, acamprosate, seratonergic agents, and lithium. They used a grading system to rate whether a drug was proven to be efficacious for treating alcohol dependence; an "A" indicated clear and consistent evidence that the drug was superior to placebo, a "B" indicated that the evidence was inconsistent, and the evidence was inconclusive regarding the efficacy of the drug, a "C" indicated that the evidence was sufficient and consistent to conclude that the drug was no more efficacious than placebo, and an "I" for inadequating evidence to make a conclusion regarding efficacy. Both Naltrexone and Acamprosate received grades of "A," indicating that there was definitely support for their use in treating alcohol dependence. Disulfiram received a grade of "B,"

indicating that the evidence was mixed regarding their use. Lithium received a grade of "C," and, therefore, the conclusion was that there was no evidence to support its efficacy in the treatment of alcohol dependence. This same conclusion was also reached in another review of lithium treatment studies by Lejoyeux and Ades (1993). Seratonergic agents, received a grade of "I," indicating that the evidence was insufficient to make a conclusion regarding their use. This conclusion was based on the relatively small sample sizes of the studies, and the mixed nature of the results.

From these reviews of pharmacological studies, we can see that there was some evidence supporting the use of certain pharmacological treatments for alcoholism, particularly acamprosate, and perhaps opioid antagonists. However, there were also potentially promising pharmacologic agents that were still unproven such as SSRIs, while still others appeared to not be useful at all, such as Lithium. Finally, some studies found support for the use of pharmacologic treatments of comorbid disorders, such as the use of buspirone to treat a comorbid anxiety disorder. Some evidence suggested that treating comorbid mood disorders positively curtailed drinking.

Reviews of Single Nonpharmacological Treatments

Brief Intervention

Brief interventions were not necessarily one specific modality of treatment, but rather can be thought of as a "category" or "range" of interventions that were circumscribed and short-term (Heather, 1995). Brief interventions were, as the name suggested, short sessions or the provision of very few sessions, with the goal of reduction of alcohol use. Typically, they were carried out in populations not seeking treatment, and

in many cases, took place in a medical setting, such as a hospital emergency room or general practice. Eligible patients were screened for excessive alcohol use by one of a multitude of screening measures (such as the CAGE, AUDIT, or a structured clinical interview), and were usually then given feedback on their drinking. This feedback varied greatly in its content, but often focused on the deleterious consequences of drinking to the individual's physical and/or mental health. Brief interventions were usually designed for patients with less severe alcohol problems, or who were in the early stage of developing problems with alcohol. The goal was a quick, cost-effective method of changing drinking behavior in a population for whom a longer, more costly intervention may not have been indicated.

Bien, Miller, and Tonigan (1993) conducted a meta-analysis of 32 controlled studies of brief intervention. The studies ranged in follow-up from 3 to 120 months, with a mean of 41. In studies comparing brief intervention to a control condition, an average effect size within the intervention groups (intake measure compared to post measure) of .70 was found, and further, an effect size comparing the intervention to control group of .38. In studies that compared brief intervention to a more intensive treatment, an average within-intervention group effect size of .8 was found (i.e., brief intervention pre to post). Also, a mean effect size involving the brief intervention group and more intensive treatment group of .06 was found.

A reasonable clinical interpretation is that, across studies, the intervention group showed a medium-to-large impact pre-post, that individuals receiving a brief intervention showed more improvement than those not receiving the intervention, and that individuals

receiving brief intervention did approximately as well as those receiving a more intensive, longer-term intervention.

Another meta-analysis reviewing 12 randomized controlled trials of brief intervention by Wilk, Jensen, and Havighurst (1997) found similarly positive results. They computed odds ratios for effect sizes, and found approximately a two-to-one ratio in favor of brief interventions over control groups. That is, those who received brief intervention were twice as likely to moderate their drinking than were those in the control groups.

Kahan, Wilson and Becker (1995) conducted a meta-analysis of 11 controlled clinical trials of brief intervention by physicians. Follow-up for these studies ranged from 8 weeks to 6 years, the most common (six of the studies) being 1 year. They analyzed studies for validity, generalizability, and for outcome. They found that the four trials with the highest validity scores showed significantly reduced alcohol consumption by men between five and seven drinks per week. However, for women, only one of four studies found a significant reduction in drinking relative to control conditions (i.e., approximately three drinks per week). They also found little evidence to support a reduction in alcohol-related morbidity due to brief intervention; however, two trials did find a significant reduction in sick days.

A more recent meta-analysis of seven studies of brief intervention in primary care populations was conducted by Poikolainen (1999). The author separated brief interventions into two categories, very brief interventions (defined as one visit of 5 to 20 minutes), and extended brief interventions (defined as multiple visits). Poikolainen found no significant changes for men or women for the very brief interventions based on a 6- to

12-month follow-up period. A significant change of approximately four drinks per week was found for men and women who received an extended brief intervention. However, a lack of statistical homogeneity among the men studied implied that the summary estimate was not meaningful. The implication of this analysis was that the brief interventions were only truly effective for women, and only when more than one intervention visit occurred.

It should be noted that conclusions drawn from the listed meta-analyses were very different. The last two were, in fact, in disagreement. It is also important to note that several authors have cautioned against reading too much into the results of controlled clinical trials and meta-analyses of brief interventions. Drummond (1997) stated that many of the studies of brief interventions have often excluded cases that could be regarded as having a poor prognosis and, therefore, results were inflated beyond which would actually be the case in practice. Further, Edwards and Rollnick (1997) pointed out that attrition rates in studies of brief intervention were very high (mean 70.6%). Also, the drop-outs tended to show characteristics that were different from those who remained in the study (e.g., they were younger, heavier drinkers, and were less educated).

Relapse Prevention

Relapse prevention was a specific form of cognitive-behavioral therapy that focused on anticipating and coping with high-risk situations that may lead to a "relapse" or return to drinking (or other drug use).

A review of relapse prevention by Carroll (1996) reviewed this treatment's use for the treatment of smoking, marijuana, cocaine, alcohol, and general drug use. Six

studies of the use of relapse prevention to treat alcohol misuse were reviewed, only one of which found positive results for the use of relapse prevention relative to control or other psychosocial treatment condition. In contrast, a more recent meta-analysis (Irvin, Bowers, Dunn, & Wang, 1999) of 22 published and four unpublished studies (10 of these studies focused on the treatment of alcohol) found support for the use of relapse prevention as a means of treating substance use disorders in general. They obtained average effect sizes for the included studies using the correlation coefficient *r*. The largest observed effect size was for the treatment of alcohol, $r = .37$. The *r*'s obtained for the treatment of other substances were .27 for polysubstance abuse, .09 for smoking, and -.03 for cocaine use.

Acupuncture

Acupuncture is the stimulation of acupuncture points by the insertion of needles. This process was thought to have "analgesic and/or tonic effects on internal organ function" (Brewington, Smith, & Lipton, 1994). This process is thought to have a therapeutic effect on certain physical ailments (e.g., pain).

Two reviews on the use of acupuncture have been published (Brewington et al., 1994; Moner, 1996). Between the two reviews, a total of three different controlled trials were listed. Two of the studies reviewed found positive effects on such outcomes as the number of drinking episodes, self-reported desire to drink, and, in one study, admittances to a detoxification unit were cut by half (Bullock, Culliton, & Olander 1989; Bullock, Umen, Culliton, & Olander, 1987). One other study found no support for the use of this treatment (Worner, Zeller, Schwarz, Zwas, & Lyon, 1992). Obviously, additional

research is needed before conclusions can be drawn about the efficacy of this treatment for alcohol misuse.

Transcendental Meditation

Alexander, Robinson, and Rainforth (1994) conducted a meta-analysis of the use of transcendental meditation (TM) for the treatment of alcohol, cigarette, and illicit drug use. TM was described by the authors as a "simple mental technique which is practiced twenty minutes twice daily" (p. 21). They analyzed fourteen studies that utilized TM as treatment for alcohol misuse, and found an average *d* effect size (relative to control condition) of .55, which can be considered a small-to-medium effect size. They compared this effect size to other meta-analyses of alcohol treatment programs including relaxation, preventive programs, preventive education programs, and DUI treatment programs, and found that TM had the largest average effect size compared to these other programs. While comparing the TM studies to preventive and driver under the influence (DUI) treatment programs did not seem valid, the comparison to other relaxation programs would seem an important one. Comparing TM to relaxation would show whether the relaxation and attention aspect of TM was responsible for the changes in drinking behavior. The meta-analysis of relaxation for the treatment of alcohol misuse revealed an average effect size of .15, which was markedly lower than the average of .55 for TM. This suggested that TM might be more effective than simple relaxation training. The authors also concluded that TM had effects larger than other standard treatment programs. However, given the other programs Alexander et al. used to make this comparison, this seemed a dubious conclusion. It was also important to keep in mind

that the samples treated evidenced alcohol misuse, subjects were not necessarily alcohol dependent. However, they also found some evidence that the effects of TM were cumulative, and that effect sizes increased at later outcome measurement periods. This would seem to indicate that abstinence was maintained and increased over time, which was not commonly seen in other alcohol treatments.

Alcoholics Anonymous

Alcoholics Anonymous (AA) was a popular alcohol treatment, which was usually in the format of voluntary group attendance, and was built around following a 12-step program of recovery. Tonigan, Toscova, and Miller (1996) conducted a meta-analysis of 107 studies of the effectiveness of AA. A major finding of their study was the poor quality of the research on this form of treatment. Representative selection, random selection, and objective verification of self-report measures were seldom used in this body of research. They also found that many of the studies had poor statistical power to detect significant differences due to small sample sizes for to make conclusions with correlational data. Despite the weaknesses of this body of literature, they attempted to find conservative estimates of bivariate and moderator relationships among variables relative to utilization of AA and outcome. They found that there did seem to be a correlation between AA attendance and drinking outcome (.22), a correlation which was even higher for outpatients (.31). This pattern was also seen for psychosocial adjustment (.18 overall, .25 for outpatients). They also found that, at least in well-designed studies, there appeared to be a relationship between severity of drinking severity and AA

affiliation (r = .20). The weak methodology evidenced by this meta-analysis disallowed a clear assessment of the magnitude of the effect of AA on drinking behavior.

Family Therapy

Family therapy was a broad range of interventions that in some way include other members of the family in the treatment process, rather than treating just the individual who presented for treatment.

Edwards and Steinglass (1995) conducted a meta-analysis of 21 studies of family therapy for the treatment of alcohol misuse. They separated treatment outcomes into three phases, based on when the family was actually included in the treatment, initiation of treatment, primary treatment/rehabilitation, and aftercare. They found four studies relevant to phase 1, and found support in all cases for the helpfulness of involving family members at the initiation of treatment. The outcome variable looked at in this phase was simply whether the alcoholic entered treatment. All studies showed that alcoholics were somewhat more likely to enter treatment if other family members (usually a spouse) were involved, than if no family members encouraged them to enter treatment. Fifteen studies were analyzed to determine the effectiveness of family therapy in phase 2, or primary treatment. They found mainly positive results for inclusion of family members, again usually spouses, in this phase of treatment, finding average effect sizes between .75 and .86. However, they found that effect sizes declined over time to an average of .17 for the several studies that followed subjects more than a year. Only two studies were found that utilized family therapy in phase 3, or aftercare. Both of these studies found support for

the use of family therapy during this phase of treatment, with an average effect size of .94.

Reviews or Meta-Analyses Comparing Different Treatment Modalities

As mentioned earlier in the introduction, several meta-analyses of the alcohol treatment outcome literature have been conducted in the past ten years comparing the effectiveness of specific treatment modalities. The focus of this study was to serve as an update to these studies, as all were focused on the literature up to 1992. However, these meta-analyses also varied on the exhaustiveness of the studies they used for their analysis, and on the variables for which they coded. These reviews are compared in the coming paragraphs for their relative contribution to determining the efficacy/ effectiveness of treatment modalities for alcohol treatment. The goal of this comparison was to assess the possibility of replicating one of these studies to achieve the stated goal of updating the literature.

Agosti conducted two meta-analyses of the outcome literature (1994; 1995). Both of these analyses included published controlled clinical trials from 1974 to 1992 that utilized at least one measure of drinking as an outcome variable. In the 1994 study, odds ratios were computed for 15 studies, and Agosti concluded that only 3 of 15 studies demonstrated efficacy. This conclusion was based on a cut-off odds-ratio of greater than "2," which the author admitted was an "arbitrary threshold" that may be "too high" (p. 761). The odds-ratios ranged from .25 to 3.2.

Effect sizes were computed for the 1995 study, which ranged from 0 to 6.3 across the studies, with an average of 1.17. Combining all studies, experimental groups consumed approximately four drinks less per week.

While Agosti did compute effect sizes using odds ratios and standard mean difference effect sizes, his two reviews only included 12 and 15 studies, respectively. Whether due to his fairly strict exclusionary criteria, his use of only the Medline database, or other reasons, both reviews appear to be lacking in comprehensiveness. This was especially noteworthy when the large number of articles reviewed by other authors across the same time period was considered. Thus, while Agosti's studies were perhaps well designed to measure certain aspects of the treatment outcome literature, they were far from exhaustive.

Three other recent meta-analyses of alcohol treatment outcome literature were located by the present author (Finney & Monahan, 1996; Holder et al., 1991; Miller et al., 1995). All utilized very similar methodologies. However, each review offered a different rank ordering of the effectiveness of treatment modalities, as can be seen when the top five modalities across the three studies were considered (see Table 1).

Many of the articles coded in the three studies overlapped. In fact Holder et al. and Finney and Monahan used basically the same set of studies. Therefore, the methodology of each study did make a difference in the amount of support shown for each modality.

Holder et al. (1991) developed a measure utilized in all three reviews called a weighted index. This index was obtained by subtracting the number of studies with negative results (showing no evidence that the treatment was effective) from the number

Table 1

Top Five Ranked Treatment Modalities in Three Meta-Analyses

Finney & Monahan (1996)	Holder at al. (1991)	Miller et al. (1995)
1. Community reinforcement	Social skills training	Brief intervention
2. Social skills training	Self-control training	Social skills training
3. Behavioral marital	Brief invention	Motivational enhancement
4. Disulfiram implants	Marital, behavioral	Community reinforcement
5. Marital, other	Community reinforcement	Behavior contracting

of studies with positive results (showing evidence that the treatment was effective), and then adding one additional point for the number of studies more than two reporting positive results. For example, in Miller et al. (1995), studies of brief intervention showed 17 positive results and 6 negative results. The weighted index would be (17 - 6) +15 or 26. The logic of this index was that treatment modalities that had been more extensively studied would obtain a higher number on this index. Holder et al. (1991) then obtained cost information for each of the treatments by compiling a database of average costs from providers, insurance companies, state alcohol and drug abuse authorities, and self-insured employers (1991), to use a cost basis on which to compare the treatments. These figures (adjusted for inflation) were also used by Finney and Monahan (1996) and by Miller et al. (1995).

The Finney and Monahan (1996) study was a replication of the Holder et al. (1991) study with several changes. As noted earlier, Finney and Monahan used most of the same articles as the Holder et al. study, but added some exclusion criteria such as a minimum 50% follow-up rate. They were also unable to obtain several studies used in the Holder et al. study. Furthermore, they added several computations to the weighted

index to obtain what they called the adjusted effectiveness index (AEin). This computation was made by first calculating the probability of obtaining a statistically significant result, a measure of statistical power. This was done by examining the following factors: number of tests for treatment effects, earliest follow-up point, one- versus two-tailed test of significance, use of at least one continuous (versus categorical) outcome measure, sample size, error-term-reducing statistical techniques such as analysis of covariance or repeated measures ANOVA, and the strength of competition (the judged effectiveness of the alternative treatment or control group). This probability was then subtracted from the percentage of studies that obtained a positive result to obtain the AEin. Through this computation, Finney and Monahan obtained a different rank ordering of treatments than did Holder et al., despite using a very similar set of studies.

Miller et al. (1995) evaluated articles up to 1992, and also utilized a new coding system beyond the weighted index. This coding system was more comprehensive, and included a number of variables not examined in either the Holder et al. or Finney and Monahan review.

First, they examined the severity of alcohol use or dependence in the treatment population, which was not assessed in either of the other two studies (for exact ratings of severity, see Appendix A). This seemed a very important variable to look at when determining the efficacy of treatments, but was previously overlooked. Furthermore, they assessed the experimental design of the studies, as well as methodological quality. Miller et al. then compared treatment modalities through computation of what they called the "cumulative evidence index." For each of the studies a product score was computed as the product of the outcome logic score (OLS) and methodological quality score (MQS).

The cumulative evidence score for each modality was then computed by adding all product scores of studies within that modality.

The OLS was a classification system for positive and negative results, which ranged from +2 to –2 and which took into account quality of experimental design. Studies with positive results based on stronger designs, such as using a placebo control, were given a score of +2, while those based on weaker designs, such as comparison to an alternative treatment were given a score of +1. The same was true of results showing no evidence for positive effect of treatments. Negative results based on stronger experimental designs obtained an OLS of –2, while those based on weaker designs obtained an OLS of –1. For the specific coding system, see Appendix A.

The methodological quality scale was a rating based on twelve factors. Group allocation was rated 0, 1, 2, 3 or 4; 4 being for randomization, 3 for within-subjects counterbalanced design, 2 for case-control or matching, 1 for quasiexperimental designs, and 0 if the treatment groups are unequal (these articles were not included in the present review).

Quality control was scored 0 or 1 depending on the presence of some form of treatment standardization with a manual or training.

Follow-up rate was coded 0 if less than 70% of the sample was followed-up at outcome, or if the follow-up period was less than 3 months; 1 if between 70 - 85% was followed up at outcome; and 2 if 85 - 100% of the sample was followed-up at outcome.

Follow-up length was coded 0 if the longest follow-up period was conducted at less than 6 months; 1 if the follow-up period was between 6 and 11 months; or 2 if the follow-up period was greater than 1 year.

Contact was coded 1 if follow-up contact was conducted by phone or in person for greater than 70% of the sample; it is coded 0 if these conditions were not met, or if follow-up was conducted with a survey or questionnaire.

Collaterals received a code of 1 if collateral interviews (someone able to vouch for the drinking status of the person) were conducted in greater than 50% of subjects; it was coded 0 if this condition was not met.

Objective verification was given a 1 if some method of objective verification of drinking status was employed, such as blood-testing, breathalyzer, record review, and so forth; it was given a score of 0 if objective verification was not utilized.

Drop-outs were given a score of 1 if treatment drop-outs were included in at least some of the outcome statistics, such as with an intent-to-treat analysis; it was given a score of 0 if this condition was not met.

Attrition was given a score of 1 when cases lost to follow-up were accounted for, and at least considered in determining outcome; and a score of 0 if this condition was not met.

Independent rater was given a score of 1 when the interviewer at follow-up was blind to the treatment condition, and was not involved in the treatment of that individual; a 0 if this condition was not met.

Use of appropriate statistical analyses was awarded a score of 1. A study was given a score of 0 if no statistical analyses were utilized, or if they are inappropriate for the data.

Multisite treatment was given a score of one if the intervention was carried out in more than one site as a parallel replication. It was given a score of 0 if the intervention was carried out in only one site.

Studies with positive findings added to the CES, while studies with negative results subtracted from the total CES. Therefore, modalities with a higher CES had received more positive support overall than other modalities with a lower CES.

Two important variables not coded by Miller et al. (1995) were patient exclusion criteria and "additional diagnosis." While these were important variables, it was important to note that these variables were measuring factors of severity of the patient population, which was, indeed, coded. For the above reasons, the Miller et al. review seemed to be the best choice for summarizing research results across studies, as it evaluated a greater number of contributing factors to treatment outcome. An extension of Miller's study should serve as a useful update of the alcohol treatment literature as it will help clinicians and researchers compare effectiveness of various treatment modalities.

RATIONALE FOR CURRENT STUDY

The present study is an update of the Miller et al. (1995) meta-analysis utilizing the same methodology and coding system. This coding system was chosen because it gave a more comprehensive rating of research studies for methodological quality, and evaluated more of the possible factors that may affect treatment outcome. The update of this review may potentially discover changing trends in alcohol treatment outcome research and determine if such factors as methodological quality play a role in experimental effectiveness. Also, it will be more inclusive, incorporating the large body of outcome studies published since 1992.

Procedures for Current Study

Articles for this review were located using the PsychLit and MedLine databases. The key words for the search were "alcohol*," "treatment," "outcome," and the names of the treatment modalities listed in the Miller et al. article and any other names of the treatment modalities found in the literature. Reference lists of obtained articles and relevant reviews of alcohol treatment were searched for other possible controlled trials or comparison studies. The goal was to do an exhaustive search of the literature for controlled outcome studies of alcohol treatment.

Articles were excluded for several reasons. The first was if subjects were diagnosed with other substance misuse disorders. Second, studies were excluded if the control or comparison group utilized was not likely an equivalent group. Last, only one article was included based on one treatment sample. A good example of this was data

based on Project MATCH. A number of studies have been published based on data from the large study. Only one study was included in the present review (Project MATCH, 1996). This study was chosen because it was the most inclusive (in terms of including the entire sample) of all studies published to date from this project.

Based on the above inclusion and exclusion criteria, 100 studies of alcohol treatment outcome utilizing a control or comparison group were obtained for inclusion in this review.

The articles were coded using the manual used by Miller et al. (1995) in *What Works*. A copy of this manual was obtained from Dr. Miller, and is included in Appendix B. The author rated seven articles included in the original review to establish that rating by the current author would be similar to that of Miller et al. Toward this end, articles were chosen to represent different treatment modalities including brief interventions, longer term psychosocial interventions, and medical interventions including psychotropic and antidisotropic medications. Specifically, the seven articles were Monti et al. (1990), Baker, Udin, and Vogler (1975), Baldwin, Heather, Lawson, Robertson, Mooney, and Braggins (1991), Bien, Miller, and Boroughs (1993), Glover and McCue (1977), Monti et al. (1990), and Powell, Penick, Lisdow, Rice, and McKnelly (1986). Table 2 shows the level of agreement of the present author's codings relative to that of Miller et al. (1995). The first set of codings showed an overall inter-rater reliability of .81. However, it was found that the initial coding errors were due to a number of misunderstandings about the coding system, especially for follow-up rate, OLS, and Modality. Upon further inspection and better understanding of the coding system, agreement was reached on all variables.

Table 2

Comparison of Initial Ratings by Present Author to Those of Miller et al. (1995)

Variable	# of disagreement	Total codings	Reliability coeffient
Percent male	1	7	.86
Age	0	7	1.00
n size	2	7	.71
Severity	2	7	.71
Group allocation	1	7	.86
Quality	1	7	.86
Follow-up rate	3	7	.57
Follow-up length	2	7	.71
Contact	0	7	1.00
Collaterals	0	7	1.00
Objective verification	1	7	.86
Drop-out rate	1	7	.86
Attrition rate	2	7	.71
Independent rater	1	7	.86
Appropriate analyses	0	7	1.00
Multisite	0	7	1.00
Outcome logic score	6	14	.57
Modality	4	14	.71
Total	27	140	.807

One other rater (Jamie Barton, an undergraduate student in Public Health) was trained by the author to use the Miller coding system to establish inter-rater reliability in the 100 new articles obtained for the current review. The present author explained the manual and coded five articles with her until she reached a level of proficiency. The author and trained rater met weekly to discuss the articles she had coded, and her ratings were compared to those of the author. All discrepancies in coding were recorded and then discussed until agreement on the correct coding was reached. Inter-rater reliability coefficients will be computed and reported for all variables. A third party (Dr. David

Stein) was consulted in cases that were not easily resolved. A detailed account of discrepancies, and inter-rater reliability is included in the results section of this document.

Analysis

The articles were first coded for treatment effectiveness (see Appendix A or rating system and decision rules). They were given an outcome logic score (OLS) of +2 for strong evidence of a specific positive effect, +1 for evidence for a specific positive effect, -1 for no evidence of a specific positive effect, and –2 for no evidence of a specific positive effect with stronger experimental designs.

The methodological quality scale (MQS) was then coded (described earlier in this literature review). This scale consisted of 12 different variables (see appendix). It was constructed to give more weight to studies of better methodological quality.

For each of these studies, the OLS was then multiplied by the MQS giving each study a final product score. The product scores of each study in a particular modality were then added together to obtain the cumulative evidence score (CES) for that particular modality. Because the OLS could be either positive or negative, each study could either add to, or subtract from the CES. The CES would show the amount of evidence each modality had in the literature, relative to other modalities.

The methodological ratings, OLS and CES, were then entered into a database. This database included all scores for the 100 articles identified by the author, as well as the 206 studies coded by Miller et al. (1995) and included in the tables of individual modalities in *What Works*. Cumulative evidence scores for articles coded by the author

and by Miller et al. were analyzed to attempt to find what the entire body of literature was suggesting, and also to determine any trends in the data. For example, it was clear to see that studies of pharmacological treatments for alcoholism had grown in number more than any other modality in the past 8 years.

To compare the relative effectiveness of each modality, a table of the rank order of cumulative evidence scores was then constructed. This table included the number of studies with positive and negative findings, the means for methodological quality score, sample size and population severity for each modality, current CES, CES at the time of the Miller review, the difference between these two CESs, and an effect size for the amount of change in this variable between these two reviews.

Miller et al. suggested a minimum of three studies for drawing any conclusions on efficacy. One or two studies was considered "too little basis for a conclusion regarding efficacy" (p. 17). This same minimum number was utilized in this review, and, therefore, the table was separated into modalities with more than two and modalities with two or less studies, as Miller did in his review. There are a number of modalities that, at the time of the Miller review, had not received sufficient research attention to make a conclusion, which have since had more than two studies published. Therefore, there are a number of modalities in the main table of this study, which had little or no published research at the time of the Miller review.

Example Coding of One Article

For the reader to understand how the coding system was applied, the following example is offered (i.e., Chang, Wilkins-Haug, Berman, & Goetz 1999).

This particular article compared a brief intervention for changing drinking behavior in pregnant women with an assessment-only condition (a control condition because both groups got the same assessment). Therefore, the only modality which was coded for this article was brief intervention.

Chang et al. randomly assigned 250 women to the treatment. The study earned a score of "4" as group allocation involved random assignment. Because the intervention was carried out on all women, the percent male was zero. Mean age was reported for the entire sample as 30.7.

This particular sample was identified by screening obstetric clinic patients. Therefore, these women were not presenting for alcohol treatment per se. This was a nonclinical sample. However, they were identified by a screening measure as having possible alcohol problems (the T-ACE); therefore, they could be considered a "problem-drinker" population. Therefore, the severity rating was a "2" (see Appendix A for exact rating system).

Follow-ups were completed, on average, at 22 weeks (5.5 months) after initiation into treatment. As such this study was given a "0" for follow-up length, because it was less than 5 months. Of the original 250 subjects, 247 were followed-up on; therefore, the score for follow-up rate was "2," because the rate was greater than percent (and was greater than a 3-month follow-up).

The brief intervention was standardized by use of a treatment manual, so a "1" was given for quality control. The follow-up was conducted in person by an interviewer blind to treatment assignment, therefore, the article was given a score of "1" for contact, and a score of "1" for independent interviewer. They also reported obtaining a collateral

report at the time of follow-up, which obtained a score of "1" for the collaterals variable. No objective verification was reported, so this variable was given a score of "0."

The statistical analyses included comparison of group means through chi-square analysis, survival analysis, and regression analysis. These seemed acceptable analyses for the data presented; drop-outs were included in these statistics and cases lost to attrition were enumerated and discussed. As such scores of "1" were given for statistical analysis, drop-outs, and attrition.

This intervention was carried out in only one hospital, therefore, the multisite variable is given a score of "0."

While both groups showed a reduction in drinks/drinking day (reduction of .4 for assessment group, .3 for intervention group), there was no statistically significant difference between groups. Furthermore, they did not differ in the number of drinking episodes (.7 for intervention, 1.0 for assessment group), or on 5-minute APGAR scores for children that were born (8.7 assessment vs. 8.9 intervention). As such, there was no meaningful difference between these two groups on any study variable, and therefore the outcome of the intervention group was seen to be equal to that of the control group, and the outcome logic score was coded as "-2."

The methodological quality score (MQS) was the sum of all methodological variables, the product score was then the product of the MQS (13) and the OLS (-2); therefore, the product score was –26 (see Table 3). This number was then entered into the database as the only product score for this study.

Table 3

Computation of MQS and Product Score for Chang, Wilkins-Haug, Berman, and Goetz (1999)

Variables	Product Score
Group allocation	4
Quality control	1
Follow-up rate	2
Follow-up length	0
Contact	1
Collaterals	1
Objective verification	0
Drop-outs	1
Attrition	1
Independent	1
Analyses	1
Multisite	0
MQS (sum of all above variables	13
OLS	-2
Product (MQS*OLS)	-26

Research Questions and Analysis

1. What conclusions can we make regarding the efficacy of treatment modalities combining all articles coded in Miller et al. and the current review?

Conclusions were based on the rank ordering of treatment modalities' CES. The CES gave an idea if the modality had generally been found in studies to be better than a control condition, and inspection of the rank order gave a good measure of research support received relative to other treatments.

It was difficult to establish a cutoff CES for determining efficacy because this decision must include other factors than just a final number. For example, in Miller's

review behavioral self-control training (BSCT) and systematic desensitization both had final CES scores of -7, which would lead one to consider them equally unsupported by research. However, upon closer inspection, this rating was based on 30 research studies for BSCT (14 finding positive results, and 16 finding negative results), and only 3 for systematic desensitization (1 positive and 2 negative). The conclusions reached on the efficacy of this modality were obviously very different given the amount of research attention it had received. Therefore, rather than setting a cutoff point, efficacy was determined on a case-by-case basis.

For modalities with 10 or more replications, factors affecting mixed outcomes will be discussed, and an attempt made to identify client characteristics or other variables that seem to be contributing to differential outcomes. Modalities with less than 10 replications were also studied for variables affecting outcome, but there was insufficient data to look for trends across these studies.

2. Do more recent studies support or contradict the conclusions reached by the Miller review regarding the efficacy of certain treatments?

Rank orderings of treatment modalities obtained in the current review were compared to those obtained by Miller et al. Cumulative evidence scores of each individual modality were also compared to determine if some modalities that had a negative score in Miller's review, now had a positive score, and vice versa. Effect sizes comparing cumulative evidence scores were computed.

3. Does this body of research point to any association between patient, design, treatment format variables and outcome?

Multiple regression was used to determine what relationships, if any, existed between patient and methodological variables and outcome of the studies including codings from both Miller's and the current study. Statistical significance levels of .05 were used.

4. Has the quality of research methodology improved over time?

Mean MQS scores were computed by decade and compared using analysis of variance. Also, visual scanning of scatter plots and linear regression were used to determine any trend in methodological quality of this body of research. It was hypothesized that there would be a trend toward better methodological quality in more recent studies. Statistical significance levels of .05 were used.

RESULTS

In the present review, 100 articles were found published since Miller et al.'s 1995 review that matched the desired criteria of a study of alcohol treatment outcome with a control or comparison group. From these 100 articles, 127 product scores were obtained for computation of cumulative evidence scores for each modality in the analysis. When combined with the Miller et al. (1995) database, there were a total of 306 studies (several articles included more than one study), with 441 product scores for analysis.

Reliability of New Codings

Reliability of coding was established for the 100 new articles obtained. Agreement was reached on all codings with little inconsistency between raters. Table 4 lists the number of initial disagreements for each coding variable and the percentage of disagreements. The reliability coefficient was based on a total *N* of 100 (the number of articles) for all variables except outcome logic score (OLS) and modality, for which there was a total *N* of 127. This discrepancy is explained by the fact that OLS and modality were scored for every ratable modality, and a number of articles contained more than one ratable modality, while all other variables were only rated once per article.

Inter-rater reliability was quite high, ranging between .82 and 1.000, with an overall reliability of .887. This was a similar rate to that obtained by Miller et al. who found a mean agreement rate of approximately 87% between the author and the consensus reached between two other coders. A table of all codings in the current study is included in Appendix B, in which all initial disagreements are marked.

Table 4

Summary of Inter-Rater Reliability of Codings

Variable	# of disagreement	Total codings	Reliability coeffient
Percent male	6	100	.94
Age	8	100	.92
n size	11	100	.89
Severity	19	100	.81
Group allocation	3	100	.97
Quality	3	100	.97
Follow-up rate	18	100	.82
Follow-up length	6	100	.94
Contact	6	100	.94
Collaterals	12	100	.88
Objective verification	17	100	.83
Drop-out rate	12	100	.88
Attrition rate	16	100	.84
Independent rater	14	100	.86
Appropriate analyses	0	100	1.000
Multisite	13	100	.87
Outcome logic score	26	127	.795
Modality	20	127	.843
Total	210	1854	.887

Notes on Combining Databases

It is important to note before discussing the cumulative evidence scores of modalities that a number of numerical errors were found in the Miller et al. (1995) article. Specifically, this author found nine instances when the methodological quality scores listed in the tables of individual treatment modalities did not match those listed in the appendix that included the ratings on all methodological quality variables. Table 5 lists the five articles on which this mismatch seemed to occur, along with the nine

Table 5

Values Listed of Methodological Quality Scores in Modality Tables and Appendix of Miller et al. (1995)

	Value listed		
Authors	Table	Appendix	Modality(s)
Bowen (1970)	9	10	Psychedelic medication
Ends (1957)	9	10	Social skills training Client-entered psychotherapy
Jensen (1963)	4	5	Psychedelic medication
Mindlin (1965)	6	7	General alcoholism counseling Educational lectures and films
Rosenberg (1986)	7	8	Cognitive therapy Relapse prevention Client-centered psychotherapy

treatment modalities in which they were listed on the individual tables.

A decision was made to utilize the numbers listed in the appendix because it was the only source for codings on all methodological variables included in the database.

Another place where there appeared to be an error was in the relapse prevention table (Miller et al., 1995, Table 2.8, p. 24). The product score for Obolensky (1984) was listed as -7, while the methodological quality score was 13, and the outcome logic score was -2 which should give a product score of -26.

There were several instances where it appeared that an incorrect publication year was listed in the tables, including Bien (1993) listed as 1992, Cooper (1988) listed as 1978, Hayashida (1989) listed as 1969, Marlatt (1977) listed as 1975, Miller (1989) listed as 1990, and Persson (1989) listed as 1988. These years were corrected to reflect the correct publication year in the database. While these were minor changes, they would be

important to later calculations looking at the trend of methodological quality over time.

Another change from Miler et al.'s reported data was the product scores for Cooper 1988. A total of five product scores were reported for this article, one under systematic desensitization, two under educational lectures and films, and two under sensory deprivation (assuming that, as listed above, the listing of Cooper [1978] was a numerical error that was meant to be Cooper [1988]). This article included two studies into the effects of Reduced Environmental Stimulation Training (REST), a treatment modality that had its own category in the Miller coding manual; therefore, this study should likely have been coded with two product scores for REST. While it was true that REST combined sensory deprivation and an educational message under that condition, it seemed the whole of this intervention was very different than just the sum of its parts, and would be better coded as a separate modality. Furthermore, there was no aspect of this intervention that was related to systematic desensitization; therefore, including it as such appears to be a mistake.

It was unlikely that any of these changes significantly altered the interpretation of the data presented in Miller et al. (1995). However, these still seemed to be important changes in the interest of accuracy. A comprehensive review of all studies coded by Miller was not undertaken, as it goes beyond the scope of this thesis.

Psychometric Properties of Coded Variables

Table 6 is a listing of the number of variables coded (some studies did not report some variables such as % male), the minimum and maximum values, and the means and standard deviations of all variables included in the database. These values are based on

Table 6

Psychometric Characteristics of Coded Variables for Entire Database

Variable	*N* reported	Minimum	Maxiumum	Mean	Standard deviation
Age	269	16.2	57.0	39.57	6.29
% males	293	0.00	100.0	81.69	21.83
n size	306	4.0	8275.0	193.11	558.38
Severity	306	1.0	4.0	3.16	.84
Group allocation	306	0.0	4.0	3.49	1.09
Quality	306	0.0	1.0	.76	.43
Follow-up rate	306	0.0	2.0	1.17	.85
Follow-up length	306	0.0	2.0	1.19	.84
Contact	306	0.0	1.0	.83	.38
Collaterals	306	0.0	1.0	.39	.49
Objective	306	0.0	1.0	.47	.50
verification	306	0.0	1.0	.88	.33
Drop-out rate	306	0.0	1.0	.72	.45
Attrition	306	0.0	1.0	.49	.50
Independent	306	0.0	1.0	.89	.31
Analyses	306	0.0	1.0	.12	.33
Multisite	306	2.0	17.0	11.41	2.72
MQS	441	-2.0	2.0	-.24	1.65
OLS Product scores	441	-32.0	34.0	-2.39	19.67

the entire database including all studies in the Miller et al. (1995) review as well as the current one. As in the reliability calculation reported above, most variables are reported once per study because they were coded only once per study. The exceptions are outcome logic score and product score as they were coded for each modality reported, and each study may have multiple modalities.

Summary of Cumulative Evidence Scores

The following sections focus on answering the first two research questions

regarding the efficacy of treatment modalities, and whether more recent studies require different conclusions than those reached by Miller et al. (1995). Cumulative Evidence Scores (CES) are reported for each modality in rank order. These are also compared to the CES obtained in the Miller et al. study through the computation of effect sizes.

Table 7 is the summary of the means of important variables and the CES of separate treatment modalities. Included in this table are both the number of studies with positive outcomes (*Np*) and negative outcomes (*Nn*), the mean Methodological Quality Score, the mean Severity Rating, the sum of all product scores (Cumulative Evidence Score) for each modality for both the current review and the Miller review, and the effect size of the change in CES from the Miller review to the current one. Effect sizes are based on the standard deviation of the Miller CES scores.

The treatment modalities are listed in rank order by the Cumulative Evidence Scores obtained combining the Miller and current reviews. Modalities with less than three studies are separated from the rest, as it was deemed that two studies was insufficient evidence upon which to draw a conclusion.

Mean age of subjects was not included on this table, as the mean of all studies was 39.11, and most modalities had means that fell in the mid 30s to mid 40s. Considering this lack of variation in mean age of samples for modalities, it is not a variable that would add much information about the differential efficacy of these treatments.

A somewhat similar pattern of rank orderings was obtained when adding articles since the last review of this type, with a number of changes. As listed earlier in Table 1, the rank ordering of the first five modalities in the Miller et al review was brief

Table 7

Summary of Cumulative Evidence Scores and Methodological Quality for All Modalities

Treatment modality	*Np*	*Nn*	Mean MQS	Mean % male	Mean sev	Mean *n*	Current CES	Miller CES	CES rater difference	Effect size
Brief intervention	26	17	12.81	69	2.27	305	229	239	-10	-0.12
Medication--GABA agonist	7	2	13.78	78	3.56	311	140	--	--	--
Social skills training	11	5	11.19	83	3.75	55	126	128	-2	-0.02
Community reinforcement	5	0	13.80	74	3.20	39	112	80	32	0.39
Behavior contracting	4	0	10.75	97	3.75	54	73	73	0	0.00
Motivational enhancement	8	6	12.86	67	2.57	223	72	87	-15	-0.18
Cue exposure	3	1	11.50	89	3.50	59	35	--	--	--
Aversion, nausea opomorphone	3	3	10.33	93	3.83	201	34	34	0	0.00
Psychotherapy, client-centered	3	2	10.60	92	3.20	100	23	34	-11	-0.13
Aversion, covert sensitization	3	5	10.88	85	3.50	63	18	18	0	0.00
Marital/family cog-behavioral	3	2	13.40	91	3.60	46	15	15	0	0.00
Self-help	2	4	11.83	58	2.83	76	0	33	-33	-0.40
Disulfiram	10	12	11.00	88	3.77	151	-7	9	-16	-0.20
Acupuncture	1	2	10.00	86	3.33	61	-8	20	-28	-0.34
Cognitive therapy	6	9	11.47	74	3.33	180	-11	22	-33	-0.40
Marital/family non-behavioral	4	5	12.56	74	3.78	75	-12	-22	10	0.12
Behavioral self-control training	15	18	12.94	76	2.88	72	-17	-7	-10	-0.12
Medication--narcotic antagonist	3	4	11.43	78	3.14	89	-24	--	--	--
Aversion, electrical	6	9	11.13	90	3.73	77	-25	-25	0	0.00
Medication--lithium	3	4	11.14	91	3.71	123	-28	-8	-20	-0.24
Relapse prevention	3	8	12.00	87	3.09	62	-31	34	-65	-0.79
Functional analysis	0	3	11.33	87	2.67	119	-34	-22	-12	-0.15
Hypnosis	0	4	10.25	199	3.75	119	-41	-41	0	0.00
Milieu therapy	3	7	11.70	89	3.60	105	-41	-41	0	0.00
Medication--antidepressant	2	5	11.14	74	3.00	121	-44	-24	-20	-0.24
Medication--psychedelic	2	6	10.13	99	3.63	123	-44	-45	1	0.01
Standard treatment--n.o.s.	0	3	10.67	90	3.00	804	-53	-53	0	0.00
Alcoholics Anonymous	0	3	12.33	87	3.33	169	-63	-52	-11	--
Medication--SSRI	4	8	11.83	76	3.17	66	-73	--	--	--
Medication--dopamine agonist	0	3	12.33	94	3.33	209	-74	--	--	0.00
Videotape self-confrontation	0	6	10.83	97	3.83	53	-77	-77	0	--
Medication--seratonin antagonist	0	4	11.75	87	2.75	264	-94	--	--	0.00
Metronidazole	1	10	9.64	94	3.73	64	-102	-102	0	

(*table continues*)

Treatment modality	*Np*	*Nn*	Mean MQS	Mean % male	Mean sev	Mean *n*	Current CES	Miller CES	CES rater difference	Effect size
Psychotherapy--insight-oriented	2	10	11.67	89	3.17	411	-132	-127	-5	-0.06
Confrontational counseling	0	8	11.50	90	2.88	136	-135	-125	-10	-0.12
Relaxation training only	3	13	10.94	89	2.88	47	-139	-109	-30	-0.37
Medication--antianxiety	1	11	9.25	89	3.25	181	-183	-79	-104	-1.27
Counseling--general alcoholism	1	15	11.38	87	3.50	146	-215	-215	0	0.00
Educational lectures or films	3	18	10.14	79	2.33	866	-247	-239	-8	-0.10
Modalities with two or fewer studies										
Tobacco cessation treatment	2	0	11.00	71	3.00	333	44	--	--	--
Reduced environmental	2	0	10.00	46	1.00	55	40	--	--	--
Stimulation training	--	--	--	--	--	--	--	--	--	--
Developmental counseling	1	0	14.00	53	2.00	144	28	28	0	0.00
Case management	1	0	13.00	81	4.00	298	26	--	--	--
Medication--dopamine antagonist	1	0	12.00	--	4.00	100	24	--	--	--
EMG biofeedback	1	0	11.00	100	4.00	250	22	--	--	--
Transcendental meditation	1	0	11.00	100	4.00	250	22	--	--	--
Feedback of assessment	1	0	10.00	52	2.00	26	20	--	--	--
Nurse intervention	1	0	10.00	100	3.00	127	20	--	--	--
Contingency management	1	0	10.00	81	3.00	42	20	--	--	--
Systematic desensitization	2	0	11.50	96	4.00	39	13	07	20	0.34
Detoxification	1	0	12.00	78	4.00	95	12	--	--	--
Exercise	1	1	10.50	100	2.50	53	9	9	0	0.00
Aversion--apneic	1	1	10.00	0	3.50	44	0	0	0	0.00
Occupational therapy	0	1	12.00	69	3.00	229	-12	--	--	--
Problem-solving	0	1	12.00	62	4.00	90	-12	-12	0	0.00
Twelve-step facilitation	0	1	16.00	76	3.00	1726	-16	--	--	--
Kudzu root	1	0	10.00	98	4.00	49	-20	---	--	--
Self-monitoring	1	1	12.50	69	3.50	28	-23	-23	0	0.00
BAC discrimination training	0	2	12.00	92	3.50	79	-24	-24	0	0.00
Medication-beta blockers	0	1	13.00	--	4.00	100	-26	--	--	--
Assessment as intervention	0	1	15.00	57	2.00	378	-30	--	--	--
Calcium carbimide	0	2	10.00	97	4.00	40	-32	-32	0	0.00
Medication--antipsychotic	0	2	9.00	89	3.50	442	-36	-36	0	0.00
Neurotherapy	0	2	11.00	100	3.50	159	-44	--	--	--
Total database	170	271	11.56	82	3.17	186	-1052	-684	-368	-2.83

intervention, social skills training, motivational enhancement, community reinforcement, and behavior contracting. The five top-ranked treatments in the current review are brief intervention, GABA agonist medication, social skills training, community reinforcement, and behavior contracting. Four of the five rankings remained the same, with motivational enhancement only falling slightly. However, support for GABA agonist medication represents a new addition; there were no studies of GABA agonist medication available at the time of the Miller et al. review.

Treatment Modalities Included in This Review

Table 8 includes brief descriptions of all treatment modalities for which there are conclusions are made in this review (i.e., more than two studies were found of the modality). Table 8 allows the reader to better understand the major features of each treatment modality. They are presented in the same order as Table 6.

Summary of Ratings by Article for Each Modality

The tables that follow include all codings from both the present review and Miller et al. (1995). For each modality, studies are listed including the author, year published, sample size, rating of sample severity, methodological quality score (MQS), outcome

Table 8

Summary of Treatment Modalities

Treatment	Modalities
Brief intervention	Short 15-20 minute interventions with the goal of reducing drinking. Subjects are usually identified by a quick screening measure, as as the AUDIT or CAGE.
Medication–GABA agonist (acamprosate)	A psychotropic medication that acts to increase levels of the GABA neurotransmitter. It is proposed to reduce the aversive effects of alcohol abstinence, and reduce craving (Swift, 1999).
Social skills training	The goal of social skills training is to address psychosocial deficits that help to maintain drinking behavior. Social skills training can include such topics as assertiveness, initiating conversations, listening, giving and receiving criticism, and drink refusal skills.
Community reinforcement	Based on the approach of Aznin, community reinforcement is a complicated intervention that requires the participation of a spouse, family, or other involved community member who serves to change the contingencies for reinforcement in the alcoholic's life. These significant others work to reinforce the person in treatment for sober behavior, and to avoid reinforcing them for drinking. This runs concurrent to the person's own work in therapy.
Behavior contracting	A straight-forward approach of agreeing to a set of behaviors the person will or will not do, and writing out a contract that spells out those behaviors.
Motivational enhancement	A specific form of brief intervention that utilizes motivational enhancement techniques as described by Miller and Rollnick (1991). It is often focused on perceived drinking norms and alcohol expectancies.
Cue exposure	An intervention that focuses on the classically conditioned cues for drinking. A person is usually exposed to graduated cues for drinking (e.g., a bottle in front of them, the smell of alcohol, etc.). Exposure to these cues is paired with a relaxation response, rather than drinking.
Aversion, nausea apomorphine	Alcohol is paired with a nauseous feeling chemically induced through the use of apomorphine. The goal is to classically condition nausea responses with alcohol, therefore reducing cravings to drink when facing stimuli that ordinarily leads to drinking behavior.
Psychotherapy–client centered	Nondirective therapy in which the therapist treats the person with unconditional positive regard. Based on the original work of Carl Rogers.
Aversion, covert sensitization	Covert sensitization is a means of pairing images of noxious stimuli with alcohol. For example, alcohol may be paired with imagery of vomiting and feeling sick.
Marital/family cognitive-behavioral	Therapy that incorporates a spouse and/or family members that utilizes cognitive behavioral techniques, and focuses on family relationships and their intervention with drinking behavior.
Self-help	Self-help is usually in the form of bibliotherapy, which stands on its own without other intervention.
Disulfiram (Antabuse)	An aversive agent, it serve to increase levels of acetaldehyde levels when drinking, and therefore increases aversive effects of alcohol consumption.

(table continues)

Treatment	Modalities
Acupuncture	Acupuncture is an ancient Chinese technique of stimulating specific external body parts, usually by needle insertion. These external body locations are thought to be interconnected with other body organs, and acupuncture is thought to alleviate disease (Moner, 1996).
Cognitive therapy	Cognitive therapy seeks to address maladaptive cognitions that lead to drinking through a number of common techniques. The goal of this type of intervention with alcoholics is to discover the cognitive thought patterns or distortions that play a role in maintaining drinking behavior. Cognitive therapy is usually accompanied by a number of behavioral techniques such as self-monitoring, and relaxation training aimed at drinking reduction.
Marital/Family nonbehavioral	Any form of therapy that includes a spouse or other family members, but is not behavioral in nature. One common example is a family systems intervention.
Behavioral self-control training	Focused on teaching individuals to moderate their drinking, and to drink at a nonproblematic level. Common aspects of treatment include goal-setting, self-monitoring, plus establishing rewards for meeting the set-out goals. Teaching of alternate coping strategies for drinking situations (similar to relapse prevention) is usually included as well.
Medication–narcotic antagonist (Naltrexone)	Blocks the opioid receptors in the brain, reduces pleasurable effects of drinking and decreases craving.
Aversion, electrical	Pairing alcohol with electrical shocks in order to classically condition an aversive emotional reaction to future alcohol exposure.
Medication–Lithium	Usually associated with bipolar disorder, acts on a number of neurotransmitters, including seratonin, dopamine, and norepinephrine among others.
Relapse prevention	A specific form of cognitive-behavioral therapy that focuses on the cues that trigger relapse, and encourages the person in treatment to plan how they will deal with high risk (relapse) situations (i.e., if you see an old friend you used to drink with, what will be your thoughts? what will you do?).
Functional analysis	Functional analysis is a specific form of behavioral assessment and intervention that takes into account the context of behaviors, what the purpose of that behavior is within that context, and how changes in that behavior will impact the person's environment.
Hypnosis	A form of therapy in which post-hypnotic suggestions focus on the person not drinking.
Milieu therapy	An intervention based on creating a therapeutic atmosphere for clients, which is in itself globally therapeutic. It is usually an inpatient or residential unit where treatment is the focus at all times. There is usually frequent group therapy contact, and a focus on how people interact socially.
Medication–antidepressant (imiprimine)	These are the "old" style-antidepressants, such as imipramine. They act mainly on the seratonin and norepinephrine neurotransmitters, and help to alleviate depression and anxiety.
Medication–psychedelic	These are medications that have a psychedelic impact on brain functioning such as Lysergic Acid (LSD). Studies of this type stopped a number of years ago.
Standard treatment–n.o.s.	A catch-all category for treatments that are not specified beyond how the treatment is usually carried out, often as a comparison condition.

(table continues)

Treatment	Modalities
Alcoholics Anonymous	A commonly recommended intervention in the United States what utilizes the 12-step model of addiction recovery. Treatment is not completely standardized, but usually includes attendance of 12-step meetings and obtaining a lay "sponsor" (an individual more advanced in their recovery) who helps the individual maintain abstinence and guides him/her through the steps. AA is usually included as an adjunct to formal treatment programs.
Medication--SSRI (Prozac, Zoloft)	This class of medications prevents the reuptake of seratonin, therefore increasing the amount of seratonin in the synapse. They act to reduce depression and anxiety.
Medication--dopamine agonist (bromocriptine)	These medications increase the amount of the neurotransmitter dopamine, and are thought to possibly reduce the unpleasant effects of abstinence.
Videotape self-confrontation	An intervention in which the person is videotaped while they are drinking, or drunk, and then shown that videotape later to show them how their behavior changes while they are drinking.
Medication--seratonin antagonist (ritanserin, odansetron)	These medications decrease levels of seratonin, the mechanism of action is not understood, but it has shown some efficacy in reducing alcohol consumption in animals (Johnson, 1996).
Metronidazole	This is another aversive agent that acts to increase the unpleasant effects of alcohol.
Psychotherapy--insight oriented	Insight-oriented psychotherapy utilizes one of the psychodynamic approaches to therapy, and is focused on the individual in treatment having "insight" or understand the reason why they behave as they do. The purpose of this type of intervention is that when the person has this "insight," they will then change their behavior.
Confrontational counseling	This form of intervention is based around "confronting the drinking behaviors of the person. It often includes a number of family members and friends who tell the person how the person's drinking effects them.
Relaxation training only	The use of Progressive Muscle Relaxation (PMR) or imagery techniques to achieve state of relaxation. People are generally instructed to utilize this technique regularly, often daily. The goal is to reduce stress, which, in turn, may decrease the use of alcohol.
Medication--anti-anxiety	Anti-anxiety medication such as Buspar has been tried as a means of reducing anxiety that may lead to self-medicating behaviors. A number of anxiolytic medications are habit forming (the benzodiazapines), and, therefore, inappropriate for this population.
Counseling--general alcoholism	This is somewhat a catch-all category for interventions in which counseling that focused on alcoholism was given, but was not further specified.
Educational lectures or films	Interventions focused on giving information about the effects of drinking in a film or lecture format. Designed on the basis that people, when armed with information about the destructive nature of their behavior, will then change that behavior.

logic score (OLS), product of MQS and OLS, and who the study was coded by (Miller or the present author). The Cumulative Evidence Score, the sum of all product scores, is also listed for each modality. The modalities were grouped together in tables based on similarity of intervention. For example, brief intervention and motivational enhancement

are listed together, as motivational enhancement is usually a form of brief intervention. The grouping of modalities is similar to that utilized in Miller et al. (1995). This information is also presented relevant to the first two research questions regarding the efficacy of the various treatment modalities.

Table 9 shows all of the individual codings for studies of brief intervention and motivational enhancement. A great deal of support for brief intervention and motivational enhancement has persisted since the time of the Miller et al review. This persistence of support is impressive as is the amount of study these two types of intervention have received (43 total for brief intervention, 14 total for motivational enhancement). The mean sample sizes of the studies completed (305 for brief intervention, 223 for motivational enhancement) also reflect significant generalizability of effects.

However, despite these positive results and the seeming generalizability, it is important to note for whom this type of intervention has proved effective. The mean population severity for brief intervention and motivational enhancement studies are 2.28 and 2.57, respectively, compared to the overall mean severity rating of all studies of 3.17. The 2.28 mean severity rating for brief intervention is the lowest mean severity for any modality for which there have been three or more studies completed. Therefore, brief intervention and motivational enhancement work better than comparison or control conditions only for less severe populations (i.e., subjects who likely do not meet diagnostic criteria for alcohol dependence).

This is still a very meaningful result from a public health perspective given the limited resources that are required for such programs, relative to the significant changes

Table 9

Studies of Brief Intervention and Motivational Enhancement

Author	Year	*n* size	Severity	MQS	OLS	Product	Review author
Fleming	1999	158	2	16	2	32	Tranchita
Fleming	1997	774	2	16	2	32	Tranchita
Harris	1990	34	3	16	2	32	Miller
Manwell	2000	205	2	16	2	32	Transchita
Wallace	1988	909	2	16	2	32	Miller
Israel	1996	105	2	15	2	30	Tranchita
Babor	1992	1490	2	14	2	28	Miller
Marlatt	1998	456	1	14	2	28	Tranchita
Anderson	1992	154	2	13	2	26	Miller
WHO	1996	1559	2	13	2	26	Tranchita
Chick	1985	156	2	12	2	24	Miller
Elvy	1988	226	2	11	2	22	Miller
Heather	1996	174	2	11	2	22	Tranchita
Kristenson	1983	473	2	11	2	22	Miller
Maheswaran	1992	44	2	11	2	22	Miller
Persson	1989	71	2	10	2	20	Miller
Tomson	1998	222	2	10	2	20	Tranchita
Welte	1998	673	2	10	2	20	Tranchita
Chick	1988	152	3	16	1	16	Miller
Edwards	1977	100	3	15	1	15	Miller
Sanchez-Craig	1991	96	3	15	1	15	Miller
Chapman	1988	105	4	14	1	14	Miller
Sanchez-Craig	1989	90	3	14	1	14	Miller
Sannibale	1988	96	3	14	1	14	Miller
Zweben	1988	218	3	14	1	14	Miller
Obolensky	1984	96	2	13	1	13	Miller
Reynolds	1995	78	2	8	-1	-8	Tranchita
Daniels	1992	233	2	5	-2	-10	Miller
Richmond	1999	852	1	5	-2	-10	Tranchita
Hayashida	1989	164	3	12	-1	-12	Miller
Romelsjo	1989	83	3	12	-1	-12	Miller
Robertson	1986	37	3	14	-1	-14	Miller
Richmond	2000	688	1	9	-2	-18	Tranchita
Bennie	1998	95	4	12	-2	-24	Tranchita
Aalto	2001	296	2	13	-2	-26	Tranchita
Aalto	2000	118	2	13	-2	-26	Tranchita
Burge	1997	242	2	13	-2	-26	Tranchita
Chang	1999	250	2	13	-2	-26	Tranchita
Scott	1990	72	2	13	-2	-26	Miller
Monti	1999	94	2	14	-2	-28	Tranchita
Heather	1987	104	3	15	-2	-30	Miller
Richmond	1995	378	2	15	-2	-30	Tranchita
Senft	1997	516	2	15	-2	-30	Tranchita
CES = + 229							

(*table continues*)

Author	Year	*n* size	Severity	MQS	OLS	Product	Review author
			Motivational Enhancement				
Miller	1993	42	2	15	2	30	Miller
Miller	1988	42	2	15	2	30	Miller
Bien	1993	32	4	13	2	26	Miller
Brown	1993	28	4	13	2	26	Miller
Sanchez-Craig	1996	155	3	12	2	24	Tranchita
Heather	1996	174	2	11	2	22	Tranchita
Mallams	1982	40	3	10	2	20	Miller
Borsari	2000	60	1	9	18	18	Tranchita
Baer	1992	132	2	11	-11	-11	Tranchita
Kuchipudi	1990	114	3	13	-13	-13	Miller
Project MATCH	1996	1726	3	16	-16	-16	Tranchita
Handmaker	1999	42	2	11	-22	-22	Tranchita
Richmond	1995	378	2	15	-30	-30	Tranchita
Chick	1988	152	3	16	-32	-32	Miller
CES=+72							

in drinking behavior that can occur across large numbers of people.

It is also apparent from this review that studies of psychotropic medications have become far more numerous since the time of Miller's review, more so than any other modality. Specifically, at the time of the Miller et al. (1995) review, there were 26 codable outcomes of psychotropic medications, accounting for 8.2% of all those obtained in the review. In the current study, there were a total of 73 codable outcomes of psychotropic medications, accounting for 16.5% of the total codable outcomes. Even more striking is the number of codable outcomes of psychotropic medications from new studies completed since the Miller review. In the new articles compiled by the present author, there were 47 codable outcomes of psychotropic medications, accounting for *37%* of the total in the 8 or so years between the Miller et al. (1995) review and the current one. Table 10 shows all of the codings for studies of psychotropic medications.

What has this increased research attention taught us about the use of psychotropic medication to treat alcohol misuse? First, all but one of the medications have negative

Table 10

Studies of Psychotropic Medications

Author	Year	*n* size	Severity	MQS	OLS	Product	Review author
			GABA-agonists (Acamprosate)				
Paille	1995	38	3	15	2	30	Tranchita
Sass	1996	272	4	15	2	30	Tranchita
Poldrugo	1997	246	4	14	2	28	Tranchita
Tempesta	2000	330	3	14	2	28	Tranchita
Whitworth	1996	455	4	14	2	28	Tranchita
Gallimberti	1992	82	4	13	2	26	Tranchita
Pelc	1997	188	3	12	2	24	Tranchita
Chick A	2000	581	3	13	-2	-26	Tranchita
Besson	1998	110	4	14	-2	-28	Tranchita
CES = 140							
			Narcotic antagonist (Naltrexone, Nalmefene)				
Anton	1999	132	3	12	2	24	Tranchita
Mason	1994	21	3	11	2	22	Tranchita
Volpecelli	1992	70	4	11	2	22	Tranchita
Kranzler	1998	20	3	11	-2	-22	Tranchita
Volpecelli	1997	98	3	11	-2	-22	Tranchita
Chick B	2000	175	3	12	-2	-24	Tranchita
O'Malley	1996	104	3	12	-2	-24	Tranchita
CES = -24							
			Lithium				
Fawcett	1987	104	4	15	2	30	Miller
Kline	1974	73	4	9	2	18	Miller
Merry	1976	71	4	8	2	16	Miller
Malec, T. S.	1994	40	3	10	-2	-20	Tranchita
Pond	1981	47	3	10	-2	-20	Miller
Powell	1986	100	4	10	-2	-20	Miller
Dorus	1989	426	4	16	-2	-32	Miller
CES = -28							
			Psychedelics (Lysergic Acid)				
Hollister	1969	72	4	11	1	11	Miller
Jensen	1963	125	4	5	2	10	Miller
Tomsovic	1970	333	3	7	-1	-7	Miller
Bowen	1970	87	3	10	-1	-10	Miller
Rhead	1977	103	4	11	-1	-11	Miller
Bowen	1970	59	3	12	-1	-12	Miller
Smart	1966	30	4	12	-1	-12	Miller
Ludwig	1969	176	4	13	-1	-13	Miller
CES = -44							

(*table continues*)

Author	Year	*n* size	Severity	MQS	OLS	Product	Review author
			Anti-depressants (imipramine orTofranil. desiprimine or Norpramin)				
Mason	1996	71	3	15	2	30	Tranchita
Nunes	1993	26	3	13	2	26	Tranchita
Kissin	1968	288	3	2	-2	-4	Miller
Shaffer	1964	145	3	10	-2	-20	Miller
Powell	1995	216	3	11	-2	-22	Tranchita
McGrath	1996	69	3	12	-2	-24	Tranchita
Mueller	1997	29	3	15	-2	-30	Tranchita
CES = -44							
			Seratonin reuptake inhibitors (fluoxetine or Prozac. sertraline or Zoloft. citalopram or Celexa)				
Romach	2000	136	3	11	-2	-22	Tranchita
Roy-Byrne	2000	64	3	10	-2	-20	Tranchita
Angelone	1998	81	4	11	2	22	Tranchita
Cornelius	1997	51	4	14	2	28	Tranchita
Janiri	1996	50	3	12	2	24	Tranchita
Tiihonen	1996	62	3	12	-2	-24	Tranchita
Cornelius	1995	21	3	12	2	24	Tranchita
Kranzler	1995	101	3	15	-1	-15	Tranchita
Naranjo 95 A	1995	99	3	11	-2	-22	Tranchita
Balldin	1994	63	3	11	-2	-22	Tranchita
Kranzler	1993	19	3	11	-2	-22	Tranchita
George	1992	45	3	12	-2	-24	Tranchita
CES = -73							
			Dopamine agonists (bromocriptine)				
Powell	1995	216	3	11	-2	-22	Tranchita
George	1992	45	3	12	-2	-24	Tranchita
Naranjo	1997	366	4	14	-2	-28	Tranchita
CES = -74							
			Seratonin antagonists (ritanserin. odansetron)				
Naranjo 95 B	1995	42	1	11	-2	-22	Tranchita
Sellers	1994	96	3	11	-2	-22	Tranchita
Johnson	1996	423	3	12	-2	-24	Tranchita
Wiesbeck	1999	493	4	13	-2	-26	Tranchita
CES = -94							
			Anti-anxiety (buspirone or Buspar. chlordiazapoxide or Librium)				
Hoff	1961	100	3	5	2	10	Miller
Kissin	1968	288	3	2	-2	-4	Miller
Gallant	1968	78	4	9	-1	-9	Miller
Shaffer	1963	199	4	10	-1	-10	Miller
Martholomew	1961	40	3	6	-2	-12	Miller
Mooney	1961	214	3	6	-2	-12	Miller
Charnoff	1963	835	3	10	-2	-20	Miller
Powell	1985	174	3	11	-2	-22	Miller
George	1999	53	3	12	-2	-24	Tranchita
Malec. E.	1996	57	4	12	-2	-24	Tranchita
Malcolm	1992	67	3	13	-2	-26	Tranchita
Kranzler	1994	61	3	15	-2	-30	Tranchita
CES = -183							

(*table continues*)

Author	Year	*n* size	Severity	MQS	OLS	Product	Review author
			Dopamine antagonies (tiapride)				
Shaw CES = 24	1994	100	4	12	2	24	Tranchita
			Beta-blockers (Atenolol)				
Gottlieb CES = -26	1994	100	4	13	-2	-26	Tranchita
			Antipsychotics (reserpine)				
Reinert	1958	48	4	8	-2	-16	Miller
Charnoff CES = -36	1963	835	3	10	-2	-20	Miller

cumulative evidence scores. This indicates that on the whole, they do not do statistically significantly better than placebo in reducing alcohol use. Furthermore, none of the medications studied at the time of the Miller review had a positive effect size in CES in the current review.

One exception was GABA agonist medication (acamprosate). Nine recent (since the time of the Miller review) controlled studies of GABA agonists were located for the current review. Of the nine, seven found positive results, giving GABA agonist medication the second highest cumulative evidence score of all modalities. Even more intriguing is the average sample severity across these nine studies was 3.56 (all sample severities were either 3 or 4). This indicates that these medications help to make statistically significant reductions in alcohol consumption among people with more severe alcohol problems. Such individuals are likely to be diagnosed with at least an alcohol misuse disorder, often moderate to severe dependence.

As can be seen in Table 11, studies of antidisotropic medications have nearly ceased to be published in the years since the Miller review. Only one controlled study

Table 11

Studies of Antidisotropic Medications

Author	Year	*n* size	Severity	MQS	OLS	Product	Review author
			Disulfiram (Anabuse)				
Fuller	1986	605	4	17	2	34	Miller
Azrin	1982	43	4	14	2	28	Miller
Chick	1992	126	4	14	2	28	Miller
Wilson	1978	20	4	13	2	26	Miller
Wilson	1980	100	4	12	2	24	Miller
Wallerstein	1957	178	4	9	2	18	Miller
Whyte	1974	45	4	7	2	16	Miller
Hoff	1953	792	4	5	2	10	Miller
Reinert	1958	48	4	8	1	8	Miller
Hussain	1972	43	3	6	1	6	Miller
Gerrein	1973	121	4	6	-1	-6	Miller
Aharan	1967	116	3	8	-1	-8	Miller
Levy	1967	30	4	8	-1	-8	Miller
Ludwig	1969	176	4	13	-1	-13	Miller
Fuller	1979	128	3	16	-1	-16	Miller
Smith	1998	106	4	16	-1	-16	Tranchita
Gallant	1968	84	4	9	-2	-18	Miller
Ling	1983	82	4	11	-2	-22	Miller
Powell	1985	174	3	11	-2	-22	Miller
Johnsen	1987	21	4	12	-2	-24	Miller
Dahlgren	1989	200	3	13	-2	-26	Miller
Johnsen	1992	76	4	13	-2	-26	Miller
CES = -7							
			Metronidazole				
Swinson	1971	60	4	13	2	26	Miller
Merry	1968	24	4	6	-1	-6	Miller
Miller	1968	40	4	6	-1	-6	Miller
Tyndel	1969	46	3	7	-1	-7	Miller
Gallant	1968	78	4	9	-1	-9	Miller
Lal	1969	71	4	9	-1	-9	Miller
Linton	1967	32	4	10	-1	-10	Miller
Penick	1969	50	3	11	-1	-11	Miller
Platz	1970	169	3	10	-2	-20	Miller
Lowenstam	1969	100	4	12	-2	-24	Miller
Egan	1968	34	4	13	-2	-26	Miller
CES = -102							
			Calcium carbimide				
Levy	1967	30	4	8	-1	-8	Miller
Boland	1978	50	4	12	-2	-24	Miller
CES = -32							

was found by this author. The lack of interest in studying antidisotropic medications is likely due to the pattern of poor outcomes summarized in Table 8. The only controlled studies of calcium carbimide ($N = 2$) found negative results. Of the 11 studies of metronidazole, only one found a positive result. Finally, out of 22 studies of disulfiram, 10 found positive results and 12 found negative results, or less than 50% of available studies. Based on this review, the results of studies of antidisotropic medication is mixed at best for disulfiram, and there is no reasonable support for metronidazole.

In a similar vein, aversion therapies have literally ceased to be studied since the time of the Miller et al review. Table 12 shows no new studies were found that met criteria for inclusion in this review, the most recent being published in 1991. This again may be the result of weak research support as only two studies with positive results have been published since the end of the 1970s. Both covert sensitization and apomorphine have positive cumulative evidence scores. However, this is mainly due to studies finding positive results tending to have stronger research designs. At best, only half of the studies have positive results.

Table 13 shows all codings for studies of marital and family therapy that have shown mixed results. The type of therapy that may be most helpful is unclear, as many of these studies have been a nonspecified, or nonbehavioral format. More clearly defined cognitive-behavioral marital and family therapies showed some promise in early studies. However, no studies of cognitive-behavioral marital or family therapy meeting inclusion criteria were found since the Miller review was completed.

Table 14 is a listing of studies of "standard" treatment components such as milieu therapy, general alcoholism counseling, educational lectures, AA, and standard treatment

Table 12

Studies of Aversion Therapies

Author	Year	*n* size	Severity	MQS	OLS	Product	Review author
			Nausea Apomorphine				
Cannon	1981	21	4	14	2	28	Miller
Smith	1991	498	4	10	2	20	Miller
Boland	1978	50	4	12	1	12	Miller
Jackson	1978	344	4	6	-1	-6	Miller
Wallerstein	1957	178	4	9	-1	-9	Miller
Richard	1983	112	3	11	-1	-11	Miller
CES = 34							
			Covert sensitization				
Maletsky	1974	20	3	13	2	26	Miller
Ashem	1968	27	4	11	2	22	Miller
Olson	1981	137	4	11	2	22	Miller
Fleiger	1973	32	3	6	-1	-6	Miller
Hedberg	1974	57	4	11	-1	-11	Miller
Richard	1983	112	3	11	-1	-11	Miller
Sanchez-Craig	1982	90	4	12	-1	-12	Miller
Telch	1984	29	3	12	-1	-12	Miller
CES = 18							
			Electrical				
Marlatt	1973	65	4	15	2	30	Miller
Caddy	1976	63	4	12	2	24	Miller
Glover	1977	48	4	11	2	22	Miller
Schaefer	1972	26	3	10	2	20	Miller
Vogler	1975	67	4	10	2	20	Miller
Vogler	1970	73	4	5	2	10	Miller
Jackson	1978	344	4	6	-1	-6	Miller
McCance	1969	76	4	12	-1	-12	Miller
Vogler	1977	39	4	12	-1	-12	Miller
Vogler	1977	119	3	12	-1	-12	Miller
Miller	1978	65	3	15	-1	-15	Miller
Miller	1973	30	4	10	-2	-20	Miller
Hedberg	1974	57	4	11	-2	-22	Miller
Regester	1971	62	3	12	-2	-24	Miller
Cannon	1981	21	4	14	-2	-28	Miller
CES = -25							
			Apneic				
Laverty	1966	45	3	10	2	20	Miller
Clancy	1967	42	4	10	-2	-20	Miller
CES = 0							

Table 13

Studies of Marital and Family Therapy

Author	Year	*n* size	Severity	MQS	OLS	Product	Review author
			Marital/family therapy, cognitive-behavioral				
Bowers	1990	16	3	15	1	15	Miller
O'Farrell	1985	36	4	15	1	15	Miller
Hedberg	1974	57	4	11	1	11	Miller
Monti	1990	69	4	11	-1	-11	Miller
McCrady	1986	53	3	15	-1	-15	Miller
CES = 15							
			Marital/family therapy, nonbehavioral				
Cadogan	1973	40	4	13	2	26	Miller
Maharajh	1993	60	4	12	2	24	Tranchita
Corder	1972	40	4	9	2	18	Miller
Dahlgren	1989	200	3	13	1	13	Miller
McCrady	1979	33	4	10	-1	-10	Miller
Fichter	1993	100	4	14	-1	-14	Tranchita
McCrady	1986	53	3	15	-1	-15	Miller
Keso	1990	117	4	12	-2	-24	Miller
O'Farrell	1985	36	4	15	-2	-30	Miller
CES = -12							

that could not be better specified into another modality have generally continued to receive very little support, despite a large number of studies that have been completed.

Certain "broad spectrum" skills training approaches to treatment were grouped together and displayed in Table 15, as they are focused on various life skills-training and not necessarily on alcohol consumption. The basic assumption behind these approaches is usually that the individual lacks some skills that would help to keep them sober and enhance general life success (Miller et al., 1995).

In this area, we find several promising approaches to treating alcohol problems, and several that seem to generally not work very well. For instance, there is a growing body of evidence that relaxation training, by itself, does not seem to make significant

Table 14

Studies of Standard Treatment Components

Author	Year	*n* size	Severity	MQS	OLS	Product	Review author
			Milieu therapy				
Walsh	1991	227	2	14	2	28	Miller
Wanberg	1974	180	3	10	2	20	Miller
Lal	1969	71	4	9	2	18	Miller
Annis	1979	70	4	8	-1	-8	Miller
Stein	1975	58	4	11	-1	-11	Miller
McLachlan	1982	100	4	12	-1	-12	Miller
Longabaugh	1983	174	3	14	-1	-14	Miller
Edwards	1967	40	4	16	-1	-16	Miller
Eriksen	1986	21	4	9	-2	-18	Miller
Chapman	1988	105	4	14	-2	-28	Miller
CES = -41							
			Standard treatment, not otherwise specified				
Mosher	1975	200	4	11	-1	-11	Miller
Salzberg	1983	2194	2	7	-2	-14	Miller
Azrin	1976	18	3	14	-2	-28	Miller
CES = -53							
			Alcoholics Anonymous				
McCrady	1999	90	3	11	-1	-11	Tranchita
Ditman	1967	301	3	12	-2	-24	Miller
Brandsma	1980	116	4	14	-2	-28	Miller
CES = -63							
			General alcoholism counseling				
Chick	1988	152	3	16	2	32	Miller
McLatchie	1988	177	3	6	-1	-6	Miller
Mindlin	1965	232	3	7	-1	-7	Miller
Braunstein	1983	174	4	10	-1	-10	Miller
Powell	19885	174	3	11	-1	-11	Miller
Annis	1992	53	3	12	-1	-12	Miller
Ogborne	1979	38	4	6	-2	-12	Miller
Pittman	1972	250	4	12	-1	-12	Miller
Caddy	1984	60	3	13	-1	-13	Miller
Fitzgerald	1985	332	4	14	-1	-14	Miller
Gallant	1968	84	4	9	-2	-18	Miller
Ditman	1967	301	3	12	-2	-24	Miller
Oei	1982	32	4	12	-2	-24	Miller
Baldwin	1991	78	4	13	-2	-26	Miller
Chapman	1988	105	4	14	-2	-28	Miller
Edwards	1977	100	3	15	-2	-30	Miller
CES = -215							

(*table continues*)

Author	Year	*n* size	Severity	MQS	OLS	Product	Review author
			Educational lectures and films				
Malfetti	1975	1000	2	9	2	18	Miller
McGuire	1978	1000	2	7	2	14	Miller
Salzberg	1983	2194	2	7	1	7	Miller
Mindlin	1965	232	3	7	-1	-7	Miller
Rosenberg	1979	75	4	9	-1	-9	Miller
Swenson	1981	351	2	9	-1	-9	Miller
Swenson	1980	436	2	9	-1	-9	Miller
Scoles	1977	122	2	5	-2	-10	Miller
Baer	1992	132	2	11	-1	-11	Tranchita
Carpenter	1985	30	2	11	-1	-11	Miller
Connors	1986	67	2	12	-1	-12	Miller
Hagen	1978	8275	2	6	-2	-12	Miller
West	1979	84	4	12	-1	-12	Miller
Baker	1975	40	4	14	-1	-14	Miller
Heather	1986	247	3	10	-2	-20	Miller
Kivlahan	1990	50	1	10	-2	-20	Miller
Sisson	1986	12	1	12	-2	-24	Miller
Wells-Parker	1988	3431	2	12	-2	-24	Miller
Burge	1997	242	2	13	-2	-26	Tranchita
Heather	1990	107	3	13	-2	-26	Miller
Brown	1980	60	2	15	-2	-30	Miller
CES = -247							

changes in drinking behavior. However, studies of social skills training have had generally positive results, as have studies of community reinforcement. In fact these two modalities are ranked in the top five modalities in terms of their CES as obtained in this review. Surprisingly, little study of these two modalities has been undertaken in the last 10 years (only one study of community reinforcement, none of social skills training in current review).

Sixteen studies of social skills training have been conducted to date, 11 of which found positive results. Importantly, the mean severity rating across these studies was 3.75, indicating that social skills training may work with fairly severe patients (i.e., those diagnosable with severe alcohol dependence).

Table 15

Studies of Broad Spectrum Skill Training

Author	Year	*n* size	Severity	MQS	OLS	Product	Review author
			Social skills training				
Azrin	1982	43	4	14	2	28	Miller
Chaney	1978	50	4	14	2	28	Miller
Eriksen	1986	24	4	13	2	26	Miller
West	1979	84	4	12	2	24	Miller
Jones	1982	74	4	10	2	20	Miller
Rohsenow	1985	40	2	10	2	20	Miller
Freedberg	1978	101	4	8	2	16	Miller
Oei	1980	32	4	7	2	14	Miller
Oei	1982	32	4	12	1	12	Miller
Ferrell	1981	22	4	11	1	11	Miller
Monti	1990	69	4	11	1	11	Miller
Jackson	1978	24	4	6	-2	-12	Miller
Cooney	1991	113	4	14	-1	-14	Miller
Miller	1981	–	2	16	-1	-16	Miller
Ends	1957	96	4	10	-2	-20	Miller
Ferrell	1981	22	4	11	-2	-22	Miller
CES = 126							
			Community reinforcement				
Smith	1998	106	4	16	2	32	Tranchita
Azrin	1982	43	4	14	2	28	Miller
Hunt	1973	16	4	13	2	26	Miller
Azrin	1976	18	3	14	1	14	Miller
Sisson	1986	12	1	12	1	12	Miller
CES = 112							
			Relaxation training				
Steffen	1975	4	3	12	2	24	Miller
Rohsenow	1985	40	2	10	2	20	Miller
Rosenberg	1979	75	4	9	1	9	Miller
Blake	1967	62	3	9	-1	-9	Miller
Sisson	1981	30	4	0	-1	-9	Miller
Drummond	1994	36	4	10	-1	-10	Tranchita
Freedberg	1978	80	4	10	-1	-10	Miller
Marlatt	1977	44	1	5	-2	-10	Miller
Connors	1986	67	2	12	-1	-12	Miller
Skutle	1987	48	3	14	-1	-14	Miller
Miller	1980	45	2	16	-1	-16	Miller
Miller	1980	48	3	16	-1	-16	Miller
Brown	1997	35	3	10	-2	-20	Tranchita
Murphy	1986	46	1	10	-2	-20	Miller
Monti	1990	69	4	11	-2	-22	Miller
Telch	1984	29	3	12	-2	-24	Miller
CES = -139							
			Systemic desensitization				
Lanyon	1972	21	4	12	2	24	Miller
Hedberg	1974	57	4	11	-1	-11	Miller
CES = 13							
			Problem solving				
Sanchez-Craig	1982	90	4	12	-1	-12	Miller
CES = -12							

Of five studies of the community reinforcement approach, all found positive results. The mean severity rating is only 3.2. However, one of these studies (Sisson, 1986) had a severity rating of 1, lowering the mean significantly. Excluding this particular study, the mean severity for the other four studies is 3.75, indicating that this intervention seems to work with samples diagnosable with severe dependence. In fact, the Smith (1998) study found positive results in a sample of homeless men diagnosable with moderate to severe alcohol dependence.

Interventions that fall into the cognitive-behavioral realm have received a great deal of research attention over the years, and to date have been generally been recognized by most experts as effective. However, the evidence presented in Table 16 shows that the outcome picture is more mixed than may be appreciated.

Studies of behavior contracting and cue exposure are the only two modalities that have generally positive findings (i.e., have a positive CES). Of four studies of behavior contracting, all found positive studies. Interestingly, no recent studies of behavior contracting were found for the current review, and the last study was published in 1984. It is unclear why this apparently promising modality has received so little research attention.

A very recent but generally positive pattern of outcomes has emerged for cue exposure therapy. Four studies of cue exposure were found for the current review, all of which were published since the time of the Miller review. Three had statistically significant positive results, indicating that cue exposure may be useful for making changes in drinking behavior. While there are four studies, more research should be undertaken before making strong conclusions about cue exposure.

Table 16

Studies of Cognitive-Behavioral Approaches

Author	Year	*n* size	Severity	MQS	OLS	Product	Review author
			Behavior contracting				
Ahles	1983	50	3	13	2	26	Miller
Miller	1975	20	4	11	2	22	Miller
Keane	1984	25	4	13	1	13	Miller
Gerrein	1973	121	4	6	2	12	Miller
CES = 73							
			Cue exposure				
Monti	1993	40	4	13	2	26	Tranchita
Sitharthan	1997	52	3	11	1	11	Tranchita
Drummond	1994	36	4	10	1	10	Tranchita
Heather	1999	108	3	12	-1	-12	Tranchita
CES = 35							
			Self-help manuals				
Miller	1978	65	3	15	2	30	Miller
Miller	1981	35	3	13	1	13	Miller
Reynolds	1995	78	2	8	-1	08	Tranchita
Guydish	1987	46	3	10	-1	-10	Miller
Baer	19892	132	2	11	-1	-11	Tranchita
Fichter	1993	100	4	14	-1	-14	Tranchita
CES = 0							
			Cognitive or general cognitive-behavioral therapy				
Brandsma	1980	116	4	14	2	28	Miller
Sitharthan	1996	166	3	13	2	26	Tranchita
Oei	1982	32	4	12	2	24	Miller
Oei	1984	18	3	11	2	22	Miller
Kelley	2000	32	3	10	2	20	Tranchita
Brown	1997	35	3	10	1	10	Tranchita
Rosenberg	1986	22	2	8	-1	-8	Miller
Ito	1988	48	4	11	-1	-11	Miller
Jackson	1978	24	4	6	-2	-12	Miller
Rice	1993	229	3	12	-1	-12	Tranchita
Ojehagen	1992	72	3	16	-1	-16	Tranchita
Project MATCH	1996	1726	3	16	-1	-16	Tranchita
Monti	1990	69	4	11	-2	-22	Miller
Sandahl	1998	59	4	11	-2	-22	Tranchita
Sitharthan	1997	52	3	11	-2	-22	Tranchita
CES = -11							

(*table continues*)

Author	Year	*n* size	Severity	MQS	OLS	Product	Review author
			Behavioral self-control training				
Harris	1990	34	3	16	2	32	Miller
Brown	1980	60	2	15	2	30	Miller
Alden	1988	144	2	14	2	28	Miller
Baker	1975	40	4	14	2	28	Miller
Sobell	1973	70	4	14	2	28	Miller
Caddy	1976	63	4	12	2	24	Miller
Hester	1997	40	2	10	2	20	Tranchita
Lovibond	1975	58	2	10	2	20	Miller
Miller	1980	45	2	16	1	16	Miller
Robertson	1986	37	3	14	1	14	Miller
Sandahl	1990	53	4	7	2	14	Miller
Baldwin	1991	78	4	13	1	13	Miller
Heather	1990	107	3	13	1	13	Miller
Coghlan	1979	60	3	10	1	10	Miller
Heather	1986	247	3	10	1	10	Miller
Guydish	1987	46	3	10	-1	-10	Miller
Carpenter	1985	30	2	11	1	-11	Miller
Heather	1999	108	3	12	-1	-12	Tranchita
Vogler	1977	119	3	12	-1	-12	Miller
Miller	1981	35	3	13	-1	-13	Miller
Pomerleau	1978	32	3	14	-1	-14	Miller
Sanchez-Craig	1989	90	3	14	-1	-14	Miller
Skutle	1987	48	3	14	-1	-14	Miller
Miller	1978	65	3	15	-1	-15	Miller
Sanchez-Craig	1991	96	3	15	-1	-15	Miller
Sanchez-Craig	1984	70	3	15	-1	-15	Miller
Miller	1980	48	3	16	-1	-16	Miller
Collins	1996	72	3	9	-2	-18	Tranchita
Kivlahan	1990	50	1	10	-2	-20	Miller
Connors	1992	63	2	14	-2	-28	Miller
Sannibale	1988	96	3	14	-2	-28	Miller
Heather	1987	104	2	15	-2	-30	Miller
Fox	1984	62	4	16	-2	-32	Miller
CES = -17							
			Relapse prevention				
O'Farrell	1993	59	4	15	2	30	Miller
Chaney	1978	50	4	14	2	28	Miller
Caddy	1984	60	3	13	2	26	Miller
Cisler	1998	37	3	8	-1	-8	Tranchita
Rosenberg	1986	22	2	8	-1	-8	Miller
McCrady	1999	90	3	11	-1	-11	Tranchita
Annis	1992	56	3	12	-1	-12	Miller
O'Malley	1996	104	3	12	-1	-12	Tranchita
Skkutle	1987	48	3	14	-1	-14	Miller
Allsop	1997	60	4	12	-2	-24	Tranchita
Obelensky	1984	96	2	13	-2	-26	Miller
CES = -31							
			Functional analysis				
Coghlan	1979	60	3	10	-1	-10	Miller
Connors	1986	67	2	12	-1	-12	Miller
Rice	1993	229	3	12	-1	-12	Tranchita
CES = -34							

(*table continues*)

Author	Year	*n* size	Severity	MQS	OLS	Product	Review author
			Self-monitoring				
Eriksen	1986	21	4	9	1	9	Miller
Harris	1990	34	3	16	-2	-32	Miller
CES = -23							
			BAC discrimination training				
Vogler	1977	119	3	12	-1	-12	Miller
Vogler	1977	39	4	12	-1	-12	Miller
CES = -24							
			Contingency management				
Cox	1998	298	4	13	2	26	Tranchita
CES = 20							

Functional analysis has failed to obtain statistically significant changes in drinking behavior across three studies. While three studies is a limited number to be making strong conclusions, there is as yet little reason to believe it is effective for making significant changes in drinking behavior.

It is difficult to make any concrete conclusions about the remaining cognitive-behavioral treatment modalities (relapse prevention, behavioral self-control training, self-help manuals, and cognitive-behavioral therapy not otherwise specified). Studies of these modalities has produced mixed results; about one third of studies focusing on these four modalities obtained positive results (26 of 75). Interestingly, relapse prevention studies have shown a significant change in the pattern of outcomes from the time of the Miller et al review. Formerly, relapse prevention had a positive CES of 34. Research since that time has generally obtained negative results, reducing the CES significantly (by 65). It is unclear at this time why more recent studies have generally found negative

results. At this time, only 3 of 11 studies of relapse prevention for alcohol use have obtained positive results, and all four recent studies obtained by the present author had negative results, indicating again that more recent research into this modality has not proven it very effective in changing drinking behavior.

While these four modalities all have zero or negative cumulative evidence scores, it is difficult to ignore the 26 studies that found positive results, particularly the 15 positive results for behavioral self-control training. While it is beyond the scope of this review, perhaps future researchers might study characteristics of people for whom these interventions seem to work or not work.

Studies of other psychotheapeutic approaches that are not cognitive or cognitive-behavioral in nature have produced mixed results (see Table 17). For example, insight-oriented psychotherapy alone has generally not been found to have significant impacts on measures of drinking. Client-centered therapy seems to have somewhat more promising findings, though the results are quite mixed.

As can be seen in Table 18, little study of confrontational approaches has been conducted since the time of the Miller review, likely due to the very limited positive results reported. Of all available studies reviewed, there was not one demonstrating a statistically significant positive impact on drinking.

Table 19 lists all studies coded in modalities listed in the "other therapies." These modalities, with the exceptions of hypnosis and acupuncture, have not received sufficient research attention to allow for conclusions. None of the four studies of hypnosis included in this review found positive results, indicating that hypnosis alone does not impact alcohol abuse. For acupuncture, only one of the three studies included in this

Table 17

Studies of Psychotherapy

Author	Year	*n* size	Severity	MQS	OLS	Product	Review author
			Client centered				
Ends	1957	96	4	10	2	20	Miller
Telch	1984	29	3	12	1	12	Miller
Valley	1981	247	4	11	1	11	Miller
Rosenberg	1986	22	2	8	-1	-8	Miller
O'Malley	1996	104	3	12	-1	-12	Tranchita
CES = 23							
			Insight-oriented psychotherapy				
Rhead	1977	103	4	11	2	22	Miller
Sandahl	1998	59	4	11	1	11	Tranchita
Johnson	1970	95	3	9	-1	-9	Miller
Bruun	1963	303	3	11	-1	-11	Miller
Jacobson	1973	80	3	11	-1	-11	Miller
Zimberg	1974	113	3	11	-1	-11	Miller
Ludwig	1969	176	4	13	-1	-13	Miller
Ojehagen	1992	72	3	16	-1	-16	Tranchita
Swenson	1981	351	2	9	-2	-18	Miller
Olson	1981	137	4	11	-2	-22	Miller
Wells-Parker	1988	3431	2	12	-2	-24	Miller
Bowers	1990	16	3	15	-2	-30	Miller
CES = -132							
			Developmental counseling				
Alden	1988	144	2	14	2	28	Miller
CES = 28							

review found positive results. It is difficult to reach any conclusions based on so few studies, though it is important to note that the two most recent studies found did not find positive results.

Trend of Methodological Quality

The following analysis is presented to answer the research Question 4: Has the quality of research methodology improved over time?

Table 18

Studies of Confrontational Approaches

Author	Year	*n* size	Severity	MQS	OLS	Product	Review author
			Videotape self-confrontation				
Fain	1976	46	4	4	-1	-4	Miller
Schaefer	1971	52	4	11	-1	-11	Miller
Vogler	1977	119	3	12	-1	-12	Miller
Vogler	1977	39	4	12	-1	-12	Miller
Baker	1975	40	4	14	-1	-14	Miller
Lanyon	1972	21	4	12	-2	-24	Miller
CES = -77							
			Confrontational counseling				
Swenson	1980	436	2	9	-1	-9	Miller
Ino	2000	278	3	5	-2	-10	Tranchita
Bjornevoll	1972	35	4	11	-1	-11	Miller
Pomerleau	1978	32	3	14	-1	-14	Miller
Miller	1990	30	2	15	-1	-15	Miller
Miller	1973	30	4	10	-2	-20	Miller
Annis	1983	150	2	14	-2	-28	Miller
Sannibale	1988	96	3	14	-2	-28	Miller
CES = -135							

First, an analysis of variance was conducted to determine if there were significant differences between mean methodological quality by decade. Due to the small number of studies conducted in the 1950s (eight), these were collapsed in with the studies from the 1960s. For the same reason, studies for the year 2000, (13) and 2001 (one) were collapsed in to the 1990s category. Table 20 is a listing of the number of studies, mean methodological quality and standard deviation by decade. Looking at this table we can see the mean methodological quality score has generally increased by decade, except between the 1980s and 1990s (including studies from 2000 and 2001).

Table 21 is the analysis of variance table conducted to determine if there are statistically significant differences between the mean methodological scores across

Table 19

Studies of Other Therapies

Author	Year	*n* size	Severity	MQS	OLS	Product	Review author
			Acupuncture				
Bullock	1987	54	4	10	2	20	Miller
Sapir-Weise	1999	72	3	12	-1	-12	Tranchita
Worner	1992	56	3	8	-2	-16	Tranchita
CES = -8							
			Hypnosis				
Edwards	1966	40	4	8	-1	-8	Miller
Wallerstein	1957	178	4	9	-1	-9	Miller
Jacobson	1973	80	3	11	-1	-11	Miller
Ludwig	1969	176	4	13	-1	-13	Miller
CES = -41							
			Tobacco cessation treatment				
Bobo	1998	575	3	12	2	24	Tranchita
Bobo	1995	90	3	10	2	20	Tranchita
CES = 44							
			Reduced environmental stimulation training (REST)				
Cooper	1988	59	1	10	2	20	Miller
Cooper	1988	51	1	10	2	20	Miller
CES = 40							
			EMG Biofeedback				
Taub	1994	250	4	11	2	22	Tranchita
CES = 22							
			Transcendental meditation				
Taub	1994	250	4	11	2	22	Tranchita
CES = 22							
			Contingency management				
Petry	2000	42	3	10	2	20	Tranchita
CES = 20							
			Feedback of assessment results				
Agostinelli	1995	26	2	10	2	20	Tranchita
CES = 20							
			Nurse intervention				
Patterson	1997	127	3	10	2	20	Tranchita
CES = 20							

(table continues)

Author	Year	*n* size	Severity	MQS	OLS	Product	Review author
			Detoxification				
Bennie CES = 12	1998	95	4	12	1	12	Tranchita
			Exercise				
Murphy	1986	46	1	10	2	20	Miller
Levinson CES = 9	1969	60	4	11	-1	-11	Miller
			Occupational therapy				
Rice CES = -12	1993	229	3	12	-1	-12	Tranchita
			Twelve-step facilitation				
Project MATCH CES = -16	1996	1726	3	26	-1	-16	Tranchita
			Kudzu Root				
Shebek CES = -20	2000	49	4	10	-2	-20	Tranchita
			Assessment as tested intervention				
Richmond CES = -30	1995	378	2	15	-2	-30	Tranchita
			Neurotherapy				
Padjen	1995	67	3	11	-2	-22	Tranchita
Taub CES = -44	1994	250	4	11	-2	-22	Tranchita

decades. The ANOVA did indicate that there is a statistically significant difference between methodological quality scores across decades.

Table 22 is the post-hoc comparisons of the mean scores across decades. As can be seen in the table, there were statistically significant differences in mean methodological quality scores across all decade comparisons except when comparing studies published in the 1980s with those published in the 1990s (including 2000 and 2001). The general trend is for increases in mean methodological quality from decade to

Table 20

Summary of Methodological Quality Scores by Decade

Decade	*N*	Mean MQS	Standard deviation
1950s and 60s	53	9.21	2.78
1970s	94	10.67	2.84
1980s	130	12.33	2.36
1990s and 2000s	164	12.23	2.22
Total	441	11.56	2.69

Table 21

ANOVA of MQS by Decade

Group	Sum of squares	*df*	Mean square	*F*	*p*
Between	517.6	3	172.5	27.6	< .001
Within	2674.9	437	6.1	--	--
Total	3192.5	440	--	--	--

Table 22

Tukey Post Hoc Comparisons of MQS by Decade

Decade	Comparison decade	Mean difference	Standard error	*p*
1950s and 60s	1970s	-1.46	.425	.003
	1980s	-3.12	.403	< .001
	1990s	-3.02	.391	< .001
1970s	2980s	-1.66	.335	< .001
	1990s	-1.56	.320	< .001
1980s	1990s and 2000s	0.11	.291	.984

decade, with the exception from the 1980s to 1990s. This is evidence in support of the hypothesis that increases in methodological quality scores have indeed occurred over time. However, MQS values began to level off starting in the 1980s. This may indicate a ceiling effect for improvements in methodological quality, at least as measured by this system.

A statistically significant zero-order Pearson correlation was found between the year the study was published (entered into the correlation as a continuous variable), and the methodological quality score ($r = .356$, $p < .001$). The r-square value is .127, indicating that study year accounted for 12.7% of the variance in methodological quality scores.

Figure 1 is a scatter plot with methodological quality scores on the y-axis, and study year on the x-axis. Again, we can see the general upward trend in methodological quality scores over time.

Variables Predictive of Outcome

A regression analysis was planned and discussed in the research questions section (under research question 3) with product score as the dependent variable and various sample and methodological characteristics as possible predictors. Originally, the goal was to determine if any of the sample characteristics of the studies included predicted outcomes. However, further study of the product score variable revealed that this analysis was not possible, given the nature of the scores. The positive and negative values of the product scores reflect separate, discontinuous constructs that do not lend themselves to a regression analysis.

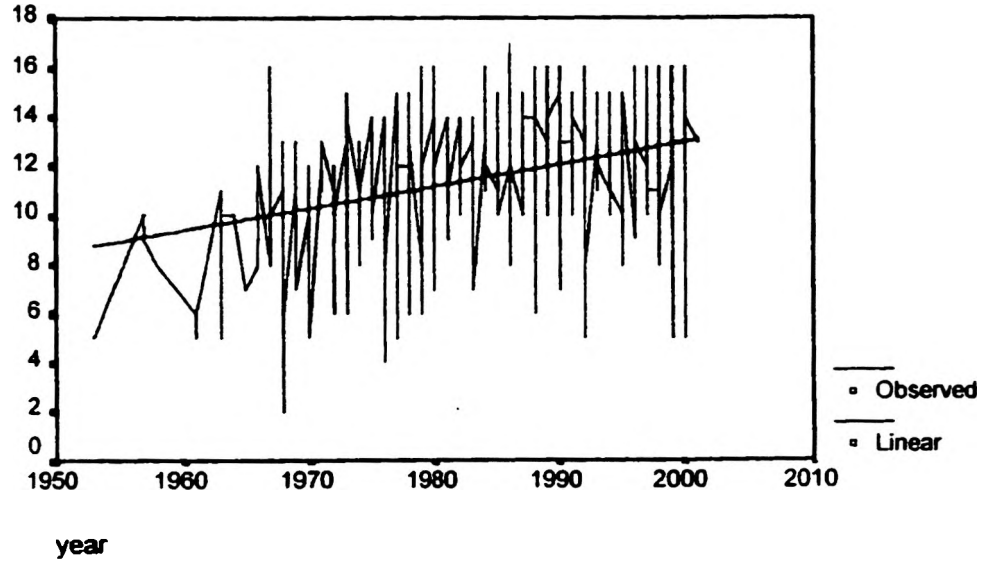

Figure 1. Regression of MQS by year.

A scatter-plot product scores over time is included in Figure 2 to illustrate the two distinct groups of data points that represent the product scores. The gap between these two data points is due to the fact that the product score is, as it sounds, a product of two variables, MQS and OLS. The minimum MQS was 4, and when multiplied by OLS, which can only be -2,-1,1, or 2, there is necessarily a gap of product scores around zero (between -4 and 6 to be exact). Therefore, this variable does not lend itself to regression analyses.

Given the separate and distinct nature of these positive and negative scores, separate regressions were considered for positive and negative values. However, it was decided that this would only show if sample characteristics were predictive of the methodological quality scores, rather than predictive of study outcomes. This analysis

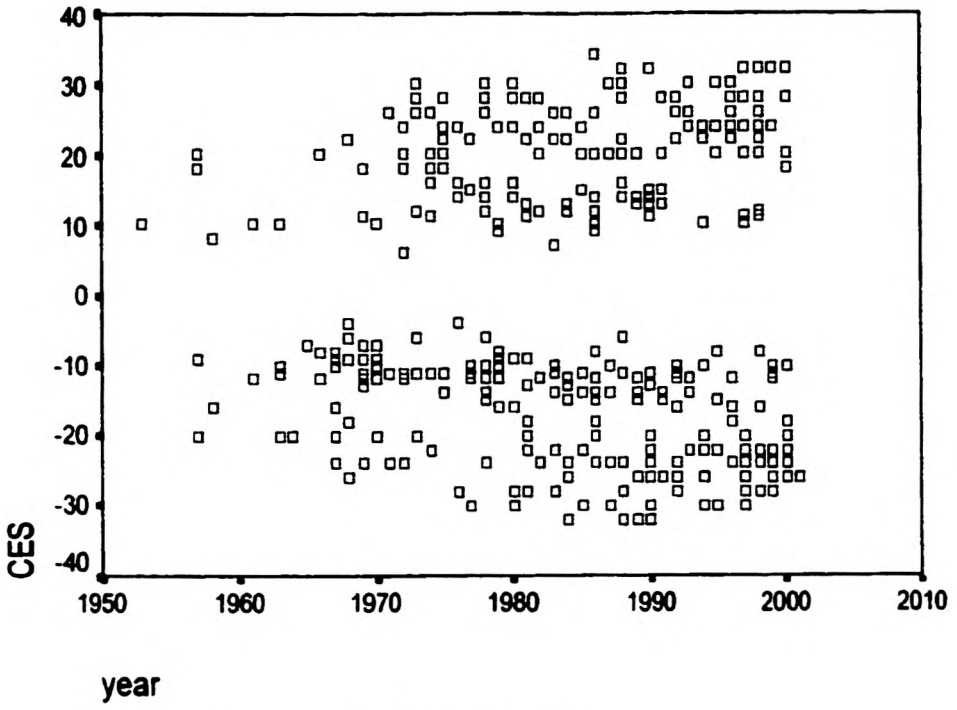

Figure 2. Scatter plot of product scores.

would not be clinically useful or meaningful. Therefore, this analysis was also abandoned.

DISCUSSION

This review was intended as an update of Miller et al. (1995) meta-analysis of controlled alcohol treatment outcome studies, using the same coding methodology. The database upon which conclusions are based included all 206 studies reviewed by Miller, as well as 100 more studies compiled by the present writer, completed since the time of the prior review. Inter-rater reliability for coding the 100 new studies was established with a trained undergraduate student judge. Reliability of all coding variables ranged from 79 - 100%, with an average of 87%. These numbers compare favorably to that obtained by Miller et al. (1995).

The present review had several purposes: (a) to establish an updated rank ordering of treatment modalities, comparing/contrasting this with the ranking obtained by Miller et al. (1995), (b) to determine if a trend exists over time regarding improved methodological quality, and (c) to determine if certain sample and study characteristics are differentially predictive of outcome.

Efficacy of Psychosocial and Behavioral Treatment Modalities

Brief interventions including motivational interviewing techniques continue to show themselves to be effective in reducing the drinking behavior in less severe samples. Study samples were usually identified through paper-and-pencil screening instruments such as the CAGE or AUDIT, and given short interventions, often less than one hour focused on reducing drinking behavior. At follow-up periods between 3 months and several years, statistically significant reductions in drinking behavior are generally found

in large samples of people measured both by self-report and objective physiological measures. This is a meaningful and important result that could be used to make public policy regarding these types of interventions for the purpose of improving general health of populations. However, given the less severe samples on which these interventions were tested, it would likely be prudent to also make referrals to more stringent treatment approaches for more severe drinkers.

It is somewhat difficult to compare the present results to those of other meta-analyses and reviews discussed in the introduction due to the varied nature of the conclusions of those reviews. Furthermore, those reviews utilized a level of specificity (male vs. female, duration of intervention) that is beyond the scope of this review, and, indeed, is a relative weakness of the current review. However, this review is still able to point to a general trend in support of brief interventions that is important to note.

Other psychosocial treatments that have generally received support with more severe samples (i.e., diagnosable with an alcohol misuse disorder) include social skills training, community reinforcement, behavior contracting, and, more recently, cue exposure. Surprisingly, behavior contracting has received very little research attention, despite generally positive results. The fact that social skills training is on this list may indicate that alcoholics tend to have a number of interpersonal deficits that may contribute to excessive drinking to alleviate anxiety in social situations. This is further supported by the fact that community, which is designed to help drinkers find new ways to interact and be reinforced socially, reinforcement has also shown to be effective. The fact that cue exposure is shown to be effective in changing drinking behavior may indicate that classically conditioned cues play an important role in maintaining drinking

behavior and relapse. This is a fact that may be overlooked by many clinicians and is not addressed experientially by most treatment modalities. As such including some assessment and treatment of these classically conditioned cues for cravings should be an important part of any treatment program.

There is also a trend for cognitive-behavioral marital and/or family therapy to be helpful in reducing drinking behavior. However, there has been little recent focus on this broadly defined group of interventions. Relatively, there exists a greater number of nonbehavioral marital and/or family therapy studies, which have generally shown to be much less effective than the cognitive-behavioral approaches. Again, it is difficult to compare the results of this review to others mentioned in the introduction. In the case of family therapy, the Edwards and Steinglass (1995) review grouped outcome of studies by various time periods of treatment (initiation of treatment, during treatment, and aftercare). The present review did not pursue this due to the inapplicability of these variables to this review, and to the studies included herein. Furthermore, Edwards and Steinglass did not differentiate studies by type of family intervention (i.e., behavioral vs. nonbehavioral). Therefore, the level of specificity was very different across reviews, though both that review and the present one found some support for the use of marital/ family therapy.

Other cognitive-behavioral interventions such as relapse prevention, CBT (cognitive-behavioral therapy), behavioral self-control training, and self-help books have very mixed results in the current review. For relapse prevention, this is a significant change since the Miller et al review, in which they found a positive CES for this modality. However, these results are similar to the Carroll (1996) review that only found

one study in which relapse prevention was superior to another psychosocial treatment. It is possible that future patient-treatment-matching studies may find sample characteristics that help to predict for whom these cognitive-behavioral interventions are helpful.

Studies of insight-oriented psychotherapies have consistently found negative results, indicating that this modality is not useful by itself in making significant changes in drinking behavior. However, there was some evidence that client-centered therapy makes significant changes in some samples (three out of five studies). It may again be the case that treatment-matching studies may find sample characteristics predictive of treatment outcome.

Other psychosocial and behavioral treatments listed in this review (with sufficient studies to make conclusions) have generally not been supported by research evidence. Several of these modalities have received very little recent research attention such as aversion and confrontational approaches.

Other modalities that have generally not been supported by research evidence include those labeled as "Standard Treatment Components" in the Miller et al. (1995) review. Included in this group are milieu therapy, standard treatment not otherwise specified, AA, general alcoholism counseling, and educational lectures and films. With the exception of AA (for which there were only three studies for this review), these modalities have received a great deal of research attention, despite the general lack of positive findings for these modalities. This is an important and disturbing result, given that these interventions are very commonly used in most clinical settings.

It is difficult to draw any conclusions about AA based on evidence from this review. As mentioned in Tonigan, Toscova, and Miller (1996), there is a fairly large

body of literature written about AA; however, the research quality is generally poor and includes very few controlled trials (three found in this review). However, this does not mean that AA does not work or that it is a poor intervention. Rather, quality outcome research on AA is scarce. This fact may speak to the nature of AA, which is led by "lay" members rather than professional therapists. Furthermore, while there are a standard 12 steps that AA members follow, meetings are not run in a standardized manner across communities.

Efficacy of Pharmacological Treatments

Research regarding antidisotropic medications such as disulfiram (antabuse) and metronidazole has produced mixed results, and such medications have received little research attention since the time of the Miller et al. review (only one of disulfiram in the current review). Of 11 studies of metronidazaole, 10 found negative results, which should prompt an obvious conclusion about this modality. However, of 22 studies of disulfiram, 10 found positive results--slightly less than half. These mixed results are a bit harder to interpret, but are generally negative.

This trend is somewhat disturbing in that disulfiram also continues to be included as one of the "standard" treatment components by many practitioners. Other reviews of antisotropic medications such as O'Brien and McKay (1998), Garbutt et al. (1999), and Swift (1999), also reached similar conclusions (i.e., "mixed" support for disulfiram). The one exception was that O'Brien and McKay concluded that studies of disulfiram, when used concomitantly with behavior contracting, showed better results. A reservation with that particular conclusion is that behavior contracting seems to work fairly well on its

own. Therefore, it may have been that behavior contracting largely accounted for the behavior change, independent of the disulfiram. It appears, generally, that the research evidence regarding the use of this medication may not support its widespread use. However, there may be a need for further research into when this medication may or may not be effective. For example, perhaps more effective monitoring of the medication would lead to better results.

There has been an explosion in the number of studies examining the efficacy of psychotropic medications for the treatment of alcohol misuse since the time of Miller's review (which covered studies up to 1992). The percentage of total codable outcomes accounted for by studies of psychotropic medications has approximately doubled since the time of the Miller review (i.e., from 8.2 - 16.5% of all outcomes included in the present review). Indeed, studies of psychotropic medications accounted for 37% of all new studies found by the present author since 1992.

However, the explosion of research into psychotropic medications has failed to identify medications that are reliably useful in changing drinking behaviors, with the possible exception of GABA agonists (acamprosate). GABA agonist medication has received a great deal of support from the controlled studies published since the time of the Miller et al. (1995) review. Studies in this review all included patients who likely meet diagnostic criteria for an alcohol misuse disorder. In line with the present review, other recent reviews have consistently concluded that GABA agonist medication is an effective means of treating alcohol misuse.

Other research into the use of psychotropic medications to change drinking behavior has reported mixed results. Studies of narcotic antagonists (naltrexone,

nalmefene) and lithium have obtained mixed results, with slightly less than half of studies obtaining positive results (3 out of 7 studies for both medications). Further, the conclusion of the present review regarding the lack of efficacy of lithium for alcohol misuse is similar to that of other reviews listed in the introduction.

However, the present conclusions regarding naltrexone runs counter to several of the reviews cited, which tended to conclude there is empirical support for its use. This discrepancy seems to exist because the current study includes a number of articles that the others do not, either due to the other studies being somewhat dated, or due to different exclusionary criteria. The review of O'Brien and McKay (1998) does not include three studies included in the current review (all of which had negative results), and the conclusions of Batel (1995) and Garbutt et al. (1999) both based conclusions on only three studies (and not the same three studies). There does appear to be a slight trend for more recent studies to be less supportive of the use of naltrexone, which could explain why earlier reviews concluded there was support for the use of this medication. However, not all of these studies were negative, indicating that future research into naltrexone could focus more on the question of patient-medication matching.

Other psychotropic medications, including antidepressants (e.g., imiprimine), selective seratonin reuptake inhibitors (SSRIs; e.g., sertraline), psychedelics (e.g., lysergic acid [LSD]), dopamine agonists (e.g., bromocriptine), seratonin antagonists (e.g., ritanserin), and antianxiety medication (e.g., buspirone) have generally not proven reliably effective over placebo for changing drinking behavior. These conclusions generally match those of other reviews mentioned in the introduction. However, some of the prior reviews have emphasized that some of these medications are more useful when

utilized to treat comorbid disorders (e.g., depression, anxiety, etc.). Studies focusing on treatment of comorbid diagnoses have not been included in the present review, and therefore, no conclusions regarding this assertion were reached in this review.

Trends in Methodological Quality

With regard to methodological quality, a definite trend was found in this body of literature for improved quality of research, though this trend seems to have flattened out since the 1980s. A statistically significant correlation was found between the year studies were published and methodological quality score (MQS), accounting for about 12% of total variance in MQS.

Furthermore, there were statistically significant increases in mean MQS from decade to decade (until the 1990s when the mean MQS was almost the same as that seen in the 1980s). It is unclear whether this should be viewed as a plateau, and that we can expect mean MQS to continue to improve in the coming decades, if it is a "ceiling effect" (that methodological quality is not likely to improve much more), or if it is evidence that research is improving in ways that are not measured in this meta-analysis. The last of these options seems most likely, and future reviews should begin to take other methodological variables into account.

Variables Predictive of Outcome

A planned regression analysis to determine which, if any, sample and study characteristics helped to predict product scores was abandoned due to the nature of the product score variable. Product scores are separated into two separate clusters for studies

with positive versus negative results, and, therefore, regression analysis would likely not be useful for this variable.

Individual treatment modalities were examined to determine if certain variables were important to explain the pattern of results. In this review it was difficult to make many conclusions regarding these variables, and no real conclusions could be made regarding certain variables being predictive outcome.

However, there were several areas where sample characteristics were important to making conclusions regarding the efficacy of certain treatments. Specifically, brief interventions and motivational enhancement were all tested on less severe populations, and, therefore, conclusions can only be made regarding using these therapies for less severe populations. In contrast, studies of GABA agonists (acamprosate), social skills training, and community reinforcement gave evidence for efficacy of these modalities with more severe populations that likely meet diagnostic criteria for an alcohol misuse disorder. While sample severity is not considered predictive of these outcomes, it gives further explanation of the results.

Clinical Implications

It is important to qualify what can, indeed, be concluded from this review in regards to clinical decision-making. This review is purposely limited in scope to trials with control or comparison groups, and focused on finding studies that have made statistically significant differences on measures of drinking in samples of people who generally do not have other comorbid diagnosable substance misuse disorders. Therefore, the conclusions of this study should be applied only to such populations.

Also, conclusions should be tempered by the realization that there is a large body of uncontrolled studies of these modalities that did not meet inclusion criteria for this review. However, it is generally recognized that controlled studies are the strongest design for making conclusions about efficacy, and, therefore, some conclusions can be made regarding the efficacy of these treatments based on this review.

People in a role of seeing large numbers of people where alcohol screening would be feasible such as a general medical practice, emergency room, or even a large-scale employer would likely be justified in deciding to utilize brief interventions. This review, along with others, has shown that these interventions have generally proven effective in making significant changes in less severe drinkers. Therefore, from a public health perspective, these interventions could be very helpful in reducing drinking behavior in large groups of people who may not be diagnosable with an alcohol misuse disorder, but are drinking at a level that may have a negative impact on their long-term health.

Those making decisions regarding more severe populations of drinkers have a range of interventions enjoying research support based on this review. Interventions that could be tentatively suggested based on this review include: GABA agonist medication, social skills training, community reinforcement, behavior contracting, cue exposure, and possibly cognitive-behavioral marital and/or family therapy. This does not mean that other treatment approaches may not be useful. In many cases, it means that study results are mixed, and that further and different research is needed.

A list of empirically supported treatments could provide clinicians with a "menu" to choose from. Clinicians often do not use single modality interventions, but rather a combination of several. Having a list of several modalities that are empirically supported

means that a clinician could make a number of them available for use with clients, and attempt to meet individual client needs through informed judgments of combinations of treatments. Furthermore, clinicians could then easily shift to another empirically validated modality, if necessary.

Perhaps what the present review can best emphasize are treatments that have generally not been supported by research, and perhaps should be avoided or abandoned. This list includes a number of treatment modalities that are generally considered "standard" treatment components that are commonly utilized such as milieu therapy, general alcoholism counseling, and educational lectures and films. Other commonly used treatment modalities that have received very little controlled research support include insight-oriented psychotherapy and confrontational approaches.

Implications for Research

Methodological quality of the alcohol treatment outcome research, as measured by Miller et al. (1995) meta-analysis, has made significant improvements over time. This is a heartening trend that hopefully will continue.

Along with being a means of making some clinical decisions, it is hoped that this review will be utilized as a guide for future research. There are some modalities in this review that have received generally positive results, but have been researched relatively little, such as behavior contracting and cue exposure. while other modalities have received a great deal of research attention, but have generally not been supported such as educational lectures and films. Knowledge such as this could be utilized in making decisions about what modalities could benefit the most from research attention.

Other research decisions could be made in terms of changing research goals. Specifically, modalities for which research is mixed such as some of the cognitive-behavioral interventions (relapse prevention, behavioral self-control training, self-help books, behavioral marital and family techniques), disulfiram (Antabuse), narcotic antagonists (Naltrexone, Nalmefene), client-centered psychotherapy, and aversion techniques may be most benefitted with research into matching treatment to patient characteristics. The controlled research into these modalities seems to show that they work some, but not all, of the time. Further study into matching these types of treatments to patients may help clinicians to understand when these treatments will be most beneficial. Some examples of possible patient variables that may be significant treatment predictors would be level of education, comorbid diagnoses (depression, anxiety, antisocial personality disorder), amount of drinking at time of intake into treatment, and past treatment history.

Limitations and Future Directions

Some of the limitations of this review are fairly obvious, and can and should be addressed in future reviews.

First, other than the corrections listed earlier, the current empirical data reported herein relies in part on the accuracy of reported scores in the Miller et al. review. The few numerical mistakes noted by this author in the Miller et al. review are unlikely to have much of an impact on the overall conclusions of a review of this nature given the robustness of the findings (i.e., large number of studies utilized). However, a future

review could perhaps reassess the accuracy of these codings to ensure that conclusions are based on as reliable data as possible.

Other limitations involve the scoring system utilized for this review. The outcome logic score calculation is, in some ways, fairly arbitrary, and causes a loss of a great deal of data. For example, studies with the same methodology that find no improvement at all, or even deterioration on drinking measures, get the same OLS as a study that finds improvements on drinking scores that were not statistically significant. While it is difficult to draw conclusions about improvements that are not statistically significant, these two results make very different statements about the use and utility of the given treatment modality. Future reviews that utilize actual treatment effect sizes would be helpful.

Furthermore, data are lost when each modality is assigned one outcome score per sample. Many studies will have several outcome measures that may be considered important. For example, a study may report a self-report measure of drinking, an objective physiological measure of alcohol use such as breathalyzer, MCV, or GGT, an objective measure of functioning such as hospitalization rates, and other measures of psychosocial functioning such as a measure of depression. All of this data may be important to determine if the intervention made a meaningful difference in the functioning of the person being treated, and is, in many cases, contradictory. With the current methodology, a judgment call was necessary to determine which of the reported results was the best measure of whether the intervention made a statistically significant difference in drinking, and completely ignored measures that were not measures of drinking. Perhaps future reviews could focus on determining effects of specific

modalities on several measures by computing effect sizes for each of the outcome measures, including other psychosocial measures.

The "Take Home" Message

There are several important points that a reader can glean from this review. First, it is important to emphasize that methodological quality of alcohol treatment research has, indeed, improved over time. This trend toward seems to have reached a plateau over the past 10 years.

Second, controlled research points the clinician to a number of treatments that seem to be efficacious for treatment of severe alcohol misusers. Those identified by this review include: GABA agonist medication, social skills training, community reinforcement, behavior contracting, and cue exposure. Combinations of these treatments could be utilized by clinicians to address the needs and symptoms of individual patients.

Third, brief interventions, including motivational enhancement, have consistently proven to be an effective means of changing drinking behavior across large groups of people with less severe alcohol problems (i.e., do not meet criteria for an alcohol misuse disorder).

Fourth, there are a number of treatment modalities still regularly utilized by clinicians that have consistently been shown in controlled research to have little or no impact on alcohol use (including milieu therapy, general alcoholism counseling, educational lectures and/or films, and confrontational counseling).

Lastly, there are a number of treatment modalities for which the research is mixed such as a number of cognitive-behavioral techniques (i.e., relapse prevention, behavioral self-control training, self-help books, and behavioral marital and family therapy), client-centered therapy, disulfiram (antabuse), aversion techniques, and narcotic antagonist medication (Naltrexone). Outcome research has shown these treatments to be effective in some studies, but ineffective in others. Further research should be undertaken that could further study for whom these therapies are helpful (i.e., "matching" patients to treatment).

REFERENCES

References marked with an asterisk (*) indicate studies included in current review.

References marked with two asterisks (**) indicate studies from Miller's review.

* Aalto, M., Saksanen, R., Laine, P., Forsstrom, R., Raikaa, M., Kiviloto, M., Seppa, K., & Sillanaukee, P. (2000). Brief intervention for female heavy drinkers in routine general practice: A 3-year randomized, controlled study. *Alcoholism: Clinical and Experimental Research 24*(11), 1680-1686.

*Aalto, M., Seppa, K., Mattila, P., Mustonen, H., Ruuth, K., Hyvarinen, H., Pulkkinen, H., Alho, H., & Sillanaukee, P. (2001). Brief intervention for male heavy drinkers in routine general practice: A three-year randomized controlled study. *Alcohol and Alcoholism, 36*(3), 224-230.

Agosti, V. (1994). The efficacy of controlled trials of alcohol misuse treatments in maintaining abstinence: A meta-analysis. *The International Journal of Addictions, 29*(6), 759-769.

Agosti, V. (1995). The efficacy of treatments in reducing alcohol consumption: A meta-analysis. *The International Journal of the Addictions, 30*(8), 1067-1077.

* Agostinelli, G., Brown, J.M., & Miller, W.M. (1995). Effects of normative feedback on consumption among heavy drinking college students. *Journal of Drug Education, 25*(1), 31-40.

** Aharan, C. H., Ogilvie, R.D., & Partington, J.T. (1967). Clinical indications of motivation in alcoholic patients. *Quarterly Journal of Studies on Alcohol, 28*, 486-492.

** Ahles, T.A., Schulundt, D.G., Prue, D.M., & Rychtarik, R.G. (1983). Impact of aftercare arrangements on the maintenance of treatment success in abusive drinkers. *Addictive Behaviors, 8*, 53-58.

** Alden, L. E. (1988). Behavioral self management controlled-drinking strategies in a comtext of secondary prevention. *Journal of Consulting and Clinical Psychology, 56*, 280-286.

Alexander, C.N., Robinson, P., & Rainforth, M. (1994). Treating and preventing alcohol, nicotine, and drug abuse through transcendental meditation: A review and statistical analysis. *Alcoholism Treatment Quarterly, 11*(1), 13-87.

* Allsop, S., Saunders, B., Phillips, M., & Carr, A. (1997). A trial of relapse prevention with severely dependent male problem drinkers. *Addiction, 92*(1), 61-74.

** Anderson, P., & Scott, E. (1992). The effect of general practitioners' advice to heavy drinking men. *British Journal of Addiction, 87*, 891-900.

* Angelone, S.M., Bellini, L., Di-Bella, D., & Catalano, M. (1998). Effects of fluvoxamine and citalopram in maintaining abstinence in a sample of Italian detoxified alcoholics. *Alcohol and Alcoholism, 33*(2), 151-156.

** Annis, H. M., & Chan, D. (1983). The differential treatment model: Empirical evidence from a personality typology of adult offenders. *Criminal Justice and Behavior, 10*, 159-173.

** Annis, H. M., & Liban, C. B. (1979). A follow-up study of male halfway-house residents and matched nonresident controls. *Journal of studies on Alcohol, 40*, 63-69.

**Annis, H. M., & Peachey, J. E. (1992). The use of calcium carbimide in relapse prevention counseling: Results of a randomized control trial. *British Journal of Addiction, 87*, 63-72.

*Anton, R.F., Moak, D.H., Waid, L.R., Latham, P.K., Malcolm, R.J., & Dias, J.K. (1999). Naltrexone and cognitive behavioral therapy for the treatment of outpatient alcoholics: Results of a placebo-controlled trial. *American Journal of Psychiatry, 156*(11), 1758-1764.

** Ashem, B., & Donner, L. (1968). Covert sensitization with alcoholics: A controlled replication. *Behaviour Research and Therapy, 6*, 7-12.

** Azrin,, N. H. (1976). Improvements in the community-reinforcement approach to alcoholism. *Behaviour Research and Therapy, 14*, 339-348.

** Azrin, N. H., Sisson, R. W., Meyers, R., & Godley, M. (1982). Alcoholism treatment by disulfiram and community reinforcement therapy. *Journal of Behavior Therapy and Experimental Psychiatry, 13*, 105-112.

** Babor, T. F., & Grant, M. (1992). Project on identification and management of alcohol-related problems. *Report on phase II: A randomized clinical trial of brief interventions in primary health care*. Geneva, Switzerland: World Health Organization.

*Baer, J.S., Marlatt, A., Kivlahan, D.R., Fromme, K., Larimer, M.E., & Williams, E. (1992). An experimental test of three methods for alcohol risk reduction with young adults. *Journal of Consulting and Clinical Psychology, 60*(6), 974-979.

** Baker, T. B., Udin, H., & Vogler, R. E. (1975). The effects of videotaped modeling and confrontation on the drinking behavior of alcoholics. *International Journal of the Addictions, 10*, 779-793.

** Baldwin, S., Heather, N., Lawson, A., Robertson, I., Mooney, J., & Graggins, F. (1991). Comparison of effectiveness: Behavioral and talk-bases alcohol education courses for court-referred young offenders. *Behavioural Psychotherapy, 19*, 157-172.

* Balldin, J., Berggren, U., Engel, J., Eriksson, M., Hard, E., & Soderpalm, B. (1994). Effect of citalopram on alcohol intake in heavy drinkers. *Alcoholism: Clinical and Experimental Research, 18*(5), 1133-1136.

**Bartholomew, A. A., & Guile, L. A. (1961). A controlled evaluation of "Librium" in the treatment of alcoholics. *The Medical Journal of Australia, 2*, 578-581.

Batel, P. (1995) The treatment of alcoholism in France. *Drug and Alcohol Dependence, 39*(suppl. 1), S15-S21.

* Bennie, C. (1998). A comparison of home detoxification and minimal intervention strategies for problem drinkers. *Alcohol and Alcoholism, 33*(2), 157-163.

* Besson, J., Aeby, F., Kasa, A., Lehert, P., & Potgieter, A. (1998). Combined efficacy of acamprosate and disulfiram in the treatment of alcoholism: A controlled study. *Alcoholism: Clinical and Experimental Research, 22*(3), 573-579.

** Bien, T. H., Miller, W. R., & Boroughs, J. M. (1993). Motivational interviewing with alcohol outpatients. *Behavioural Psychotherapy, 21*, 347-356.

Bien, T.H., Miller, W.R., & Tonigan, J.S. (1993). Brief interventions for alcohol problems: A review. *Addiction, 88*, 315-336.

** Bjornevoll, K. J. (1972). Alkoholikere I encountergruppe: Encountergrupppe som tillegsbehandling for en gruppe pasienter ved Victoria A-sentrum, A-klinikken for Vestlandet. Unpublished master's thesis, University of Bergen, Norway.

** Blake, B. G. (1967). A follow up of alcoholics treated by behaviour therapy. *Behaviour Research and Theory, 5*, 89-94.

* Bobo, J.K., McIlvain, H.E., Lando, H.A., Walder, R.D., & Leed-Kelly, A. (1998). Effect of smoking cessation counseling on recovery from alcoholism: Findings from a randomized community intervention trial. *Addiction, 93*(6), 877-887.

* Bobo, J.K., Walker, R.D., Lando, H.A., & McIlvain, H.E. (1995). Enhancing alcohol control with counseling on nicotine dependence: Pilot study findings and treatment

implications. In J.B. Fertig, & J.P. Allen (Eds), *Alcohol and tobacco: From basic science to clinical practice* (pp. 225-238). Bethesda, MD: National Institute on Alcohol Abuse and Alcoholism.

** Boland, F. J., Mellor, C. S., & Revusky, S. (1978). Chemical aversion treatment of alcoholism: Lithium as the aversive agent. *Behavior Research and Therapy, 16*, 401-409.

* Borsari, B., & Carey, K.B. (2000). Effects of a brief motivational intervention with college student drinkers. *Journal of Consulting and Clinical Psychology, 68*(4), 728-733.

** Bowen, W. T., Soskin, R.A., & Chotlos, J. W. (1970). Lysergic acid diethylamide as a variable in the hospital treatment of alcoholism: A follow-up study. *Journal of Nervous and Mental Disease, 150*, 111-118.

** Bowers, T. G., & Al-Redha, M. R. (1990). A comparison of outcome with group/ marital and standard/ individual therapies with alcoholics. *Journal of Studies on Alcohol, 51*, 301-309.

** Brandsma, J. M., Maultsby, M. C., & Welsh, R. J. (1980). *The outpatient treatment of alcoholism: A review and comparative study*. Baltimore: University Park Press.

** Braunstein, W. B., Powell, B. J., McGowan, J. F., & Thoresen, R. W. (1983). Employment factors in outpatient recovery for alcoholics: A multivariate study. *Addictive Behaviors, 8*, 345-351.

Breslin, F.C., Sobell, S.L., Sobell, L.C., & Sobell, M.B. (1997). Alcohol treatment outcome methodology: State of the art 1989-1993. *Addictive Behaviors, 22*(2), 145-155.

Brewington, V., Smith, M., & Lipton, D. (1994). Acupuncture as a detoxification treatment. *Journal of Substance Abuse Treatment, 11*(4), 289-307.

** Brown, J. M., & Miller, W. R. (1993). Impact of motivational interviewing on participation and outcome in residential alcoholism treatment. *Addictive Behaviors, 7*(4), 211-218.

**Brown, R. A. (1980). Conventional education and controlled drinking education courses with convicted drunken drivers. *Behavior Therapy, 11*, 632-642.

* Brown, R.A, Evans, D.M., Miller, I.W., Burgess, E.S., & Mueller, T.I. (1997). Cognitive-behavioral treatment for depression in alcoholism. *Journal of Consulting and Clinical Psychology, 65*(5), 715-726.

**Bruun, K. (1963). Outcome of different types of treatment of alcoholics. *Quarterly Journals of Studies on Alcohol, 24*, 280-288.

Bullock, M.L., Culliton, P.D., & Olander, R.T. (1989). Controlled trial of acupuncture for severe recidivist alcoholism. *The Lancet, 1*(8652), 1435-1439.

**Bullock, M. L., Umen, A. J., Culliton, P. D., & Olander, R. T. (1987). Acupuncture treatment of alcoholic recidivism: A pilot study. Alcoholism. *Clinical and Experimental Research, 11*, 292-295.

* Burge, S.K., Amodei, N., Elkin, B., Catala, S., Andrew, S.R., Lane, P.A., & Seale, J.P. (1997). An evaluation of two primary care interventions for alcohol abuse among Mexican-American patients. *Addiction, 92*(12), 1705-1716.

**Caddy, G. R., & Lovibond, S. H. (1976). Self-regulation and discriminated aversive conditioning in the modification of alcoholics' drinking behavior. *Behavior Therapy, 7*, 223-230.

**Caddy, G.R., Addington, H.J., & Trenschel, W.R. (1984). *A comparative evaluation of aftercare technologies in the management of alcohol dependence.* Unpublished manuscript.

**Cadogan, D.A. (1973). Marital group therapy in the treatment of alcoholism. *Quarterly Journal of Studies on Alcohol, 34*, 1187-1194.

**Cannon, D.S., & Baker, T.B. (1981). Emetic and electric shock alcohol aversion therapy: Assessment of conditioning. *Journal of Consulting and Clinical Psychology, 49*, 20-33.

**Carpenter, R. A., Lyons, C. A., & Miller, W. R. (1985). Peer-managed self-control program for prevention of alcohol abuse in American Indian high school students: A pilot evaluation study. *International Journal of the Addictions, 20*, 299-310.

Carroll, K.M. (1996). Relapse prevention as a psychosocial treatment: A review of controlled clinical trials. *Experimental and Clinical Psychopharmacology, 4*(1), 46-54.

Carroll, K.M. (1997). New methods of treatment efficacy research: Bridging clinical research and clinical practice. *Alcohol Health and Research World, 21*(4), 352-359.

**Chaney, E. R., O'Leary, M. R., & Marlatt, G. A. (1978). Skill training with alcoholics. *Journal of Consulting and Clinical Psychology, 46*, 1092-1104.

* Chang, G., Wilkins-Haug, L., Berman, S., & Goetz, M.A. (1999). Brief intervention for alcohol use in pregnancy: A randomized trial. *Addiction, 94*(10), 1499-1508.

**Chapman, P.L.H., & Huygens, I. (1988). An evaluation of three treatment programmes for alcoholism: An experimental study with 6- and 18-month follow-ups. *British Journal of Addiction, 83*, 67-81.

**Charnoff, S.M., Kissin, B., & Reed, J.I. (1963). An evaluation of various psychotherapeutic agents in the long-term treatment of chronic alcoholism. *American Journal of Medical Sciences, 246*, 172-179.

* Chick, J., Anton, R., Checisnski, K., Croop, R., Drummond, D.C., Farmer, R., Labriola, D., Marshall, J., Moncrieff, J., Morgan, M., Peters, T., & Ritson, B. (2000). A multicentre, randomized, double-blind, placebo-controlled trial of naltrexone in the treatment of alcohol dependence or abuse. *Alcohol and Alcoholism, 35*(6), 587-593.

**Chick, J., Gough, K., Wojeciech, F., Kershaw, P., Hore, B., Mehta, B., Ritson, B., Ropner, R., & Torley, D. (1992). Disulfiram treatment of alcoholism. *British Journal of Psychiatry, 161*, 84-89.

* Chick, J., Howlett, H., Morgan, M.Y., & Ritson, B. (2000). United Kingdom multicentre acamprosate study (UKMAS): A 6-month prospective study of acamprosate versus placebo in preventing relapse after withdrawal from alcohol. *Alcohol and Alcoholism, 35*(2), 176-187.

**Chick, J., Lloyd, G., & Crombie, E. (1985). Counselling problem drinkers in medical wards: A controlled study. *British Medical Journal, 290*, 965-967.

**Chick, J., Ritson, B., Connaughton, J., Stewart, A., & Chick, J. (1988). Advice versus treatment for alcoholism: A controlled trial. *British Journal of Addiction, 83*, 159-170.

* Cisler, R.A., & Nawrocki, J.W. (1998). Coping and short-term outcomes among dependent drinkers: Preliminary evidence for enhancing traditional treatment with relapse prevention training. *Alcoholism Treatment Quarterly, 16*(4), 5-20.

**Clancy, J., Vanderhoof, E., & Campbell, P. (1967). Evaluation of an aversive technique as a treatment for alcoholism. *Quarterly Journal of Studies on Alcohol, 28*, 476-485.

**Coghlan, G.R. (1979). The investigation of behavioral self-control theory and techniques in a short term treatment of male alcohol abusers. Unpublished doctoral dissertation, State University of New York at Albany. (University Microfilms No. 7918818)

* Collins, R.L., Morsheimer, E.T., Shiffman, S., Paty, J.A., Gnys, M., & Papandonatos, G.D. (1998). Ecological momentary assessment in a behavioral drinking

moderation training program. *Experimental and Clinical Psychopharmacology, 6*(3), 306-315.

**Conners, G. J., Tarbox, A.R., & Faillace, L.A. (1992). Achieving and maintaining gains among problem drinkers: Process and outcome results. *Behavior Therapy, 23*, 449-474.

**Conney, N.L., Kadden, R.M., Litt, M.D., & Gerter. H. (1991). Matching alcoholics to coping skills or interactional therapies: Two-year follow-up results. *Journal of Consulting and Clinical Psychology, 59*, 598-601.

**Connors, G.J., Maisto, S.A., & Ersner-Hershfield, S.M. (1986). Behavioral treatment of drunk-driving recidivists: Short-term and long-term effects. *Behavioural Psychotherapy, 14*, 34-45.

**Cooper, G.O., Adams, H.B., & Scott, J.C. (1988). Studies in REST: I. Reduced environmental stimulation therapy and reduced alcohol consumption. *Journal of Substance Abuse Treatment, 5*, 61-68.

**Corder, B.F., Corder, R.F., & Laidlaw, N.D. (1972). An intensive treatment program for alcoholics and their wives. *Quarterly Journal of Studies on Alcohol, 33*, 1144-1146.

* Cornelius, J.R., Salloum, I.M., Cornelius, M.D., Perel, J.M., Ehler, J.G., Jarrett, P.J., Levin, R.L., Black, A., & Mann, J.J. (1995). Preliminary report: Double-blind placebo-controlled study of fluoxetine in depressed alcoholics. *Psychopharmacology Bulletin, 31*(2), 297-303.

* Cornelius, J.R., Salloum, I.M., Ehler, J.G., Jarrett, P.J., Cornelius, M.D., Perel, J.M., Thase, M.E., & Black, A. (1997). Fluoxetine in depressed alcoholics: A double-blind, placebo-controlled trial. *Archives of General Psychiatry, 54*(8), 700-705.

* Cox, G.B., Walker, R.D., Freng, S.A., Short, B.A., Meijer, L., & Gilchrist, L. (1998). Outcome of a controlled trial of the effectiveness of intensive case management for chronic public inebriates. *Journal of Studies on Alcohol, 59*, 523-532.

**Dahlgren, L., & Willander, A. (1989). Are special treatment facilities for female alcoholics needed? A controlled 2 year follow-up study from a specialized female unit (EWA) versus a mixed male/female facility. *Alcoholism: Clinical and Experimental Research, 13*(4), 499-504.

**Daniels, V., Somers, M., & Orford, J. (1992). How can risk drinking amongst medical patients be modified? The effects of computer screening and advice and a self-help manual. *Behavioural Psychotherapy, 20*, 47-60.

DeRubeis, R.J., & Crits-Christoph, P. (1998). Empirically supported individual and group psychological treatments for adult mental disorders. *Journal of Consulting and Clinical Psychology, 66*(1), 37-52.

**Ditman, K.S., Crawford, G.G., Forgy, E.W., Moskowitz, H., & MacAndrew, G. (1967). A controlled experiment on the use of court probation for drunk arrests. *American Journal of Psychiatry, 124*, 160-163.

**Dorus, W., Ostrow, D.G., Anton, R., Cushman, P., Collins, J.F., Schaefer, M., Charles, H.L., Desai, P., Hayashida, M., Malkerneker, U., Wallenbraing, M., & Sather, M.R. (1989). Lithium carbonate treatment of depressed and nondepressed alcoholics in a double blind, placebo controlled study. *Journal of the American Medical Association, 262*, 1646-1652.

Drummond, D.C. (1997). Alcohol interventions: Do the best things come in small packages? *Addiction, 92*(4), 375-379.

*Drummond, D.C., & Glautier, S. (1994). A controlled trial of cue exposure treatment in alcohol dependence. *Journal of Consulting and Clinical Psychology, 62*(4), 809-817.

Edwards, A.G.K., & Rollnick, S. (1997). Outcome studies of brief alcohol intervention in general practice: The problem of lost subjects. *Addiction, 92*(12), 1699-1704.

**Edwards, G. (1966). Hypnosis in treatment of alcohol addiction. *Quarterly Journal of studies on Alcohol, 27*, 221-241.

**Edwards, G., & Guthrie, S. (1967). A controlled trial of inpatient and outpatient treatment of alcohol dependency. *Lancet, 1*, 555-559.

**Edwards, G., Orford, J., Egert, S., Guthrie, S., Hawker, A., Hensman, C., Mitcheson, M., Oppenheimer, E., & Taylor, C. (1977). Alcoholism: A controlled trial of "treatment" and "advice," *Journal of Studies on Alcohol, 38*, 1004-1031.

Edwards, M.E., & Steinglass, P. (1995). Family therapy treatment outcomes for alcoholism. *Journal of Marital and Family Therapy, 21*(4), 475-509.

**Egan, W.P., & Goetz, R. (1968). Effect of metronidazole on drinking by alcoholics. *Quarterly Journal of Studies on Alcohol, 29*, 899-902.

**Elvy, G.A., Wells, J.E., & Baird, K.A. (1988). Attempted referral as intervention for problem drinking in the general hospital. *British Journal of Addiction, 83*, 83-89.

**Ends, E.J., & Page, C.W. (1957). A study of three types of group psychotherapy with hospitalized inebriates. *Quarterly Journal of Studies on Alcohol, 18*, 263-277.

**Eriksen, L. (1986). The effect of waiting for inpatient treatment after detoxification: An experimental comparison between inpatient treatment and advice only. *Addictive Behaviors, 11*, 389-398.

**Eriksen, L., Bjornstad, S., & Gotestam, K.G. (1986). Social skills training in groups for alcoholics: One-year treatment outcome for groups and individuals. *Addictive Behaviors, 11*, 309-330.

**Faia, C., & Shean, G. (1976). Using videotapes and group discussion in the treatment of male chronic alcoholics. *Hospital and Community Psychiatry, 27*, 847-851.

**Fawcett, J. Clark, D.C., Asgesen, C.A., Pisani, V.D., Tilkin, J.M., Sellers, D., McGuire, M., & Gibbons, R.D. (1987). A double-blind, placebo-controlled trial of lithium carbonate therapy for alcoholism. *Archives for General Psychiatry, 44*, 248-256.

**Ferrell, W.L., & Galassi, J.P. (1981). Assertion training on human relations training in the treatment of chronic alcoholics. *International Journal for the Addictions, 16*, 959-968.

* Fichter, M.M., & Frick, U. (1993). The key relative's impact on treatment and course of alcoholism. *European archives of Psychiatry and Clinical Neuroscience, 243*(2), 87-94.

Finney, J.W., & Monahan, S.C. (1996). The cost effectiveness of treatment for alcoholism: A second approximation. *Journal of Studies on Alcohol, 57*, 229-243.

**Fitzgerald, J.L., & Mulford, H.A. (1985). An experimental test of telephone aftercare contacts with alcoholics. *Journal of Studies on Alcohol, 46*, 418-424.

**Fleiger, D.L., & Zingle, H.W. (1973). Covert sensitization treatment with alcoholics. *Canadian Counselor, 7*, 269-277.

* Fleming, M.F., Barry, K.L., Manwell, L.B., Johnson, K., & London, R. (1997). Brief physician advice for problem alcohol drinkers: A randomized controlled trial in community-based primary care practices. *JAMA: Journal of the American Medical Association, 277*(13), 1039-1045.

Fleming, M.F., Manwell, L.B., Barry, K.L., Adams, W., & Stauffacher, E.A. (1999) Brief physician advice for alcohol problems in older adults: A randomized community-based trial. *The Journal of Family Practice, 48*(5), 378-384.

**Foy, D.W., Nunn, B.L., & Rychtarik, R.G. (1984). Broad-spectrum behavioral treatment for chronic alcoholics: Effects of training controlled drinking skills. *Journal of Consulting and Clinical Psychology, 52*, 213-230.

**Freedberg, E.J., & Johnston, W.E. (1976). The effects of assertion training within the context of a multi-modal alcoholism treatment program for employed alcoholics. Substudy No. 796. Toronto: Addiction Research Foundation, Substudy.

**Freedberg, E.J., & Johnston, W.E. (1978). The effects of relaxation training within the context of a multi-modal alcoholism treatment program for employed alcoholics. Substudy No. 988(a). Toronto: Addiction Research Foundation.

**Fuller, R.K., Branchey, L., Brightwell, D.R., Derman, R.M., Emrick, C.D., Iber, F.L., James, K.E., Lacoursiere, R.B., Lee, K.K., Lowenstam, I., Maany, I., Neiderheiser, D., Nocks, J.J., & Shaw, S. (1986). Disulfiram treatment of alcoholism: A Veterans Administration cooperative study. *Journal of the American Medical Association, 256*, 1449-1455.

**Fuller, R.K., & Roth, H.P. (1979). Disulfiram for the treatment of alcoholism: An evaluation in 128 men. *Annals of Internal Medicine, 90*, 901-904.

**Gallant, D.M., Bishop, M.P., Camp, E., & Tisdale, C. (1968). A six-month controlled evaluation of metronidazole (flagyl) in chronic alcoholic patients. *Current Therapeutic Research, 10*, 82-87.

**Gallant, D.M., Bishop, M.P., Faulkner, M.A., Simpson, L., Cooper, A., Lathrop, D., Brisolara, A.M., & Bossetta, J.R. (1968). A comparative evaluation of compulsory (group therapy and/or Antabuse) and voluntary treatment of the chronic alcoholic municipal court offender. *Psychosomatics, 9*, 306-310.

* Gallimberti, L., Ferri, M., Ferrera, S.D., Fadda, F., & Gessa, G.L. (1992). Gamma-hydroxybutyric acid in the treatment of alcohol dependence: A double-blind study. *Alcoholism: Clinical and Experimental Research, 16*(4), 673-676.

Garbutt, J.C., West, S.L., Carey, T.S., Lohr, K.N., & Crews, F.T. (1999). Pharmacological treatment of alcohol dependence: A review of the evidence. *Journal of the American Medical Association, 281*(14), 1318-1325.

* George, D.T., Lindquist, T., Rawlings, R.R., Eckardt, M.J., Moss, H., Mathis, C., Martin, P.R., & Linnoila, M. (1992). Pharmacological maintenance of abstinence in patients with alcoholism: No efficacy of 5-hydoxytryptophan or levodopa. *Clinical Pharmocology and Therapeutics, 52*, 553-560.

* George, D.T., Rawlings, R., Eckardt, M.J., Phillips, M.J., Shoaf, S.E., & Linnolia, M. (1999). Buspirone treatment of alcoholism: Age of onset, and cerebrospinal fluid 5-hydroxyindolacetic acid and homovanillic acid concentrations, but not medication treatment, predict return to drinking. *Alcoholism: Clinical and Experimental Research, 23*(2), 272-278.

**Gerrein, J.R., Rosenberg, C.M., & Manohar, V. (1973). Disulfiram maintenance in outpatient treatment of alcoholism. *Archives of General Psychiatry, 28*, 798-802.

**Glover, J.H., & McCue, P.A. (1977). Electrical aversion therapy with alcoholics: A comparative follow-up study. *British Journal of Psychiatry, 130*, 279-286.

* Gottlieb, L.D., Horwitz, R.I., Kraus, M.L., Segal, S.R., & Viscoli, C.M. (1994). Randomized controlled trial in alcohol relapse prevention: Role of atenolol, alcohol craving, and treatment adherence. *Journal of Substance Abuse Treatment, 11*(3), 253-258.

**Guydish, J.R. (1987). Self control bibliotherapy as a secondary prevention strategy with heavy-drinking college students. Unpublished doctoral dissertation, Washington State University, Pullman.

**Hagen, R.E., Williams, R.L., McConnell, E.J., & Fleming, C.W. (1978). *An evaluation of alcohol abuse treatment as an alternative to drivers license suspension or revocation.* Final report to the legislature of the state of California. Sacramento: Health & Welfare Agency, Department of Alcohol & Drug Abuse, Report No. CAL-DMV-RSS-7868.

* Handmaker, N.S., Miller, W.R., & Manicke, M. (1999). Findings of a pilot study of motivational interviewing with pregnant drinkers. *Journal of Studies on Alcohol, 60*, 285-287.

**Harris, K.B., & Miller, W.R. (1990). Behavioral self-control training for problem drinkers: Components of efficacy. *Psychology of Addictive Behaviors, 4*, 82-90.

**Hayashida, M., Alterman, A.I., McLellan, A.T., O'Brien, C.P., Purtill, J.J., Volpicelli, J.R., Raphaelson, A.H., & Hall, C.P. (1989). Comparative effectiveness and costs of inpatient and outpatient detoxification of patients with mild-to-moderate alcohol withdrawal syndrome. *New England Journal of Medicine, 320*, 358-365.

**Heather, N., Campion, P.D., Neville, R.G., & Maccabe, D. (1987). Evaluation of a controlled drinking minimal intervention for problem drinkers in general practice (the DRAMS scheme). *Journal of the Royal College for General Practitioners, 37*, 358-363.

**Heather, N., Kissoon-Singh, J., & Fenton, G.W. (1990). Assisted natural recovery from alcohol problems: Effects of a self-help manual with and without supplementary telephone contact. *British Journal of Addiction, 85*, 1177-1185.

**Heather, N., Whitton, B., & Robertson, I. (1986). Evaluation of a self-help manual for media-recruited problem drinkers: Six-month follow-up results. *British Journal of Clinical Psychology, 25*, 19-34.

Heather, N. (1995). Brief intervention strategies. In R.K. Hester & W.R. Miller (Eds.), *Handbook of alcoholism treatment approaches: Effective alternatives* (pp. 12-44). Boston: Allyn and Bacon.

* Heather, N., Brodie, J., Wale, S., Wilkinson, G., Luce, A., Webb, E., & McCarthy, S. (2000). A randomized controlled trial of moderation-oriented cue exposure. *Journal of Studies on Alcohol, 61*, 561-570.

* Heather, N., Rollnick, S., Bell, A., & Richmond, R. (1996). Effects of brief counselling among male heavy drinkers identified on general hospital wards. *Drug and Alcohol Review, 15*, 29-38.

**Hedberg, A.G., & Campbell, L.M. (1974). A comparison of four behavioral treatment approaches to alcoholism. *Journal of Behavior Therapy and Experimental Psychiatry, 5*, 251-256.

* Hester, R.K., & Delaney, H.D. (1997). Behavioral self-control program for Windows: Results of a controlled clinical trial. *Journal of Consulting and Clinical Psychology, 65*(4), 686-693.

**Hoff, E.C. (1961). The use of pharmacological adjuncts in the psychotherapy of alcoholics. *Quarterly Journal of Studies on Alcohol, 1*, 138-150.

**Hoff, E.C., & McKeown, C.E. (1953). An evaluation of the use of tetraethylthiuram disulfide in the treatment of 560 cases of alcohol addiction. *American Journal of Psychiatry, 109*, 670-673.

Holder, H., Longbaugh, R., Miller, W.R., & Rubonis, A.V. (1991). The cost effectiveness of treatment for alcoholism: A first approximation. *Journal of Studies on Alcohol, 52*(6), 517-540.

**Hollister, L.E., Shelton, J., & Krieger, G. (1969). A controlled comparison of lysergic acid diethylamide (LSD) and dextroamphetamine in alcoholics. *American Journal of Psychiatry, 125*, 1352-1357.

**Hunt, G.M., & Azrin, N.H. (1973). A community-reinforcement approach to alcoholism. *Behaviour Research and Therapy, 11*, 91-104.

**Hussain, M.Z., & Harinath, M. (1972). Helping alcoholics abstain: An implantable substance. *American Journal of Psychiatry, 129*, 363.

* Ino, A. & Hayashida, M. (2000). Before-discharge intervention method in the treatment of alcohol dependence. *Alcoholism: Clinical and Experimental Research, 24*(3), 373-376.

Irvin, J.E., Bowers, C.A., Dunn, M.E., & Wang, M.C. (1999). Efficacy of relapse prevention: A meta-analytic review. *Journal of Consulting and Clinical Psychology, 67*(4), 563-570.

* Israel, Y., Hallander, O., Sanchez-Craig, M., Booker, S., Miller, V., Gingrich, R., & Rankin, J.G. (1996), Screening for problem drinking and counseling by the primary care physician-nurse team. *Alcoholism: Clinical and Experimental Research, 20*(8), 1443-1450.

**Ito, J.R., Donovan, D.M., & Hall, J.J. (1988). Relapse prevention in alcohol aftercare: Effects on drinking outcome, change process and aftercare attendance. *British Journal of Addiction, 83*, 171-181.

**Jackson, P., & Oei, T.P.S. (1978). Social skills training and cognitive restructuring with alcoholic. *Drug and Alcohol Dependence, 3*, 369-374.

**Jackson, T.R., & Smith, J.W. (1978). A comparison of two aversion treatment methods for alcoholism. *Journal of Studies on Alcohol, 38*, 187-191.

**Jacobson, N.O., & Silfverskiold, N.P. (1973). A controlled study of a hypnotic method in the treatment of alcoholism with evaluation by objective criteria. *British Journal of Addiction, 68*, 25-31.

* Janiri, L., Gobbi, G., Mannelli, P., & Pozzi, G. (1996). Effects of fluoxetine and antidepressant doses on short-term outcome of detoxified alcoholics. *International Clinical Psychopharmacology, 11*(2), 109-117.

**Jensen, S.E., & Ramsey, R. (1963). Treatment of chronic alcoholism with lysergic acid diethylamide. *Canadian Psychiatric Association Journal, 8*, 182-188.

**Johnsen, J., & Morland, J. (1991). Disulfiram implant: A double-blind placebo controlled follow-up on treatment outcome. *Alcoholism: Clinical and Experimental Research, 15*, 532-536.

**Johnsen, J., Stowell, A., Bache-Wiig, J.E., Stensrud, T., Ripel, A., & Morland, J. (1987). A double-blind placebo controlled study of male alcoholics given a subcutaneous disulfiram implantation. *British Journal of Addiction, 82*, 607-613.

* Johnson, B.A., Jasinski, D.R., Galloway, G.P., & Kranzler, H. (1996). Ritanserin in the treatment of alcohol dependence: A multi-center clinical trial. *Psychopharmacology, 128*(2), 206-215.

**Johnson, F.G. (1970). A comparison of short-term treatment effects of intravenous sodium amytalmethedrine and LSD in the alcoholic. *Canadian Psychiatric Association Journal, 15*, 493-497.

**Jones, S.L., Kanfer, R., & Lanyon, R.I. (1982). Skill training with alcoholics: A clinical extension. *Addictive Behaviors, 7*, 285-290.

Kahan, M., Wilson, L., & Becker, L. (1995). Effectiveness of physician-based interventions with problem drinkers: A review. *Canadian Medical Association Journal, 152*(6), 851-859.

**Keane, T.M., Foy, D.W., Nunn, B., & Rychtarik, R.G. (1984). Spouse contracting to increase antabuse compliance in alcoholic veterans. *Journal of Clinical Psychology, 40*, 340-344.

* Kelly, A.B., Halford, W.K., & Young, R.M. (2000). Maritally distressed women with alcohol problems: The impact of a short-term alcohol-focused intervention on drinking behaviour and marital satisfaction. *Addiction, 95*(10), 1537-1549.

**Keso, L., & Salaspuro, M. (1990). Inpatient treatment of employed alcoholics: A randomized clinical trial on Hazelden-type and traditional treatment. *Alcoholism: Clinical and Experimental Research, 14*, 584-589.

**Kissin, B., & Gross, M.M. (1968). Drug therapy in alcoholism. *American Journal of Psychiatry, 125*, 31-41.

**Kivlahan, D.R., Marlatt, G.A., Fromme, K., Coppel, D.B., & Williams, E. (1990). Secondary prevention with college drinkers: Evaluation of an alcohol skills training program. *Journal of Consulting and Clinical Psychology, 58*, 805-810.

**Kline, N.S., Wren, J.C., Cooper, T.B., Varga, E., & Canal, O. (1974). Evaluation of lithium therapy in chronic and periodic alcoholism. *American Journal of Medical Science, 268*, 15-22.

* Kranzler, H.R., Burleson, J.A., Del-Boca, F.K., Babor, T.F, Korner, P., Brown, J., & Bohn, M.J. (1994). Buspirone treatment of anxious alcoholics: A placebo controlled trail. *Archives of General Psychiatry, 51*(9), 720-731.

*Kranzler, H.R., Burleson, J.A., Korner, P., Del-Boca, F.K., Bohn, M.J., Brown, J., & Liebowitz, N. (1995). Placebo-controlled trial of fluoxetine as an adjunct to relapse prevention in alcoholics. *American Journal of Psychiatry, 152*(3), 391-397.

* Kranzler, H.R., Del-Boca, F.K., Korner, P., & Brown, J. (1993). Adverse effects limit the usefulness of fluvoxamine for the treatment of alcoholism. *Journal of Substance Abuse Treatment, 10*(3), 283-287.

* Kranzler, H.R., Modesto-Lowe, V., & Nuwayser, E.S. (1998). Sustained-release naltrexone for alcoholism treatment: A preliminary study. *Alcoholism: Clinical and Experimental Research, 22*(5), 1074-1079.

**Kristenson, H., Ohlin, H., Hulten-Nosslin, M.B., Trell, E., & Hood, B. (1983). Identification and intervention of heavy drinking in middle-aged men: Results and follow-up of 24-60 months of long term study with randomized controls. *Alcoholism: Clinical and Experimental Research, 7*, 203-209.

**Kuchipudi, V., Hobein, K., Flickinger, A., & Iber, F.L. (1990). Failure of a 2-hour motivational intervention to alter recurrent drinking behavior in alcoholics with gastrointestinal disease. *Journal of Studies on Alcohol, 51*, 356-360.

**Lal, S. (1969). Metronidazole in the treatment of alcoholism: A clinical trial and review of the literature. *Quarterly Journal of Studies on Alcohol, 30*, 140-151.

**Lanyon, R.I., Primo, R.V., Terrell, F., & Wener, A. (1972). An aversion-desensitization treatment for alcoholism. *Journal of Consulting and Clinical Psychology, 38*, 394-398.

**Laverty, S.G. (1966). Aversion therapies in the treatment of alcoholism. *Psychosomatic Medicine, 28*, 651-666.

Lejoyeux, M., & Ades, J. (1993). Evaluation of lithium treatment in alcoholism. *Alcohol and Alcoholism, 28*(3), 273-279.

**Levinson, T., & Sereny, G. (1969). An experimental evaluation of "insight therapy" for the chronic alcoholic. *Canadian Psychiatric Association Journal, 14*, 143-146.

Levy, M.S., Livingstone, B.L., & Collins, D.M. (1967). A clinical comparison of disulfiram and calcium carbimide. *American Journal of Psychiatry, 123*, 1018-1022.

**Ling, W., Weiss, D.G., Charuvastra, V.C., O'Brian, C.P., Blakis, M., Wang, R., Savage, C., Roszell, D., Way, E.L., & McIntyre, J. (1983). Use of disulfiram for alcoholics in methadone maintenance programs: A Veterans Administration cooperative study. *Archives of General Psychiatry, 40*, 851-861.

** Linton, P.H., & Hain, J.D. (1967). Metronidazole in the treatment of alcoholism. *Quarterly Journal of Studies on Alcohol, 28*, 544-546.

Litten, R.Z., Allen, J., & Fertig, J. (1996). Pharmacotherapies for alcohol problems: A review of research with focus on developments since 1991. *Alcoholism: Clinical and Experimental Research, 20*(5), 859-876.

**Longabaugh, R., McCrady, B., Fink, E., Stout, R., McAuley, T., Doyle, C., & McNeill, D. (1983). Cost-effectiveness of alcoholism treatment in partial versus inpatient setting: Six-months outcomes. *Journal of Studies on Alcohol, 44*, 1049-1071.

**Lovibond, S.H. (1975). Use of behavior modification in the reduction of alcohol-reduced road accidents. In K.G. Gitestam, G.L. Melin, & W.S. Dockens (Eds.), *Applications of behavior modification* (pp. 399-406). New York: Academic Press.

**Lowenstam, I. (1969). Metronidazole and placebo in the treatment of chronic alcoholism: A comparative study. *Psychosomatics, 10*(3, Sect. II), 43-45.

**Ludwig, A., Levine, J., Stark, L., & Lazar, R. (1969). A clinical study of LSD treatment in alcoholism. *American Journal of Psychiatry, 126*, 59-69.

* Maharajh, H.D., & Bhugra, D. (1993). Brief family therapy with alcohol-dependent men in Trinidad and Tobago. *Acta Psychiatrica Scandinavica, 87*(6), 422-426.

**Maheswaran, R., Beevers, M., & Beevers, D.G. (1992). Effectiveness of advice to reduce alcohol consumption in hypertensive patients. *Hypertension, 19*, 79-84.

* Malcolm, R., Anton, R.F., Randall, C.L., Johnston, A., Brady, K., & Thevos, A. (1992). A placebo-controlled trial of buspirone in anxious inpatient alcoholics. *Alcoholism: Clinical and Experimental Research, 16*(6), 1007-1013.

* Malec, E., Malec, T., Gagne, M.A., & Dongier, M. (1996). Buspirone treatment of alcohol dependence: A placebo controlled trial. *Alcoholism: Clinical and Experimental Research, 20*(2), 307-312.

* Malec, T.S., Dobkin, P.L., Dongier, M., Ghadirian, A.M., & Kealey, S. (1994). A clinical trial of the combination of L-tryptophan and lithium in the treatment of chronic alcoholism. *Lithium, 5*(1), 23-27.

Malec, T.S., Malec, E.A., & Dongier, M. (1996). Efficacy of buspirone in alcohol dependence: A review. *Alcoholism: Clinical and Experimental Research, 20*(5), 853-858.

** Maletzky, B.M. (1974). Assisted covert sensitization for drug abuse. *International Journal of Addiction, 9*, 411-429.

**Malfetti, J.L. (1975). Reeducation and rehabilitation of the drunken driver. *Journal of Drug Issues, 5*, 255-269.

**Mallams, J.H., Godley, M.D., Hall, G.M., & Meyers, R.J. (1982). A social-systems approach to resocializing alcoholics in the community. *Journal of Studies on Alcohol, 43*, 1115-1123.

* Manwell, L.B., Fleming, M.F., Mundt, M.P., Stauffacher, E.A., & Barry, K.L. (2000). Treatment of problem alcohol use in women of childbearing age: Results of a brief

intervention trial. *Alcoholism: Clinical and Experimental Research, 24*(10), 1517-1524.

**Marlatt, G.A. (1973, April). *A comparison of aversive conditioning procedures in the treatment of alcoholism.* Paper presented at the annual meeting of the Western Psychological Association, Anaheim, CA.

* Marlatt, G.A., Baer, J.S., Kivlihan, D.R., Dimeff, L.A., Larimer, M.E., Quigley, L.A., Somers, J.M., & Williams, E. (1998). Screening and brief intervention for high-risk college student drinkers: Results from a two-year follow-up assessment. *Journal of Consulting and Clinical Psychology, 66*(4), 604-615.

**Marlatt, G.A., & Marques, J.K. (1977). Meditation, self-control and alcohol use. In R. B. Stuart (Ed.), *Behavioral self-management: Strategies, techniques and outcome* (pp. 117-153). New York: Brunner/Mazel.

* Mason, B.J., Kocsis, J.H., Ritvo, E.C., & Butler, R.B. (1996). A double-blind, placebo-controlled trial of desipramine for primary alcohol dependence stratified on the presence or absence of major depression. *JAMA: Journal of the American Medical Association, 275*(10), 761-767.

*Mason, B.J., Ritvo, E.C., Morgan, R.O., Salvato, F.R., Goldberg, G., Welch, B., & Mantero-Atienza, E. (1994). A double-blind placebo-controlled pilot study to evaluate the efficacy and safety of oral nalmefene HCl for alcohol dependence. *Alcoholism: Clinical and Experimental Research, 18*, 1162-1167.

**McCance, C., & McCance, P.F. (1969). Alcoholism in North-East Scotland: Its treatment and outcome. *British Journal of Psychiatry, 115*, 189-198.

* McCrady, B.S., Epstein, E.E., & Hirsch, L.S. (1999). Maintaining change after conjoint behavioral alcohol treatment for men: Outcomes at 6 months. *Addiction, 94*(9), 1381-1396.

**McCrady, B.S., Noel, N.E., Abrams, D.H., Stout, R.L., Nelson, H.F., & Hay, W.M. (1986). Comparative effectiveness of three types of spouse involvement in outpatient behavioral alcoholism treatment. *Journal of Studies on Alcohol, 47*, 459-467.

**McCrady, B.S., Paolino, T.J.,Jr., Longabaugh, R., & Rossi, J. (1979). Effects of joint hospital admission and couples treatment for hospitalization alcoholics: A pilot study. *Addictive Behaviors, 4*, 155-165.

* McGrath, P.J., Nunes, E.V., Stewart, J.W., Goldman, D., Agosti, V., Ocepek-Welikson, K., & Quitkin, F.M. (1996). Imipramine treatment of alcoholics with primary

depression: A placebo-controlled clinical trial. *Archives of General Psychiatry, 53*(3), 232-240.

**McGuire, F.L. (1978). The effectiveness of a treatment program for alcohol-involved drivers in America. *American Journal of Drug and Alcohol Abuse, 5*, 517-525.

**McLachlan, J.F.C., & Stein, R.L. (1982). Evaluation of a day clinic for alcoholics. *Journal of Studies on Alcohol, 43*, 261-272.

**McLatchie, B.H., & Lomp, K.G.E. (1988). An experimental investigation of the influence of aftercare on alcoholic relapse. *British Journal of Addiction, 83*, 1045-1054.

**Merry, J., Reynolds, C.M., Bailey, J., & Coppen, A. (1976). Prophylactic treatment of alcoholism by lithium carbonate: A controlled study. *Lancet, 2*, 481-482.

**Merry, J., & Whitehead, A. (1968). Metronidazole and alcoholism. *British Journal of Psychiatry, 114*, 859-861.

**Miller, P.M. (1975). A behavioral intervention program for chronic public drunkenness offenders. *Archives of General Psychiatry, 32*, 915-918.

**Miller, P.M., Hersen, M., Eisler, R.M., & Hemphill, D.P. (1973). Electrical aversion therapy with alcoholics: An analogue study. *Behaviour Research and Therapy. 11*, 491-497.

**Miller, W. R. (1978). Behavioral treatment of problem drinkers: A comparative outcome study of three controlled drinking therapies. *Journal of Consulting and Clinical Psychology. 46*, 74-86.

**Miller, W.R., Benefield, R.G., & Tonigan, J.S. (1993). Enhancing motivation for change in problem drinking: A controlled comparison of two therapist styles. *Journal of Consulting and Clinical Psychology, 61*, 455-461.

Miller, W.R., Brown, J.M., Simpson, T.L., Handmaker, N.S., Bien, T.H., Luckie, L.F. Montgomery, H.A., Hester, R.K., & Tonigan, J.S. (1995). What works? A methodological analysis of the alcohol treatment outcome literature. In R.K. Hester & W.R. Miller (Eds.), *Handbook of alcoholism treatment approaches: Effective alternatives* (pp. 12-44). Boston: Allyn and Bacon.

**Miller. W.R., Gribskov, C.J., & Mortell, R.L. (1981). Effectiveness of a self-control manual for problems drinkers with and without therapist contact. *International Journal of the Addictions, 16*, 1247-1254.

Miller, W.R., & Rollnick, S. (1991). *Motivational interviewing: Preparing people to change addictive behaviors.* New York: Guilford Press.

**Miller, W.R., & Sovereign, R.G. (1989). The check-up: A model for early intervention in addictive behaviors. In T. Loberg, W.R. Miller, P.E. Nathan, & G.A. Marlatt (Eds.), *Addictive behaviors: Prevention and early intervention* (pp. 219-231). Amsterdam: Swets & Zeitlinger.

**Miller, W.R., Sovereign, R.G., & Krege, B. (1988). Motivational interviewing with problem drinkers: II. The drinker's check-up as a preventative intervention. *Behavioural Psychotherapy, 16,* 251-268.

**Miller, W.R., & Taylor, C.A. (1980). Relative effectiveness of bibliotherapy, individual and group self-control training in the treatment of problem drinkers. *Addictive Behaviors, 5,* 13-24.

**Mindlin, D.F. (1965). Group therapy for alcoholics: A study of the attitude and behavior changes in relation to perceived group norms. *Dissertation Abstracts, 26,* 2323-2324.

Moner, S.E. (1996). Acupuncture and addiction treatment. *Journal of Addictive Diseases, 15*(3), 79-100.

**Monti, P.M., Abrams, D.B., Binkoff, J.A., Zwick, W.R., Liepman, M.R., Nirenberg, T. D., & Rohsenow, D.J. (1990). Communication skills training, communication skills training with family and cognitive behavioral mood management training for alcoholics. *Journal of Studies on Alcohol, 51,* 263-270.

* Monti, P.M., Colby, S.M., Barnett, N.P., Spirito, A., Rohsenow, D.J., Myers, M. Wollard, R., & Lewander, W. (1999). Brief intervention for harm reduction with alcohol-positive older adolescents in a hospital emergency department. *Journal of Consulting and Clinical Psychology, 67*(6), 989-994.

* Monti, P.M., Rohsenhow, D.J., Rubonis, A.V., Niaura, R.S., Sirota, A.D., Colby, S.M., Goddard, P., & Abrams, D.B. (1993). Cue exposure with coping skills treatment for male alcoholics: A preliminary investigation. *Journal of Consulting and Clinical Psychology, 61*(6), 1011-1019.

**Mooney, H.B., Ditman, K.S., & Cohen, S. (1961). Chlordiazepoxide in the treatment of alcoholics. *Disease of the Nervous System, 22*(supplement), 44-51.

**Mosher, V., Davis, J., Mulligan, D., & Iber, F.L. (1975). Comparison of outcome in a 9-day and 30-day alcoholism treatment program. *Journal of Studies on Alcohol, 36,* 1277-1281.

* Mueller, T.I., Stout, R.L., Rudden, S., Brown, R.A., Gordon, A., Solomon, D.A., & Recupero, P.R. (1997). A double-blind placebo-controlled pilot study of carbamazepine for the treatment of alcohol dependence. *Alcoholism: Clinical and Experimental Research, 21*(1), 86-92.

**Murphy, T.J., Pagano, R.R., & Martat, G.A. (1986). Lifestyle modification with heavy alcohol drinkers: Effects of aerobic exercise and meditation. *Addictive Behaviors, 11*, 175-186.

* Naranjo, C.A., Bremner, K.E., & Lanctot, K.L. (1995a). Effects of citalopram and a brief psycho-social intervention on alcohol intake, dependence and problems. *Addiction, 90*, 87-99.

* Naranjo, C.A., Dongier, M., & Bremner, K.E. (1997). Long-acting injectable bromocriptine does not reduce relapse in alcoholics. *Addiction, 92*(8), 969-978.

* Naranjo, C.A., Poulos, C.X., Lanctot, K.L., Bremner, K.E., Kwok, M., & Umana, M. (1995b). Ritanserin, a central 5-HT-2 antagonist, in heavy social drinkers: Desire to drink, alcohol intake and related effects. *Addiction, 90*, 893-905.

* Nunes, E.V., McGrath, P.J., Quitkin, F.M., Stewart, J.P., Harrison, W., Tricamo, E., & Ocepek-Welikson, K. (1993). Imipramine treatment of alcoholism with comorbid depression. *American Journal of Psychiatry, 150*(6), 963-965.

**Obolensky, M.R. (1984). Recidivism among male DWI first offenders and intervention. Unpublished doctoral dissertation, University of Rhode Island, Kingston.

O'Brien, C.P., & McKay, J.R. (1998). Psychopharmacological treatments of substance use disorders. In P.E. Nathan, & J.M. Gordon (Eds.), *A guide to treatments that work* (pp. 156-166). New York: Oxford University Press.

**Oei, T.P.S., & Jackson, P.R. (1980). Long-term effects of group and individual social skills training with alcoholics. *Addictive Behaviors, 5*, 129-136.

**Oei, T.P.S., & Jackson, P.R. (1982). Social skills and cognitive behavioral approaches to the treatment of problem drinking. *Journal of Studies on Alcohol, 43*, 532-547.

**Oei, T.P.S., & Jackson, P.R. (1984). Some effective therapeutic factors in group cognitive-behavioral therapy with problem drinkers. *Journal of Studies on Alcohol, 45*, 119-123.

**O'Farrell, T.J., Choquette, K.A., Cutter, H.S.G., Brown, E.D., & McCourt, W.F. (1993). Behavioral marital therapy with and without additional relapse prevention sessions for alcoholics and their wives. *Journal of Studies on Alcohol, 54*, 652-666.

**O'Farrell, T.J., Cutter, H.S.G., & Floyd, F.J. (1985). Evaluating behavioral marital therapy for male alcoholic: Effects on marital adjustment and communication before and after treatment. *Behavior Therapy, 15*, 147-168.

**Ogborne, A.C., & Wilmot, R. (1979). Evaluation of an experimental counseling service for male Skid Row alcoholics. *Journal of Studies on Alcohol, 40*, 129-132.

* Ojehagen, A, Berglund, M., Appel, C.P., Andersson, K., Nilsson, B., Skjaerris, A., & Wedlin-Toftenow, A.M. (1992). A randomized study of long-term out-patient treatment in alcoholics. *Alcohol and Alcoholism, 27*(6), 649-658.

**Olson, R.P., Ganley, R., Devine, V.T., & Dorsey, G.C., Jr. (1981). Long-term effects of behavioral verses insight-oriented therapy with inpatient alcoholics. *Journal of Consulting and Clinical Psychology, 49*, 866-877.

* O'Malley, S.S., Jaffe, A.J., Chang, G., Rode, S., Schottenfeld, R., Meyer, R.E., & Rounsaville, B.J. (1996). Six-month follow-up of naltrexone and psychotherapy for alcohol dependence. *Archives of General Psychiatry, 53*(3), 217-224.

* Padjen, A.L., & Malec, T. (1995). Effects of cerebral electrical stimulation on alcoholism: A pilot study. *Alcoholism: Clinical and Experimental Research, 19*(4), 1004-1010.

* Paille, F.M., Guelfi, J.D., Perkins, A.C., Royer, R.J., Steru, L., & Parot, P. (1995). Double-blind randomized multicentre trial of acamprosate in maintaining abstinence from alcohol. *Alcohol and Alcoholism, 30*(2), 239-247.

* Patterson, D.G., Macpherson, J., & Brady, N.M. (1997). Community psychiatric nurse aftercare for alcoholics: A five year follow-up study. *Addiction, 92*(4), 459-468.

* Pelc, I., Verbanck, P., LeBon, O., & Gavrilovik, M. (1997). Efficacy and safety of acamprosate in the treatment of detoxified alcohol-dependent patients: A 90-day placebo-controlled dose-finding study. *British Journal of Psychiatry, 171*, 73-77.

**Penick, S.B., Carrier, R.N., & Sheldon, J.B. (1969). Metronidazole in the treatment of alcoholism. *American Journal of Psychiatry, 125*, 1063-1066.

**Persson, J., & Magnusson, P.H. (1989). Early intervention in patients with excessive consumption of alcohol: A controlled study. *Alcohol, 6*, 403-408.

* Petry, N.M., Martin, B., Cooney, J.L., & Kranzler, H.R. (2000). Give them prizes and they will come: Contingency management for treatment of alcohol dependence. *Journal of Consulting and Clinical Psychology, 68*(2), 250-257.

**Pittman, D.J., & Tate, R.L. (1972). A comparison of two treatment programs for alcoholics. *International Journal of Social Psychiatry, 18*, 183-193.

**Platz, A., Panepinto, W.C., Kissin, B., & Charnoff, S.M. (1970). Metronidazole and alcoholism: An evaluation of specific and on specific factors in drug treatment. *Diseases of the Nervous System, 31*, 631-636.

Poikolainen, K. (1999). Effectiveness of brief interventions to reduce alcohol intake in primary health care populations: A meta-analysis. *Preventive Medicine, 28*, 503-509.

* Poldrugo, F. (1997). Acamprosate treatment in a long-term community-based alcohol rehabilitation programme. *Addiction, 92*(11), 1537-1546.

**Pomerleau, O., Pertschuk, M., Adkins, D., & d'Aquili, E. (1978). A comparison of behavioral and traditional treatment for middle income problem drinkers. *Journal of Behavioural Medicine, 1*, 187-200.

**Pond, S.M., Becker, C.E., Vandervoort, R., Phillips, M., Bowler, R., & Peck, C.C. (1981). An evaluation of the effects of lithium in the treatment of chronic alcoholism I. Clinical results. *Alcoholism: Clinical and Experimental Research, 5*, 247-254.

* Powell, B.J., Campbell, J.L., Landon, J.F., Liskow, B.I., Thomas, H.M., Nickel, E.J., Dale, T.M., Penick, E.C., Samuelson, S.D., & Lacoursiere, R.B. (1995). A double-blind, placebo-controlled study of nortriptyline and bromocriptine in male alcoholics subtyped by comorbid psychiatric disorders. *Alcoholism: Clinical and Experimental Research, 19*(2), 462-468.

**Powell, B.J., Penick, E.C., Liskow, B.I., Rice, A.S., & McKnelly, W. (1986). Lithium compliance in alcoholic males: A six-month follow up study. *Addictive Behaviors, 11*, 135-140.

**Powell, B.J., Penick, E.C., Read, M.R., & Ludwig, A.M. (1985). Comparison of three outpatient treatment interventions: A twelve-month follow-up of men alcoholics. *Journal of Studies on Alcohol, 46*, 309-312.

* Project MATCH Research Group. (1996). Matching alcoholism treatments to client heterogeneity: Project MATCH three-year drinking outcomes. *Alcoholism: Clinical and Experimental Research, 22*(6), 1300-1311.

**Regester, D.C. (1971). Changes in autonomic responsivity and drinking behavior of alcoholics as a function of aversion therapy. *Dissertation Abstracts International, 32*, 1225-B.

* Reynolds, K.D., Coombs, D.W., Lowe, J.B., Peterson, P.L., & Gayoso, E. (1995). Evaluation of a self-help program to reduce alcohol consumption among pregnant women. *International Journal of Addictions, 30*(4), 427-443.

**Reinert, R.E. (1958). A comparison of reserpine and disulfiram in the treatment of alcoholism. *Quarterly Journal of Studies on Alcohol, 19*, 617-622.

**Rhead, J.C., Soskin, R.A., Turek, I., Richards, W.A., Yensen, R., Kurland, A.A., & Ota, K.Y. (1977). Psychedelic drug (DPT)-assisted psychotherapy with alcoholics: A controlled study. *Journal of Psychedelic Drugs, 9*, 287-300.

* Rice, C., Longabaugh, R., Beattie, M.C., & Noel, N. (1993). Age group differences in response to treatment for problematic alcohol use. *Addiction, 88*(10), 1369-1375.

**Richard, G.P. (1983). *Behavioural treatment of excessive drinking*. Unpublished doctoral dissertation, University of New South Wales, Sydney, Australia.

* Richmond, R., Heather, N., Wodak, A., Kehoe, L., & Webster, I. (1995). Controlled evaluation of a general practice-based brief intervention for excessive drinking. *Addiction, 90*(1), 119-132.

* Richmond, R., Kehoe, L., Hailstone, S., Wodak, A., & Uebel-yan, M. (1999). Quantitative and qualitative evaluations of brief interventions to change excessive drinking, smoking and stress in the police force. *Addiction, 94*(10), 1509-1521.

* Richmond, R., Kehoe, L., Heather, N., & Wodak, A. (2000). Evaluation of a workplace brief intervention for excessive alcohol consumption: The Workscreen project. *Preventive Medicine, 30*, 51-63.

**Robertson, I., Heather, N., Dzialdowski, A., Crawford, J., & Winton, M. (1986). A comparison of minimal versus intensive controlled drinking treatment of problem drinkers. *British Journal of Clinical Psychology, 25*, 185-194.

**Rohsenow, D.J., Smith, R.E., & Johnson, S. (1985). Stress management training as a prevention program for heavy social drinkers: Cognitive, affect, drinking, and individual differences. *Addictive Behaviors, 10*, 45-54.

* Romach, M.K., Sellers, E.M., Kaplan, H.L., Somer, G.R., & Gomez-Mancilla, B. (2000). Efficacy of Dexfenfluramine in the treatment of alcohol dependence. *Alcoholism: Clinical and Experimental Research, 24*(10), 1534-1541.

**Romelsjo, A., Andersson, L., Barmer, H., Borg, S., Granstrand, C., Hultman, O., Hassler, A., Kallqvist, A., Magnusson, P., Morgell, R., Nyman, K., Olofsson, A., Olsson, E., Rhedin, A., & Wikblad, O. (1989). A randomized study of secondary

prevention of early stage problem drinkers in primary health care. *British Journal of Addiction, 84*, 1319-1327.

**Rosenberg, H., & Brian, T. (1986). Cognitive-behavioral group therapy for multiple-DUI offenders. *Alcoholism Treatment Quarterly, 3*(2), 47-65.

**Rosenberg, S.D. (1979). *Relaxation training and a differential assessment of alcoholism*. Unpublished doctoral dissertation. California School of Professional Psychology, San Diego. (University Microfilms No. 8004362)

* Roy-Byrne, P.P., Pages, K.P., Russo, J.E., Jaffe, C., Blume, A.W., Kingsley, E., Cowley, D.S., & Ries, R.K. (2000). Nefazadone treatment of major depression in alcohol dependent patients: A double-blind, placebo-controlled trial. *Journal of Clinical Psychopharmacology, 20*(2), 129-136.

**Salzberg, P.M., & Klingberg, C.L. (1983). The effectiveness of deferred prosecution for driving while intoxicated. *Journal of Studies on Alcohol, 44*, 299-306.

**Sanchez-Craig, M., Annis, H.M., Bornet, A.R., & MacDonald, K.R. (1984). Random assignment to abstinence and controlled drinking: Evaluation of a cognitive-behavioural program for problem drinkers. *Journal of Consulting and Clinical Psychology, 52*, 390-403.

* Sanchez-Craig, M., Davila, R., & Cooper, G. (1996). A self-help approach for high-risk drinking: Effect of an initial assessment. *Journal of Consulting and Clinical Psychology, 64*(4), 694-700.

**Sanchez-Craig, M., Leigh, G., Spivak, K., & Lei, H. (1989). Superior outcome of female over males after brief treatment for the reduction of heavy drinking. *British Journal of Addiction, 84*, 395-404.

**Sanchez-Craig, M., Spivak, K., & Davila, R. (1991). Superior outcome of females over males after brief treatment for the reduction of heavy drinking: Replication and report of therapist effects. *British Journal of Addiction, 86*, 867-876.

**Sanchez-Craig, M., & Walker, K. (1982). Teaching coping skills to chronic alcoholics in a coeducational halfway house: I. Assessment of programme effects. *British Journal of Addiction, 77*, 35-50.

* Sandahl, C., Herlitz, K., Ahlin, G., & Roennberg, S. (1998). Time-limited group psychotherapy for moderately alcohol dependent patients: A randomized controlled clinical trial. *Psychotherapy Research, 8*(4), 361-378.

**Sandahl, C., & Ronnberg, S. (1990). Brief group psychotherapy relapse prevention for alcohol dependent patients. *International Journal of Group Psychotherapy, 40*, 453-476.

**Sannibale, C. (1988). The differential effect of a set of brief interventions on the functioning of a group of "early stage" problem drinkers. *Australian Drug and Alcohol Review, 7*, 147-155.

* Sapir-Weise, R., Berglund, M., Frank, A., & Kristenson, H. (1999). Acupuncture in alcoholism treatment: A randomized out-patient study. *Alcohol & Alcoholism, 34*(4), 629-635.

* Sass, H., Soyka, M., Mann, K., & Zieglgaensberger, W. (1996). Relapse prevention by acamprosate: Results from a placebo-controlled study on alcohol dependence. *Archives of General Psychiatry, 53*(8), 673-680.

**Schaefer, H.H. (1972). Twelve-month follow-up of behaviorally trained ex-alcoholic social drinkers. *Behavior Therapy, 3*, 286-289.

**Schaefer, H.H., Sobell, M.B., & Mills, K.C. (1971). Some sobering data on the use of self-confrontation with alcoholics. *Behavior Therapy, 2*, 28-39.

**Scoles, P., & Fine, E.W. (1977). Short-term effects of an educational program for drinking drivers. *Journal of studies on Alcohol, 38*, 633-637.

**Scott, E., & Anderson, P. (1990). Randomized controlled trial of general practitioner intervention in women with excessive alcohol consumption. *Drug and Alcohol Review, 10*, 313-321.

* Sellers, E.M., Toneatto, T., Romach, M.K., Somer, G.R., Sobell, L.C., & Sobell, M.B. (1994). Clinical efficacy of the 5-HT-3 antagonist odansetron in alcohol abuse and dependence. *Alcoholism: Clinical and Experimental Research, 18*(4), 879-885.

* Senft, R.A., Polen, M.R., Freeborn, D.K., & Hollis, J.F. (1997). Brief intervention in a primary care setting for hazardous drinkers. *American Journal of Preventive Medicine, 13*(6), 464-470.

**Shaffer, J.W., Freinek, W.R., Wolf, S., Foxwell, N.H., & Kurland, A.A. (1963). A controlled evaluation of chlordiazepoxide (Librium) in the treatment of alcoholics. *Journal of Nervous and Mental Disease, 137*, 494-507.

**Shaffer, J.W., Freinek, W.R., Wolf, S., Foxwell, N.H., & Kurland, A.A. (1964). Replication of a study of nialamide in the treatment of convalescing alcoholics with emphasis on prediction of response. *Current Therapeutic Research, 6*, 521-531.

* Shaw, G.K., Waller, S., Majumdar, S.K., Alberts, J.L., Latham, C.J., & Dunn, G. (1994). Tiapride in the prevention of relapse in recently detoxified alcoholics. *British Journal of Psychiatry, 165*(4), 515-523.

* Shebek, J., & Rindone, J.P. (2000). A pilot study exploring the effect of Kudzu root on the drinking habits of patients with chronic alcoholism. *The Journal of Alternative and Complementary Medicine, 6*(1), 45-48.

**Sisson, R.W. (1981). *The effect of three relaxation procedures on tension reduction and subsequent drinking of inpatient alcoholics.* Unpublished doctoral dissertation, Southern Illinois University at Carbondale. (University Microfilms No. 8122668)

**Sisson, R.W., & Azrin, N.H. (1986). Family-member involvement to initiate and promote treatment of problem drinkers. *Journal of Behavior Therapy and Experimental Psychiatry, 17*, 15-21.

* Sitharthan, T. Kavanagh, D.J., & Sayer, G. (1996). Moderating drinking by correspondence: An evaluation of a new method of intervention. *Addiction, 91*(3), 345-355.

* Sitharthan, T., Sitharthan, G., Hough, M.J., & Kavanaugh, D.J. (1997). Cue exposure in moderation drinking: A comparison with cognitive-behavior therapy. *Journal of Consulting and Clinical Psychology, 65*(5), 878-882.

**Skutle, A., & Berg, G. (1987). Training in controlled drinking for early-stage problem drinkers. *British Journal of Addiction, 82*, 493-501.

**Smart, R.G., Storm, T., Baker, E.F.W., & Solursh, L. (1966). A controlled study of lysergide in the treatment of alcoholism: I. The effects on drinking behavior. *Quarterly Journal of Studies on Alcohol, 27*, 469-482.

* Smith, J.E., Meyers, R.J., & Delaney, H.D. (1998). The community reinforcement approach with homeless alcohol-dependent individuals. *Journal of Consulting and Clinical Psychology, 66*(3), 541-548.

**Smith, J.W., Frawley, P.J., & Polissar, L. (1991). Six and twelve month abstinence rates in inpatient alcoholics treated with aversion therapy compared to matched inpatients from a treatment registry. *Alcoholism: Clinical and Experimental Research, 15*, 862-870.

**Sobell, M.B., & Sobell, L.C. (1973). Individualized behavior therapy for alcoholics. *Behavior Therapy, 4*, 49-72.

**Steffen, J.J. (1975). Electromyographically induced relaxation in the treatment of chronic alcohol abuse. *Journal of Consulting and Clinical Psychology, 43*, 275.

**Stein, L.I., Newton, J.R., & Rowman, R.S. (1975). Duration of hospitalization for alcoholism. *Archives of General Psychiatry, 32*, 247-252.

**Swenson, P.R., & Clay, T.R. (1980). Effects of short-term rehabilitation on alcohol consumption and drinking-related behaviours: An eight month follow-up study of drunken drivers. *International Journal of the Addictions, 15*, 821-838.

**Swenson, P.R., Struckman-Johnson, D.L., Ellingstad, V.S., Clay, T.R., & Nichols, J. L. (1981). Results of a longitudinal evaluation of court-mandated DWI treatment programs in Phoenix, Arizona. *Journal of Studies on Alcohol, 42*, 642-653.

Swift, R.M. (1999). Drug therapy for alcohol dependence. *New England Journal of Medicine, 340*(19), 1482-1490.

**Swinson, R.P. (1971). Long term trial of metronidazole in male alcoholics. *British Journal of Psychiatry, 119*, 85-89.

* Taub, E., Steiner, S.S., Weingarten, E., & Walton, K.G. (1994). Effectiveness of broad spectrum approaches to relapse prevention in severe alcoholism: A long-term, randomized, controlled trial of transcendental meditation, EMG biofeedback and electronic neurotherapy. *Alcoholism Treatment Quarterly, 11*(1-2), 187-220.

**Telch, M.J., Hannon, R., & Telch, C.F. (1984). A comparison of cessation strategies for the outpatient alcoholism. *Addictive behaviors, 9*, 103-109.

* Tempesta, E., Janiri, L., Bignamini, A., Chabac, S., & Potgetier, A. (2000). Acamprosate and relapse prevention in the treatment of alcohol dependence: A placebo-controlled study. *Alcohol and Alcoholism, 35*(2), 202-209.

* Tiihonen, J., Ryynaenen, O.P., Kauhanen, J., Hakola, H.P.A., & Salaspuro, H.M. (1996). Citalopram in the treatment of alcoholism: A double-blind placebo-controlled study. *Pharmacopsychiatry, 29*(1), 27-29.

* Tomson, Y., Romelsjo, A., & Aberg, H. (1998). Excessive drinking-brief intervention by a primary health care nurse. *Scandinavian Journal of Primary Health Care, 16*, 188-192.

**Tomsovic, M., & Edwards, R.V. (1970). Lysergide treatment of schizophrenic and nonschizophrenic alcoholics: A controlled evaluation. *Quarterly Journal of Studies on Alcohol, 31*, 932-949.

Tonigan, J.S., Toscova, R., & Miller, W.R. (1996). Meta-analysis of the literature on Alcoholics Anonymous: Sample and study characteristics moderate findings. *Journal of Studies on Alcohol, 57*, 65-72.

**Tyndel, M., Fraser, J.G., & Hartleib, C.J. (1969). Metronidazole as an adjuvant in the treatment of alcoholism. *British Journal of Addiction, 64*, 57-61.

**Valle, S.K. (1981). Interpersonal functioning of alcoholism counselors and treatment outcome. *Journal of Studies on alcohol, 42*, 783-790.

**Vogler, R.E., Ferstl, R., Kraemer, S., & Brengelmann, J.C. (1975). Electrical aversive conditioning of alcoholics: One year follow-up. *Journal of Behavior Therapy and Experimental Psychiatry, 6*, 171-173.

**Vogler, R.E., Lunde, S.E., Johnson, G.R., & Martin, P.L. (1970). Electrical aversion conditioning with chronic alcoholics. *Journal of Consulting and Clinical Psychology, 34*, 302-307.

**Vogler, R.E., Weissbach, T.A., & Compton, J.V. (1977). Learning techniques for alcohol abuse. *Behaviour Research and Therapy, 15*, 31-38.

* Volpicelli, J.R., Alterman, A.I., Hayashida, M., & O'Brien, C.P. (1992). Naltrexone in the treatment of alcohol dependence. *Archives of General Psychiatry, 49*, 876-880.

* Volpicelli, J.R., Rhines, K.C., Rhines, J.S., Volpicelli, L.A., Alterman, A.I., & O'Brien, C.P. (1997). Naltrexone and alcohol dependence: Role of subject compliance. *Archives of General Psychiatry, 54*(8), 737-742.

**Wallace, P., Cutler, S., & Haines, A. (1988). Randomised controlled trial of general practitioner intervention in patients with excessive alcohol consumption. *British Medical Journal, 297*, 663-668.

**Wallerstein, R.S., Chotlos, J.W., Friend, M.B., Hammersley, D.W., Perlswig, E.A., & Winship, G.M. (1957). *Hospital treatment of alcoholism: A comparative experimental study*. New York: Basic Books.

**Walsh, D.C., Hingson, R.W., Merrigan, D.M., Morelock Levenson, S., Cupples, A., Heeren, T., Coffman, G.A., Becker, C.A., Barker, T.A., Hamilton, S.K., McGuire, T.G., & Kelly, C.A. (1991). A randomized trial of treatment options for alcohol-abusing workers. *The New England Journal of Medicine, 325*, 775-782.

**Wanberg, K.W., Horn, J.L., & Fairchild, D. (1974). Hospital versus community treatment of alcoholism problems. *International Journal of Mental Health, 3*, 160-176.

Weisner, C., Greenfield, T., & Room, R. (1995). Trends in the treatment of alcohol problems in the U.S. general population, 1979 through 1990. *American Journal of Public Health, 85*, 55-60.

**Wells-Parker, E., Anderson, B.J., Landrum, J.W., & Snow, R.W. (1988). Effectiveness of probation, short-term intervention and LAI administration for reducing DUI recidivism. *British Journal of Addiction, 83*, 415-422.

* Welte, J.W., Perry, P., Longabaugh, R., & Clifford, P.R. (1998). An outcome evaluation of a hospital-based early intervention program. *Addiction, 93*(4), 573-581.

**West, P.T. (1979). *Three modes of training alcoholics in interpersonal communications skills: A comparative study.* Unpublished doctoral dissertation, University of Western Ontario, London.

* Whitworth, A.B., Fischer, F., Lesch, O.M., Nimmerrichter, A., Oberbauer, H., Platz, T., Potgieter, A., Walter, H., & Flieschhacker, W.W. (1996). Comparison of acamprosate and placebo in long-term treatment of alcohol dependence. *Lancet, 347*,1438-1442.

**Whyte, C.R., & O'Brien, P.M. (1974). Disulfiram implant: A controlled trial. *British Journal of Psychiatry, 124*, 42-44.

* Wiesbeck, G.A., Weijers, H.G., Chick, J., Naranjo, C.A., & Boening, J. (1999). Ritanserin in relapse prevention in abstinent alcoholics: Results from a placebo-controlled double-blind international multicenter trial. *Alcoholism: Clinical and Experimental Research, 23*(2), 230-235.

Wilk, A.I., Jensen, N.M., & Havighurst, T.C. (1997). Meta-analysis of randomized control trials addressing brief interventions in heavy alcohol drinkers. *Journal of General Internal Medicine, 12*, 274-283.

**Wilson, A., Davidson, W.J., & Blanchard, R. (1980). Disulfiram implantation: A trial using placebo implants and two types of controls. *Journal of Studies on alcohol, 41*, 429-436.

**Wilson, A., Davidson, W.J., Blanchard, R., & White, J. (1978). Disulfiram implantation: A placebo-controlled trial with two-year follow-up. *Journal of Studies on Alcohol, 39*, 809-819.

* World Health Organization, Brief Intervention Study Group, Geneva, Switzerland. (1996). A cross-national trial of brief intervention with heavy drinkers. *American Journal of Public Health,86*(7), 948-955.

Worner, A.M., Zeller, B., Scwarz, H., Zwas, F., & Lyon, D. (1987). Acupuncture fails to improve treatment outcome in alcoholics. *Drug and Alcohol Dependence, 30*, 169-173.

* Worner, T.M., Zeller, B., Schwarz, H., Zwas, F., & Lyon, D. (1992). Acupuncture fails to improve treatment outcome in alcoholics. *Drug and Alcohol Dependence, 30*, 169-173.

**Zimberg, S. (1974). Evaluation of alcoholism treatment in Harlem. *Quarterly Journal of Studies on Alcohol, 35*, 550-557.

**Zweben, A., Pearlman, S., & Li, S. (1988). A comparison of brief advice and conjoint therapy in the treatment of alcohol abuse: The results of the marital systems study. *British Journal of Addiction, 83*, 899-916.

APPENDIXES

Appendix A: Coding Manual from Miller et al.

Megatable Coding Manual

TREATMENT MODALITY CODES

1.	AA	Alcoholics Anonymous
2.	AC	Acupuncture
3.	AM	Antidipsotropic Medication
4.	AMcc	Calcium Carbimide
5.	AMdi	Disulfiram
6.	AMme	Metronidazole
7.	AS	Assessment as tested intervention
8.	AV	Aversion Therapy
9.	AVap	Apneic
10.	AVcs	Covert Sensitization
11.	Avel	Electrical
12.	AVna	Nausea - apomorphine
13.	AVne	Nausea - emetine
14.	AVnl	Nausea - lithium
15.	AVnm	Nausea - motion sickness
16.	BA	BAC Discrimination Training (by internal cue feedback)
17.	BC	Behavior Contracting
18.	BE	Behavioral Self-Control Training
19.	BF	Biofeedback
20.	BFee	EEG biofeedback (alpha/theta, etc.)
21.	BFem	EMG
22.	BI	Brief Intervention (advice)
23.	CE	Cue Exposure
24.	CG	Counseling - General Alcoholism
25.	CH	Client Choice among options
26.	CM	Case management
27.	CN	Confrontational Counseling
28.	CNji	Johnson Institute Intervention
29.	CR	Community Reinforcement Approach
30.	CT	Cognitive Therapy (including cognitively-based relapse prev)
31.	DC	Developmental Counseling (Egan)
32.	DT	Detoxification
33.	ED	Education (in person lectures, films, etc.; not reading)
34.	EDd	Disease-model education
35.	EDl	Learning theory education
36.	EX	Exercise program (e.g., aerobic)
37.	FA	Functional Analysis
38.	FB	Feedback of assessment results

39.	FT	Family Therapy (not marital therapy)
40.	FTcb	Cognitive-Behavioral family therapy
41.	FTfs	Family Systems/Structural
42.	FTo	Family Therapy, other or unspecified orientation
43.	FTun	Unilateral Family (or Marital) Therapy (behavioral skills training)
44.	HO	Housing provided as part of treatment
45.	HOac	Housing contingent upon abstinence (not residential treatment setting)
46.	HOnc	Housing noncontingent (not residential treatment setting)
47.	HY	Hypnosis
48.	JT	Job-finding or job-skill training (specifically; do not code with OT)
49.	ME	Motivational Enhancement or Motivational Interviewing
50.	MI	Milieu Therapy (include therapeutic community)
51.	MM	Minnesota Model
52.	MO	Self-Monitoring
53.	MP	Medical Procedure (e.g., surgical - not medication)
54.	MT	Marital
55.	MTcb	Cognitive/Behavioral Marital Therapy
56.	MTss	Marital Therapy, Systems/Structural
57.	MTo	Marital Therapy, other or unspecified orientation
58.	NT	Neurotherapy (low intensity electrical stimulation of head)
59.	OM	Other Medications
60.	OMai	Angiotensin-converting enzyme inhibitor (enalapril)
61.	OT	Occupational Therapy
62.	PI	Sodium Pentothal interview
63.	PM	Psychotropic Medication
64.	PMan	Anti-anxiety
65.	PMbb	Beta blockers
66.	PMda	Dopamine agonist (bromocriptine)
67.	PMde	Antidepressant
68.	PMdn	Dopamine antagonist (tiapride)
69.	PMga	GABA agonist (acamprosate)
70.	PMhy	Hypnotic
71.	PMli	Lithium
72.	PMna	Narcotic antagonist (Naltrexone, nalmefene)
73.	PMsa	Serotonin antagonist (ritanserin)
74.	PMsr	Selective serotonin reuptake inhibitors (sertraline, fluoxetine, zimelidine)
75.	PMsc	Antipsychotic
76.	PMst	Stimulant
77.	PMsy	Psychedelic
78.	PS	Problem-Solving
79.	PT	Psychotherapy
80.	PTin	Insight-oriented
81.	PTcl	Client-centered, nondirective, supportive

82.	PTre	Reality Therapy (Glasser)
83.	RP	Relapse Prevention (cognitive-behavioral skill training; if not more specifically codable)
84.	RE	REST Reduced Environmental Stimulation Therapy (includes sensory deprivation + change messages)
85.	RT	Recreational Therapy
86.	SH	Self-Help Manual
87.	SM	Stress Management
88.	SMde	Systematic Desensitization
89.	SMre	Relaxation training only
90.	SMsd	Sensory deprivation (but not full REST)
91.	SP	Spiritual intervention
92.	SPsc	Spiritual counseling
93.	SPsd	Spiritual direction
94.	SPip	Intercessory prayer
95.	SS	Social Skills Training
96.	SSas	Assertiveness training
97.	SSbr	Behavior rehearsal
98.	SSco	Communication training
99.	SScs	Culturally sensitive social skills training
100.	ST	Standard Treatment, unspecified or minimally specified (Treatment as usual) [If also received by EXP groups, specify them ST + . . .]
101.	SV	Surveillance
102.	SX	Sexual Counseling
103.	TO	Tobacco cessation treatment
104.	TS	Twelve-Step Facilitation
105.	VS	Videotape Self-Confrontation
106.	Nurse	Nurse intervention
107.	TM	Transcendental Meditation

More than one modality may be specified; e.g., ED/SC/SMre/VS
When including multiple modalities, list in alphabetical order
CIRCLE what appears to be the primary treatment modality
Additional codes may be added as new modalities are evaluated

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CONTROL GROUP CODES (to be used instead of modality code)

	Assessment only Code as NT (Formerly AS)
LE	Legal sanctions only
MM	Medical Monitoring only
NA	No pre-assessment or treatment
NT	No treatment, but assessed

PL	Placebo
PLat	Attention identified as placebo (e.g. discussion) including altered (sham) form of nonmedical treatment
PLom	Oral medication
PLsu	Sham surgery
PR	Probation only
WL	Waiting List

(Comparison treatment groups are specified by their modality codes)

TREATMENT SETTING CODES

AF	Aftercare (outpatient)
DA	Day Treatment
CL	Classroom, educational
EA	Employee Assistance Program
GP	General Practitioner medical practice
HA	Halfway House
IP	Inpatient Hospital
IP	Alcoholism/Drug special hospital or ward
IPgh	General hospital - not special ward
IPps	Psychiatric hospital - not special ward
JA	Jail or Prison
MA	Mail contact only
MS	Mixed settings (e.g., inpatient phase plus outpatient phase; AA is not a setting)
NO	No Treatment provided for alcohol problems (e.g., recruited for drug study only)
OP	Outpatient Alcohol Treatment
PH	Telephone contact only
RE	Residential Alcohol Treatment, not hospital
SH	Self-Help (including AA, bibliotherapy)
UT	Unspecified treatment setting

TREATMENT FORMAT CODES

CO	Computer-administered
FA	Family treatment (more than dyad)
GR	Group treatment
IN	Individual treatment
INph	Telephone contact only
MA	Marital/couples treatment
MI	Minimal therapist contact
MIad	Brief advice contact (not more than one session)
MIbi	Bibliotherapy

MX	Mixed format (e.g., group plus individual)
NC	No treatment contact (e.g., by mail only; no treatment; assessment only)
SO	Significant other treatment (without identified patient)
SOal	Al-Anon group
SOin	Individual SO treatment
SOgr	Group SO treatment
US	Unspecified treatment format

PRIMARY TREATMENT AGENT CODES

AC	Alcohol/Drug Counselor (less than MA)
AP	Acupuncturist
MA	Master's Level Counselor (other than Social Worker)
MD	Physician, Psychiatrist
MX	Mixed - treatment provided by varying levels of professionals
NA	Not Applicable - no treatment agent
PA	Paraprofessional or student trained especially for research project - not regular alcohol counselor
PC	Pastoral Counselor, Clergy
PO	Probation Officer
PS	Psychologist
RN	Nurse
SW	Social Worker (MSW minimum)
TE	Team
UN	Unspecified treatment agent

TREATMENT GOAL CODES

AB	Total Abstinence
CD	Controlled/Moderate Drinking
HR	General Harm Reduction; AB or CD not specified; include programs working toward alcohol problem improvement without specifying goal (use for treatments with unspecified goal or client-selected goal)
NG	No goal (use for untreated controls, etc.)
OT	Primary treatment goal is other than modification of drinking (e.g., family therapy to improve family communication)

Population Severity Rating:

4 = Severely Impaired Clinical Population (e.g., alcoholics in treatment, with documented moderate to severe dependence)

3 = Problem Drinker Clinical Population (e.g., drinkers seeking treatment because of problems related to alcohol; available evidence does not indicate severe dependence

2 = Problem Drinker Nonclinical (e.g., drinkers with clear alcohol-related problems, but not seeking treatment; recruited for research only, not treatment; includes populations mandated into treatment where available evidence does not indicate severe problems or dependence, and populations identified via medical screening)

1 = Nonclinical (e.g., recruited for research only; available evidence indicated mild or no problems)

0 = Insufficient information to classify

Do not infer from setting alone (e.g., inpatient = 4)

WEIGHTING SYSTEM FOR TREATMENT EFFECTS

A main effect is reported at any FU point on alcohol consumption or alcohol problems measures, given appropriate statistical analysis. A "matching" interaction effect in the absence of a main effect is not coded. Also, do not code for reported effect within a select subgroup of patients (e.g., smokers, older, nonabstainers) in the absence of an overall main effect.

Effects for Treatment A

+2	A>0	A > no treatment, sham, placebo [also A=B>0; A>B=0]
+2	AB>B	Additive effect > treatment without A
+1	A>B	A > alternative treatment B without control
+1	A>b	A > brief, dissimilar treatment without control
+1	A>a	A > briefer form of same treatment without control
+1	a≥B	a (brief A) better than or equal to from more extensive B without control
-1	A=B	A nsd from alternative treatment of comparable/greater intensity without control
-1	A=a	A nsd from briefer form of same treatment without control
-1	a<B	a (minimal A) less effective than more extensive B without control
-1	C>A>B	Mixed differences among treatments without control
-1	AB=B	No additive effect above alternative treatment without control
-1	ABC=B	No additive effect of combination of modalities above alternative treatment without control
-1	A<AB	A worse than alternative treatment B with A, without control
-2	A<B	A worse than alternative treatment B of comparable intensity, without control
-2	A≤b	A not better than brief, dissimilar treatment
-2	AB<B	Outcome with B is worse when A is added
-2	A≤0	A not better than no treatment, sham, placebo, or assessment only

"Control" above refers to a group not receiving treatment A or an alternative active treatment: no treatment, sham, or placebo

When a control group is present, the comparison of A with controls takes precedence over any other comparison in determination of the treatment effect classification

In a dismantling design (e.g., AB vs B vs NT), the specific component test (AB vs B) takes precedence over the combined effect (AB vs NT) in judging the effect of an additive component (A). Thus if AB=B>NT, A would be 0, B would be +2.

In additive designs with multiple components, ABCD>B cannot be used to support individual components A, C, and D. However a lack of additive effect (ABCD=B) yields 0 scores for A, C, and D.

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*A black asterisk may be used instead of a treatment effect code, if in the reviewer's judgment the study is so flawed as to be uninterpretable (e.g., massive overall attrition; conclusion based on clearly improper statistical procedures). The justification for * rating must be specified.

Megatable Project Rating Criteria

0-4	GROUP ALLOCATION	4 = Randomization 3 = Within-subjects counterbalanced design 2 = Case control, matching 1 = Quasi-experimental design, sequential cohorts 0 = Violated randomization or nonequivalent groups
0-1	QUALITY CONTROL	1 = Treatment standardized by manual, procedures, specific training, etc. 0 = No standardization specified
0-2	FOLLOW-UP RATE (at any follow-up point ≥ 3mo)	2 = 85-100% follow-ups completed 1 = 70-84.9% follow-ups completed 0 = <70% follow-ups completed, or follow-up less than 3 months
0-2	FOLLOW-UP LENGTH	2 = 12 months or longer 1 = 6-11 months 0 = < 6 mo
0-1	CONTACT	1 = Personal or telephone contact for >70% of completed follow-ups 0 = Questionnaire, unspecified, or <70%
0-1	COLLATERALS	1 = Collaterals interviewed in >50% of cases 0 = No collateral verification
0-1	OBJECTIVE	1 = Objective verification (records, serum, breath, neuropsychological) 0 = No objective verification
0-1	DROP-OUTS	1 = Treatment dropouts are included in at least some outcome data (e.g., intent to treat analysis; compared on dv; mere statement of the number of drop-outs does not count) 0 = Treatment dropouts not discussed or not accounted for (e.g., excluded noncompleters from all analyses)
0-1	ATTRITION	1 = Cases lost to follow-up are enumerated and considered in outcome reporting (e.g., counted as failures; compared with nonattrition cases on prior characteristics)

0 = Lost cases not enumerated or merely enumerated, and not considered in any outcome reporting

0-1 INDEPENDENT
1 = FU done by treatment-blind interviewer
0 = FU nonblind; not specified; questionnaire

0-1 ANALYSES
1 = Appropriate statistical analyses of group differences are reported
0 = No statistical analysis; inappropriate

0-1 MULTISITE
1 = Parallel replications at 2 or more sites, with separate research teams
0 = Single site or comparisons of sites offering different programs

0-17 TOTAL

Study:

Treatments

Modalities/Control	Setting	Format	Agent	Goal	Tabled
A	/	/	/	/	
B	/	/	/	/	
C	/	/	/	/	
D	/	/	/	/	
E	/	/	/	/	
F	/	/	/	/	

Assignment:
__Random
__Arbitrary/nonrandom (e.g., alternating)
__ Within-S counterbalanced
__Case-control or matching Matched on:_____
__ Cohort
__Violated random
__Nonequivalent groups (do not code in megatable)

Stated diagnosis:_____

Characteristics of sample:_____% male Mean age:_____

Severity Classification:_____ Notes _____

_____

_____

N randomized/initiated into study sample:_____ (use as denominator for % completed)

FU Intervals*	_____	_____	_____	_____	_____	_____
N completed	_____	_____	_____	_____	_____	_____
% completed	_____	_____	_____	_____	_____	_____
Outcome code (A>B, etc.)	_____	_____	_____	_____	_____	_____

*Follow-up interval is from intake/baseline, not from treatment termination

___	GROUP ALLOCATION	4 = Randomization 3 = Within-S counterbalanced 2 = Case control / matching 1 = Quasi-experimental design 0 = Violated randomization or nonequivalent groups
___	QUALITY CONTROL	1 = Treatment standardized by manual, specific training, etc. 0 = No standardization specified
___	FOLLOW-UP RATE (at any follow-up point ≥ 3mo)	2 = 85-100% follow-ups completed 1 = 70-84.9% follow-ups completed 0 = <70% follow-ups completed or FU less than 3 months
___	FOLLOW-UP LENGTH	2 = 12 months or longer 1 = 6-11 months 0 = < 6 mo
___	CONTACT	1 = Personal or telephone interview 0 = Questionnaire, unspecified
___	COLLATERALS	1 = Collaterals interviewed in >50% of cases 0 = No collateral verification in most cases
___	OBJECTIVE	1 = Objective verification (records, serum, breath, neuropsychological) in >50% of cases 0 = No objective verification in most cases
___	DROP-OUTS	1 = Treatment dropouts discussed and accounted for 0 = Treatment dropouts not discussed or accounted for (e.g., excluded all noncompleters)

___ ATTRITION
1 = Cases lost to follow-up are discussed and included in analyses or outcome stats. etc.
0 = Cases lost to follow-up are not discussed or excluded from analyses and outcome stats

___ INDEPENDENT
1 = FU done by independent interviewer
0 = FU nonblind; not specified; questionnaire

___ ANALYSES
1 = Acceptable statistical analyses of group differences
0 = No statistical analysis; inappropriate

___ MULTISITE
1 = Parallel replications at 2 or more sites
0 = Single site or comparison of sites offering different treatments

_____ TOTAL MODALITY — FINAL SCORES

x _____ TREATMENT EFFECT CODE (-2 to +2) = _____ _____
x _____ TREATMENT EFFECT CODE (-2 to +2) = _____ _____
x _____ TREATMENT EFFECT CODE (-2 to +2) = _____ _____
x _____ TREATMENT EFFECT CODE (-2 to +2) = _____ _____

Notes

Appendix B: All New Codings, Including All Disagreements for Inter-Rater Reliability

Author	year	perm	age	nsize	sev	grall	qual	folr	foll	cont	coll	obj	drop	attr	ind	analy	multi	mqs	ols	ces	mod
Aalto	2000	0	40.9	[illegible]	2	4	1	0	2	1	0	1	1	1	0	1	1	13	-2	-26	BI
Aalto	2001	100	41.9	[illegible]	2	4	1	[illegible]	2	1	0	1	[illegible]	1	0	1	1	13	-2	-26	BI
Agostinelli	1995	52	[illegible]	26	2	4	1	0	0	[illegible]	0	0	1	1	1	1	0	10	2	20	FB
Allsop	1997	100	41.2	60	[illegible]	1	1	[illegible]	2	1	1	[illegible]	1	1	[illegible]	1	0	12	-2	-24	[illegible]
Angelone	1998	67.9	48.8	81	[illegible]	4	1	0	0	1	1	0	1	1	1	1	0	11	2	22	PMsr
Anton	1999	71	42.5	132	3	4	1	1	0	1	[illegible]	1	1	1	1	1	0	12	2	24	[illegible]
Baer	1992	48	21.2	[illegible]	2	4	1	[illegible]	2	[illegible]	0	0	1	1	0	1	0	11	-1	-11	[illegible]
Baer	1992	48	21.2	[illegible]	2	4	1	[illegible]	2	[illegible]	0	0	1	1	0	1	0	11	-1	-11	[illegible]
Baer	1992	48	21.2	[illegible]	2	4	1	1	2	[illegible]	0	0	1	1	0	1	0	11	-1	-11	[illegible]
Balldin	1994	100	48	[illegible]	3	4	1	0	0	1	0	1	[illegible]	1	1	1	0	11	-2	-22	PMsr
Bennic	1998	77.6	48.5	95	[illegible]	4	[illegible]	1	1	1	1	[illegible]	1	1	0	1	0	12	[illegible]	-24	BI
Bennic	1998	77.6	48.5	95	[illegible]	4	[illegible]	1	1	1	1	[illegible]	1	1	0	1	0	12	[illegible]	12	DT
Besson	1998	80	42.5	110	4	4	1	0	2	1	0	[illegible]	1	1	1	1	1	14	[illegible]	-28	PMga
Bobo	1995	74.4	[illegible]	[illegible]	3	4	1	2	1	[illegible]	0	[illegible]	[illegible]	[illegible]	0	1	1	10	2	20	TO

Author	year	perm	age	nsize	sev	grall	qual	folr	foll	cont	coll	obj	drop	attr	ind	analy	multi	mqs	ols	ces	mod
Bobo	1998	67	33	575	3	4	1	1	2	1	1	1	1	1	0	1	1	12	2	24	TO
Borsari	2000	43.3	18.6	60	1	4	1	0	0	1	0	0	1	1	0	1	0	9	2	18	[redacted]
Brown	1997	71	38	35	3	1	1	2	1	1	1	0	1	1	0	1	0	10	1	-20	SMre
Brown	1997	71	38	35	3	1	1	2	1	1	1	0	1	1	0	1	0	10	1	10	CT
Burge	1997	79	37.5	242	1	4	1	1	2	1	0	1	1	1	1	1	0	13	-2	-26	BI
Burge	1997	79	37.5	242	1	4	1	1	2	1	0	1	1	1	1	1	0	13	-2	-26	EDd
Chang	1999	0	30.7	250	2	4	1	2	1	1	1	0	1	1	1	1	0	13	-2	-26	BI
Chick A	2000	83.4	43.3	581	3	4	1	1	1	1	1	0	1	1	0	1	1	13	-2	-26	PMga
Chick B	2000	74.9	43.5	175	3	4	1	0	0	1	0	1	1	1	1	1	1	12	-2	-24	PMna
Cisler	1998	51.4	36.4	37	3	1	1	2	0	1	0	0	1	1	0	1	0	8	-1	-8	RP
Collins	1996	59.5	35.9	72	3	4	1	0	0	1	1	0	1	1	0	1	0	9	-2	-18	BE
Cornelius	1995	66	33.8	21	3	4	1	2	0	1	0	0	1	1	1	1	0	12	2	24	PMsr
Cornelius	1997	51	34.8	51	4	4	1	2	0	1	1	1	1	1	1	1	0	14	1	28	PMsr
Cox	1998	81	42.9	298	1	4	1	1	2	1	0	0	1	1	1	1	0	13	2	26	CM
Drummond	1994	100	44	1	4	1	1	1	1	1	1	1	1	1	0	1	1	10	-1	-10	SMrc
Drummond	1994	100	44	1	4	1	1	1	1	1	1	1	1	1	0	1	1	10	1	10	CE
Fichter	1993	58	38	100	4	4	1	2	2	1	1	0	1	1	0	1	0	14	-1	-14	FTo

Author	year	perm	age	nsize	sev	grall	qual	folr	foll	cont	coll	obj	drop	attr	ind	analy	multi	mqs	ols	ces	mod
Fichter	1993	58	38	100	4	4	1	2	2	1	1	0	1	1	0	1	0	14	-1	-14	SH
Fleming	1997	62.2	.	774	2	4	1	2	2	1	1	0	1	1	1	1	1	16	2	32	BI
Fleming	1999	66.5	.	158	2	4	1	2	2	1	1	0	1	1	1	1	1	16	2	32	BI
Gallimberti	1992			82	4	4	1	2	0	1	1	1		0	1	1	0	13	2	26	PMga
George	1992	97.7	41.6	45		4	1	0	2	1		1	1		1	1	0	12	-2	-24	PMsr
George	1992	97.7	41.6	45		4	1	0	2	1		1	1		1	1	0	12	-2	-24	PMda
George	1999	100			3	4	1	0	2	1	0		1	1		1	0	12	-2	-24	PMan
Gottlieb	1994	.	39	100	4	4	1	0	2	1	0	1	1	1	1	1	0	13	-2	-26	PMbb
Handmaker	1999	0	24	42	2	4	1	0	0	1	1		1	1		1	0	11	-2	-22	ME
Heather	1996	100	34.4	174		1	1	1	1	1	1		1	1	1	1		11		22	
Heather	1996	100	34.4	174		1	1	1	1	1	1		1	1	1	1		11		22	
Heather	1999	75	41.4	108	3	4	1	1	1	1	0	1			1	1	0	12	-1	-12	CE
Heather	1999	75	41.4	108	3	4	1	1	1	1	0	1			1	1	0	12	-1	-12	BE
Hester	1997	60	36.3	40	2	4	1			1	1		1	0	0	1	0	10		20	BE
Ino	2000	93.9	53	278	3	1	1	0	0	1	1	0		0	0	1	0	5	-2	-10	CN
Israel	1996	.	.	105	2	4	1	1	2	1	0	1	1	1		1	1	15		30	
Janiri	1996	80	45.4	50	3	4	1		0	1	1	1	1	1	1	1		12	2	24	PMsr

Author	year	perm	age	nsize	scv	grall	qual	folr	foll	cont	coll	obj	drop	attr	ind	analy	multi	mqs	ols	ccs	mod
Johnson	1996	77.3	41	423		4	1	0	0	1	0	1	1	1		1	1	12	-2	-24	PMsa
Kelly	2000	0	42.8	32	3	4	1	0	0	1		0	1	1	0	1	0	10	2	20	
Kranzler	1994	77	39	61	3	4	1	2	1	1	1	1	1	1	1	1	0	15		-30	PMan
Kranzler	1993	94.7	41	19	3	4	1	0	0	1	0		1	1	1	1	0	11	-2	-22	PMsr
Kranzler	1995	80	40.1	101	3	4	1		1	1		1	1	1	1	1	0	15	-1	-15	PMsr
Kranzler	1998	75	47.3	20	3	4	1		0	1	0	1	1	1	1	1	0	11		-22	PMna
Maharajh	1993	100	40	60	4	2		2	2	1	1				1	1	0	12	2	24	FTo
Malcolm	1992	100	42.9	67	3	4	1	0	1	1		1	1	1	1	1	0	13	-2	-26	PMan
Malec, E	1996	82.5	41.6	57		4	1	0	0	1	1	1	1		1	1		12	-2	-24	PMan
Malec, T.S.	1994	86.7	37.6	40		4	1	1	0	1	0	1	0	0	1	1	0	10	-2	-20	PMli
Manwell	2000	0		205	2	4	1	2	2	1		0	1	1	1	1	1	16		32	BI
Marlatt	1998			456		4	1		2	1	1	0	1	1	0	1		14	2	28	BI
Mason	1996	83	39.5	71	3	4	1	1	1	1	1	1	1	1	1	1		15	2	30	PMde
Mason	1994	71.4	42	21	3	4	1	0	0	1	0	1	1	1		1		11	2	22	PMna
McCrady	1999	100	39.4	90	3	4	1		1	1	1	0	1		0	1	0	11		-11	AA
McCrady	1999	100	39.4	90	3	4	1		1	1	1	0	1		0	1	0	11		-11	RP
McGrath	1996	50		69	3	4	1	0	0	1	1	1	1	1		1	0	12	-2	-24	PMde

Author	year	perm	age	nsize	scv	grall	qual	folr	foll	cont	coll	obj	drop	attr	ind	analy	multi	mqs	ols	ccs	mod
Monti	1993	100		40		4	1	1	1	1	1	1	1	1	0	1	0	13	2	26	CE
Monti	1999	64	18.4	94	2	4	1	2	1	1	0	1	1	1	1	1	0	14	-2	-28	BI
Mueller	1997	62.1	38	29	3	4	1	1	2	1	1	1	1	1	1	1	0	15		-30	PMdc
Naranjo	1997	83.3	42	366	4	4	1	0		1	1	1	1	1	1	1	1	14	-2	-28	PMda
Naranjo 95 A	1995	56.4	45.3	99	3	4	1	0	0	1	0	1	1	1		1	0	11	-2	-22	PMsr
Naranjo 95 B	1995	89.7	35	42		4	1		0	1	0	1	1	1	1	1	0	11	-2	-22	PMsa
Nunes	1993		40		3	4	1		1	1	0	0	1	1	1	1	0	13		26	PMdc
O'Malley	1996	74	40.5	104	3	4	1	1	1	1	0	0	1			1	0	12	-1	-12	
O'Malley	1996	74	40.5	104	3	4	1	1	1	1	0	0	1			1	0	12	-1	-12	
O'Malley	1996	74	40.5	104	3	4	1	1	1	1	0	0	1			1	0	12	-2	-24	PMna
Ojehagen	1992	83.3	37	72	3	4	1	2	2	1			1	1		1	0	16	-1	-16	CT
Ojehagen	1992	83.3	37	72	3	4	1	2	2	1			1	1		1	0	16	-1	-16	PTin
Padjen	1995	100	40.1		3	4	1	0	1	1	0	1		0		1	0	11	-2	-22	NT
Paille	1995	80	43.2	538	3	4	1	1	2	1	0	1	1	1	1	1	1	15	2	30	PMga
Patterson	1997	100	36.8	127	3		0	1	2	1	1	0	1	1	1	1	0	10	2	20	Nurs
Pelc	1997			188	3	4	1		0	1	0	1	1	1	1	1	1	12	2	24	PMga
Petry	2000	100	47.5	42	3	4	1	0	0	1	0	1	1	1	0	1	0	10	2	20	Cont

Author	year	perm	age	nsize	scv	grall	qual	folr	foll	cont	coll	obj	drop	attr	ind	analy	multi	mqs	ols	ces	mod
Poldrugo	1997	72.7	43	246	4	4	1	0	2	1	0	1	1	1	1	1	1	14	2	28	PMga
Powell	1995	100	41.3	216	3	4	1	0	1	1	0	1	1	0	1	1	0	11	-2	-22	[redacted]
Powell	1995	100	41.3	216	3	4	1	0	1	1	0	1	1	0	1	1	0	11	-2	-22	PMda
Project	1996	75.7	40.3	1726	3	4	1	2	2	1	1	1	1	1	0	1	1	16	-1	-16	ME
MATCH																					
Project	1996	75.7	40.3	1726	3	4	1	2	2	1	1	1	1	1	0	1	1	16	-1	-16	CT
MATCH																					
Project	1996	75.7	40.3	1726	3	4	1	2	2	1	1	1	1	1	0	1	1	16	-1	-16	TS
MATCH																					
Reynolds	1995	0	22.4	78	2	4	1	[redacted]		0	[redacted]		0	0	1	1	0	1	0	8	-1	-8	SH
Reynolds	1995	0	22.4	78	2	4	1	[redacted]		0	[redacted]		0	0	1	1	0	1	0	8	-1	-8	BI
Rice	1993	69	38.7	229	3	4	1	1	1	1	[redacted]		0	1	1	0	1	0	12	-1	-12	[redacted]
Rice	1993	69	38.7	229	3	4	1	1	1	1	[redacted]		0	1	1	0	1	0	12	-1	-12	CT
Rice	1993	69	38.7	229	3	4	1	1	1	1	[redacted]		0	1	1	0	1	0	12	-1	-12	OT
Richmond	1995	57	37.7	378	2	[redacted]		1	1	2	1	0	1	1	1	[redacted]	1	1	15	-2	-30	[redacted]
Richmond	1995	57	37.7	378	2	[redacted]		1	1	2	1	0	1	1	1	[redacted]	1	1	15	-2	-30	[redacted]
Richmond	1995	57	37.7	378	2	[redacted]		1	1	2	1	0	1	1	1	[redacted]	1	1	15	-2	-30	[redacted]

Author	year	perm	age	nsize	sev	grall	qual	folr	foll	cont	coll	obj	drop	attr	ind	analy	multi	mqs	ols	ces	mod
Richmond	2000	61.6	38.7	688	1	4	1	0	1	1	0	0	[redacted]		0	1	1	9	-2		-18 BI
Richmond	1999	77	33.2	852	1	[redacted]	1	0	1	[redacted]	0	0	[redacted]		0	1	1	5	-2		-10 BI
Romach	2000	72	44	136	3	4	1	0	0	1	0	1	1	1	1	1	0	11	-2		-22 PMsr
Roy-Byrne	2000	45.3	40.2	64	3	4	1	0	0	1	0	0	1	1	1	1	0	10	-2		-20 [redacted]
Sanchez-Craig	1996	63.8	42	155	[redacted]	4	1	2	[redacted]	1	1	0	1	1	0	1	0	12	[redacted]		24
Sandahl	1998	[redacted]	46.5	[redacted]	4	4	1	[redacted]	2	1	0	0	1	[redacted]	0	1	[redacted]	11	[redacted]		-22 CT
Sandahl	1998	[redacted]	46.5	[redacted]	4	4	1	[redacted]	2	1	0	0	1	[redacted]	0	1	[redacted]	11	[redacted]		11 PTin
Sapir-Weise	1999	70.8	45	72	3	4	1	1	1	1	0	0	1	1	1	1	0	12	[redacted]		-12 AC
Sass	1996	77.6	41	272	[redacted]	4	1	0	2	1	1	1	1	1	1	1	1	15	2		30 PMga
Sellers	1994	100	43.6	96	3	4	1	[redacted]	0	1	0	1	1	1	1	1	0	11	-2		-22 PMsa
Senft	1997	70.5	42.5	516	[redacted]	4	1	1	[redacted]	1	1	[redacted]	1	1	1	1	[redacted]	15	[redacted]		-30 BI
Shaw	1994	.	41	100	4	4	1	0	1	1	0	1	1	[redacted]	1	1	0	12	2		24 PMdn
Shcbck	2000	98	48	49	4	4	1	0	0	1	0	0	1	1	1	1	0	10	-2		-20 Kudz
Sitharthan	1996	[redacted]	46	166	[redacted]	4	1	[redacted]	2	0	[redacted]	0	1	0	0	1	0	13	2		26 CT
Sitharthan	1997	79	.	52	[redacted]	4	1	1	1	1	0	[redacted]	1	1	0	1	[redacted]	11	-2		-22 CT
Sitharthan	1997	79	.	52	[redacted]	4	1	1	1	1	0	[redacted]	1	1	0	1	[redacted]	11	1		11 CE
Smith	1998	85.8	38	106	4	4	1	[redacted]	2	1	1	1	1	1	[redacted]	1	0	16	2		32 CR

Author	year	perm	age	nsize	sev	grail	qual	folr	foll	cont	coll	obj	drop	attr	ind	analy	multi	mqs	ols	ccs	mod
Smith	1998	85.8	38	106	4	4	1	[illegible]	2	1	1	1	1	1	[illegible]	1	0	16	-1	-16	[illegible]
Taub	1994	100	44.3	250	4	4	1	0	2	1	1	1	[illegible]		0	1	0	11	[illegible]	22	BFem
Taub	1994	100	44.3	250	4	4	1	0	2	1	1	1	[illegible]		0	1	0	11	[illegible]	-22	NT
Taub	1994	100	44.3	250	4	4	1	0	2	1	1	1	[illegible]		0	1	0	11	[illegible]	22	TM
Tempesta	2000	82.7	45.9	330	3	4	1	1	[illegible]	1	0	1	1	1	1	1	1	14	2	28	PMga
Tiihonen	1996	[illegible]	45.8	62	3	4	1	0	0	1	1	1	1	1	1	1	[illegible]	12	-2	-24	PMsr
Tomson	1998	81.3	45.2	[illegible]	2	4	[illegible]	0	2	1	0	1	1	0	0	1	0	10	[illegible]	20	BI
Volpeccelli	1992	100	43.4	70	[illegible]	4	1	0	0	1	0	1	1	1	1	1	0	11	2	22	PMna
Volpeccelli	1997	77.3	38.4	98	3	4	1	1	0	1	0	1	1	1	0	1	0	11	[illegible]	-22	PMna
Welte	1998	66.8	40	673	2	1	1	1	1	1	1	1	1	[illegible]	0	1	1	10	2	20	BI
Whitworth	1996	78.8	42	455	4	4	1	0	2	1	0	1	1	1	1	1	1	14	2	28	PMga
WHO	1996	80.8	36.7	1559	2	4	1	1	1	1	[illegible]	1	1	1	0	1	1	13	2	26	BI
Wiesbeck	1999	80	43	493	4	4	1	0	1	1	0	1	1	1	1	1	[illegible]	13	-2	-26	PMsa
Worner	1992	87.5	41.2	56	3	4	1	0	0	1	0	[illegible]		0	0	1	0	8	-2	-16	AC
Total		6	8	11	19	3	3	18	6	8	12	17	11	16	14	0	13		26		20
Disagree =	[illegible]																				