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The Community Reinforcement Approach to the Treatment of Substance Use Disorders

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Empirical support is presented for the Community Reinforcement Approach (CRA), a broad-spectrum cognitive-behavioral treatment for substance use disorders. At the core of CRA is the belief that an individual's environment can play a powerful role in encouraging or discouraging drinking and drug use. Consequently, it attempts to rearrange contingencies so that sober behavior is more rewarding than substance-abusing behavior. Originally tested in the early 1970s with a small sample of alcohol-dependent inpatients, it has repeatedly proven to be successful over the years with larger, diverse populations. Empirical backing is also presented for a new variant of CRA that works through family members to engage treatment-resistant individuals into substance abuse treatment. (Am J Addict 2001;10(Suppl):51-59)

The Community Reinforcement Approach (CRA) is a comprehensive cognitive-behavioral program for treating substance abuse problems. It is based on the belief that environmental contingencies can play a powerful role in supporting or discouraging drinking or drug-using behavior. As such, it utilizes familial, social, recreational, and occupational reinforcers to aid clients in the recovery process. The goal is to rearrange multiple aspects of an individual's "community" so that a clean and sober lifestyle is more rewarding than one that is dominated by alcohol and drugs.[1] It accomplishes this in a non-confrontational manner by first carefully outlining the external and internal triggers for an individual's substance use and reviewing both the positive and negative consequences of the use. Its treatment plan then focuses broadly on many aspects of the individual's life, since these are all believed to play integral roles in the substance use. Importantly, this often includes the individual's social activities and his or her job. When skill deficits are noted, behavioral training is introduced in the relevant areas (e.g., drink/drug refusal, communication training, problem-solving). Significant others are involved in treatment whenever possible.[2]

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META-ANALYTIC REVIEWS OF ALCOHOL INTERVENTIONS

In each of three recent meta-analytic reviews that relied on somewhat different methodologies, CRA was ranked as one of the most efficacious and cost-effective alcohol treatments available. The initial review rank-ordered 33 treatments on the basis of their cost and whether they had statistically proven to be superior to another intervention at least at one point during the follow-up period.[3] CRA earned a fifth-place ranking. The next meta-analysis took into consideration the methodological quality of the studies when it constructed its cumulative evidence scores.[4] In examining the 30 treatments that had been tested in at least three empirical studies, CRA was placed fourth in the rankings. The final meta-analytic review factored in the probability that a study would yield a significant effect by considering such issues as sample size, strength of the comparison treatments used, and the number of statistical tests.[5] CRA earned the top position in this ranking of 36 alcohol interventions. Regardless of the precise manner in which the various meta-analyses were conducted, the findings consistently suggested that CRA was one of the most effective alcohol treatments available.

EARLY ALCOHOL STUDIES

Inpatient Studies

The efficacy of CRA was first demonstrated more than 25 years ago with a small inpatient sample. Using a matched-control design, Hunt and Azrin[1] randomly assigned one alcohol-dependent member in each of eight pairs to the CRA condition, and the other member to the hospital's standard Alcoholics Anonymous (AA) program. The latter was comprised of instructional sessions on the Jellinek disease model of alcoholism[6] and discussions about the typical alcoholic's behavior and problems. CRA participants additionally were taught how to identify and access non-drinking reinforcers, and they received both job and leisure-time counseling. Relapse prevention was provided through home visits, and attendance at an alcohol-free social club was encouraged. Married individuals received behavioral couples therapy.

At the time of the 6-month follow-up, the CRA participants were drinking an average of only 14% of the follow-up days, while the standard treatment group was drinking 79% of the days. There were striking group differences in unemployment as well, with the CRA group averaging 5% of the days unemployed and the standard group averaging 62%. Furthermore, the CRA participants were hospitalized on only 2% of follow-up days, as contrasted with 27% for the standard treatment. Despite its small sample size, this first CRA study was recognized as unique for its reliance upon operant reinforcement theory for the conceptualization and treatment of alcoholism and for focusing on outcomes that were not restricted to substance abuse.

Azrin's second CRA inpatient study was an extension of his first, but standard treatment participants were also encouraged to take disulfiram as part of their program in the second study.[7] The new CRA procedures included a compliance program that monitored and reinforced individuals for taking disulfiram, an early warning system that identified potential relapses in advance, and a buddy system that served as social support. The CRA group again showed superior outcomes in a variety of areas at the 6-month follow-up. Specifically, CRA participants drank on an average of 2% of the follow-up days, whereas the standard treatment group drank on 55% of the days. Unemployed days averaged 20% for the CRA group and 56% for standard treatment. Finally, although none of the

CRA participants were institutionalized, standard treatment group members were institutionalized an average of 45% of the follow-up days.

Outpatient Study

The first CRA outpatient trial was conducted in the early 1980s by Azrin and colleagues.[8] Its main objectives were to contrast the previously introduced disulfiram compliance program[7] with the traditional method for dispensing disulfiram and to test an abbreviated form of CRA. Participants were randomly assigned to either traditional treatment (n 14), disulfiram compliance (n 15), or CRA disulfiram compliance (n 14). Traditional treatment was comprised of 12-step counseling and a prescription for disulfiram. The disulfiram compliance condition received this same basic program, but participants and their significant others were taught the disulfiram compliance procedure as well. This entailed communication training and role-playing to teach the significant other how to give the drinker the disulfiram in a supportive manner. Because this disulfiram compliance condition essentially was a combination of 12-step counseling and the CRA procedures associated with disulfiram administration, it was expected to produce an outcome midway between those of the other two conditions. The third condition, CRA disulfiram compliance, was based on the earlier CRA program.[7] New procedures included drink-refusal and relaxation training, as well as sobriety sampling, which was a "gently" negotiated contract for an alcohol-free period.

As predicted, the two conditions that included disulfiram compliance components reported the highest abstinence rates. The disulfiram compliance group was abstinent an average of 74% of the days during the sixth month of the follow-up, and the CRA disulfiram compliance group reported an abstention rate of 97% of the days. Interestingly, the couples within the disulfiram compliance group performed better than the single individuals, with the former achieving abstinence rates very similar to those of the CRA group. Participants in traditional treatment were abstinent only 45% of the follow-up days. And although significant differences in unemployment rates were not detected between the three groups, the CRA disulfiram compliance condition averaged only 7% of the days unemployed, whereas the traditional treatment group averaged 36% of the days. This study showed that CRA could successfully be used with an outpatient population and with an average of only five CRA sessions.

Investigations of Individual Components of CRA

The behavioral couples component of CRA actually was first tested in a marital distress study in which participants were not selected for having alcohol problems.[9] The theory behind this "reciprocity counseling" was that individuals got married because they believed married life would be more reinforcing in a variety of ways than single life was. Not only did the therapy assist couples in selecting and initiating new mutually reinforcing interactions, but more generally, it set the expectation that a reinforcing act by one partner needed to be reciprocated. The within-subject design with 12 couples demonstrated significant improvement in marital happiness during the reciprocity counseling weeks, as compared to during the "catharsis-type" counseling weeks. As noted, reciprocity counseling became a routine part of the CRA package whenever problem drinkers were involved in significant relationships.

Another component of CRA that has been examined separately is the social club, which is an alcohol-free recreational

environment that typically is made available during high-risk drinking times (e.g., Friday and Saturday nights). The social club study also tested the ability of behavioral procedures to motivate people to attend the club.[10] Participants were alcohol-dependent individuals who were already involved in an outpatient treatment program. Those interested in the study were randomly assigned to either the Encouragement condition (n 19) or the control group (n 16). Members of the control group were simply provided with information about the social club. Those assigned to the Encouragement condition received: multiple contacts by a counselor who encouraged them to attend the social club, problem-solved attendance obstacles, and provided flyers about upcoming club activities and membership cards. As predicted, not only did Encouragement group members attend the social club significantly more often than did the control group, they also drank significantly less alcohol during that time than control group members. Although the study could be criticized for having only limited information about participants' involvement in their hospital treatment program, nevertheless it offered a promising motivational procedure for encouraging attendance at a potentially valuable activity. Furthermore, it highlighted the importance of addressing a person's recreational life as part of the recovery process.

The individual CRA component that has received repeated research attention is the job club. The major goal of the job club is to assist individuals in obtaining satisfying employment, thereby adding non-drinking reinforcers in the form of enhanced self-esteem, financial rewards, and opportunities for pleasant social interactions. Its procedural skills are outlined in the Job Club Counselor's Manual[11] and include steps, such as developing resumes, completing job applications, generating job leads, and rehearsing interviews. The job club's success was first demonstrated in populations that were not necessarily substance users.[12] One of these studies utilized individuals referred from probation officers and the state hospital, as well as from substance abuse centers.[13] At the 6-month follow-up, 95% of the participants who had been randomly assigned to the job club were employed, compared to only 28% in the control group. Additionally, members of the job club acquired higher-paying positions and obtained them faster than members of the control group. Impressive group differences also were detected in a study with welfare recipients.[14] As noted, the job club was quite successful in the studies that included it as part of the complete CRA package.[1,7,8]

MORE RECENT ALCOHOL STUDIES

Large Outpatient Study

A large-scale (N 237) replication and extension of Azrin's work was conducted by Miller and colleagues at the University of New Mexico's Center on Alcoholism, Substance Abuse, and Addictions (CASAA). It addressed many of the methodological limitations of the early CRA research, such as small samples.[15] The first three conditions were replications of the first outpatient study[8]: traditional treatment, traditional treatment disulfiram compliance, and CRA disulfiram compliance. A fourth condition, CRA without disulfiram, was added to determine whether disulfiram appeared to be a critical part of the CRA package. Also, to accommodate disulfiram-*in*eligible participants, groups were added for them both in traditional and CRA treatment. The design allowed up to 12 sessions for all conditions.

The results for the proximal follow-up (months 1 6) for the disulfiram-eligible participants (i.e., those in the first four conditions) showed that the CRA conditions significantly outperformed the traditional

group in terms of the drinking variables.[16] The most pronounced difference was the contrast between the percent of drinking days for the CRA participants (3%) and for traditional treatment (19%). However, when a comparison was conducted between the CRA and traditional conditions that had received disulfiram compliance training, there was no significant difference in outcome. When the distal follow-up (months 12 and 18) was examined, no significant treatment differences were detected. In exploring the outcomes of the disulfiram-*in*eligible participants, the only group differences were higher dropout rates for the traditional treatment (41%) compared to CRA (9%). In summary, the findings from the proximal follow-up, which was roughly comparable to Azrin's typical follow-up length, were quite similar to Azrin's results in two ways. First, CRA was superior to traditional treatment in terms of drinking outcomes. Second, when disulfiram compliance training was added to traditional treatment, the group outcomes were similar to those of the CRA condition. Azrin had detected this as well, though only for married clients.[8]

Homeless Population Study

The most recent application of CRA was with a homeless alcohol-dependent population (N 106) in a study conducted by Smith and colleagues.[17] Individuals were randomly assigned to either the CRA group or the homeless shelter's standard treatment. Modifications to the CRA program, which included delivering it in a group format, offering small incentives for group attendance, using the project nurse as the disulfiram monitor, and offering independent living skills groups, were introduced to better accommodate the homeless population. The shelter's standard treatment included access to 12-step counselors, on-site AA meetings, and a job program. All participants received abstinence-contingent grant-supported housing during the 3-month program.

In terms of drinking outcomes, the overall average number of daily drinks dropped from 19.0 at pretreatment to 3.8 at 12 months. Participants in the CRA condition significantly outperformed those in the standard condition, with the differences most consistent across the various drinking variables through the 9-month follow-ups. Secondary predictions were not supported: namely, neither the initial willingness to take disulfiram nor the actual use of disulfiram was associated with an enhanced treatment response. Overall improvements in employment were noted, but there were no group differences. A total of 55% of the individuals had jobs at 12 months, but only 23% of them were full-time. Housing status also improved markedly for both conditions, with homeless rates across the 5 follow-ups averaging less than 20%. The one significant group difference occurred at 4 months, with the results favoring the CRA condition. The study was notable for its utilization of a cost-effective group format and its high follow-up and low dropout rates. Future homeless studies should both focus on the modest employment results noted and add program components to address the special needs of women (e.g., victimization).

ILLICIT-DRUG STUDIES

Cocaine Studies

When treating cocaine dependence, CRA typically has been combined with a contingency management program that offers vouchers for clean urines. The vouchers, which can be exchanged for material goods, increase in value as the days of continuous abstinence build. Financial reinforcers were added to the CRA program for this type of substance abuse problem, both to address the extremely high early attrition rates of cocaine-dependent individ-

uals and to have a tool to compete with the powerful reinforcing effects of cocaine early in treatment.

Several cocaine trials have established the efficacy of the CRA voucher program. In a randomized study by Higgins and colleagues, 58% of the CRA voucher participants completed 24 weeks of CRA treatment, as opposed to only 11% of those in standard counseling.[18] In terms of cocaine abstinence, 8 and 16 weeks of continuous abstinence were demonstrated by 68% and 42%, respectively, of those assigned to the CRA voucher program. This was in contrast to only 11% and 5% of participants being continuously abstinent in the standard counseling condition. Urinalyses documented significantly greater cocaine abstinence for the CRA voucher group at the 9- and 12-month follow-ups.[19] When more recent studies have attempted to tease out the unique contribution of the contingent vouchers apart from the CRA program, the significant advantage detected for the contingent vouchers during treatment is sometimes maintained over time,[20] but in other studies it is lost across the follow-up.[19]

One of the components of the original CRA package that has been examined separately in cocaine trials is disulfiram compliance training. Although disulfiram compliance was initially introduced to decrease alcohol consumption, it has shown great promise for various reasons in reducing cocaine use as well. Two randomized trials demonstrated that cocaine-dependent individuals who received disulfiram compliance training as part of their treatment protocol had significantly more cocaine and alcohol abstinence when compared to individuals who did not receive it.[21,22]

Opiate Studies

Because the outcomes of pharmacotherapies in treating opiate addiction are enhanced when they are combined with effective psychosocial interventions,[23] a number of psychological interventions have been tested within this population, including CRA. In a study conducted by Bickel and colleagues, 39 individuals who were undergoing buprenorphine detoxification were randomly assigned to either a CRA voucher condition or to standard drug counseling.[24] One unique aspect of this particular voucher program was that half of the vouchers could be earned for opiate-free urines and half could be earned for engaging in treatment-prescribed activities. Significantly more participants in the CRA vouchers condition completed the 24-week detoxification program (53%) when compared to those in standard counseling (20%). A second study used CRA *without* the voucher component to treat methadone-maintained individuals (n 181). Abbott and colleagues[25] found that significantly more participants assigned to the CRA conditions (with or without additional relapse prevention training) achieved at least 3 weeks of continuous abstinence (89%) when contrasted with those assigned to standard drug counseling (78%). Additionally, the CRA groups showed significantly greater improvement on the Addiction Severity Index drug composite score than did the standard counseling condition.

COMMUNITY REINFORCEMENT AND FAMILY TRAINING (CRAFT)

In more recent years, CRA has been expanded to address a sizeable segment of the substance abusing population: individuals who refuse to seek treatment. Rather than attempting to motivate these resistant individuals directly, the CRA variant called Community Reinforcement and Family Training (CRAFT) instead works through a concerned significant other (CSO). CRAFT teaches CSOs behavioral techniques that change their manner of

interacting with the drug-abusing individual, with the goal of getting him or her to begin treatment. In brief, it emphasizes increasing positive reinforcement for clean/sober behavior and withholding reinforcement for substance using behavior. Furthermore, CRAFT works to improve the psychosocial functioning of the CSOs. An early version of CRAFT was shown to be significantly superior to Al-Anon in engaging resistant alcohol-dependent individuals in treatment.[26] Six out of the seven drinkers whose CSOs received CRAFT entered treatment, whereas none of the five whose CSOs received traditional counseling did. In a large study (N 130) conducted by Miller and colleagues,[27] CSOs assigned to CRAFT were significantly more successful at engaging their loved one into alcohol treatment (64%) than were the CSOs assigned to either the Johnson Institute intervention (30%) or Al-Anon (13%).

When CRAFT has been tested with illicit-drug abusing populations, similar results have been found. An uncontrolled trial with 62 CSOs discovered that 74% were successful at engaging the resistant drug-abusing individual in treatment after the CSOs had been trained in CRAFT procedures.[28] A randomized study by Kirby and colleagues[29] detected significant differences when the engagement rates of CRAFT-trained CSOs (64% engaged) were compared to the rates of CSOs who attended 12-step meetings (17% engaged). The newest study conducted at CASAA in Albuquerque[30] with 90 CSOs again discovered significantly better engagement rates for CSOs randomly assigned to CRAFT (67%) versus those assigned to individual Twelve-Step Facilitation therapy (31%). In summary, CRAFT procedures consistently outperformed other interventions as far as engaging resistant alcohol or drug abusing individuals in treatment.

SUMMARY AND CONCLUSION

Empirical evidence strongly supports the use of CRA and CRAFT in the treatment of substance use disorders. Azrin's initial positive findings have been replicated by several research groups, with consistent advantages being found for CRA across culturally diverse populations. Research designs typically have compared CRA with other standard practice treatment approaches in randomized trials, thereby providing stringent tests of relative efficacy. Importantly, every study to date has found an advantage for CRA on at least some outcome measures. With increasing concern for cost containment, it is also noteworthy that outpatient CRA is a relatively inexpensive treatment approach that has been successfully learned and applied by less experienced therapists.[31] The treatment methods are clearly described in several clinician manuals.[2,32] CRAFT, an outgrowth of CRA, specifically addresses the common obstacle of lack of motivation for treatment and has proven to successfully enhance treatment entry. The principal challenge now is to disseminate this well-supported Community Reinforcement Approach into clinical practice.

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