

The effect of 12-step self-help group attendance and participation on drug use outcomes among cocaine-dependent patients[☆]

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Abstract

Objective: Although cocaine-dependent patients are frequently referred to 12-step self-help groups, little research has examined the benefits of 12-step group attendance in this population. Moreover, the distinction between attending meetings and actively participating in 12-step activities has not typically been examined.

Method: In the National Institute on Drug Abuse Collaborative Cocaine Treatment Study, 487 cocaine-dependent outpatients were recruited at five sites for a randomized controlled trial of 24-week behavioral treatments. Study data were examined to see whether self-help attendance or active participation were related to subsequent drug use.

Results: Twelve-step group attendance did not predict subsequent drug use. However, active 12-step participation in a given month predicted less cocaine use in the next month. Moreover, patients who increased their 12-step participation during the first 3 months of treatment had significantly less cocaine use and lower ASI Drug Use Composite scores in the subsequent 3 months. Finally, Individual Drug Counseling, based on a 12-step model, and increasing levels of 12-step participation each offered discrete benefits.

Conclusions: Results suggest that active 12-step participation by cocaine-dependent patients is more important than meeting attendance, and that a combination of Individual Drug Counseling and active 12-step participation is effective for these patients.

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1. Introduction

Self-help groups based on the 12-step philosophy of Alcoholics Anonymous (AA) are frequently recommended for

the treatment of substance use disorders in the United States (Humphreys, 1997; Institute of Medicine, 1990). For alcohol dependence, studies have indicated that affiliation with 12-step groups is associated with positive clinical outcomes (Montgomery et al., 1995; Timko et al., 1994, 2000), as well as reduced health care costs (Humphreys and Moos, 1996).

While 12-step self-help (often called mutual-help) groups are typically recommended for drug-dependent patients as well, outcomes research on 12-step groups in this population

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is limited by two major factors. First, few reports separate individuals dependent on alcohol alone from those identifying illicit drugs as their primary problem. Benefits of 12-step affiliation have been reported among samples of alcohol and/or drug abusers combined (Christo and Franey, 1995; Miller and Hoffman, 1995; Ouimette et al., 1998; Toumbourou et al., 2002) and drug abusers (Fiorentine and Hillhouse, 2000). Better drug and alcohol outcomes have also been associated with 12-step group affiliation among patients dependent on alcohol and/or cocaine (McKay et al., 1994; Morgenstern et al., 1997), but these studies have not examined cocaine-dependent patients separately. Since results of large comparative psychotherapy studies have not been consistent across substances of abuse (Crits-Christoph et al., 1999; Project MATCH, 1997; Woody et al., 1983), studying the relationship between self-help activities and outcome in this population is important.

The second limitation of previous research in this area is that studies of 12-step groups for substance-dependent patients have rarely differentiated attendance at 12-step groups from active participation, such as speaking at meetings, working on one or more of the 12 steps, having a sponsor, or performing duties such as making coffee at meetings. Some researchers have not distinguished between the two (McKay et al., 1998) or have used the terms interchangeably (Watson et al., 1997). Studies differentiating attendance from degrees of “participation” (Kingree, 1997), “involvement” (Montgomery et al., 1995; Ouimette et al., 1998; Toumbourou et al., 2002), “commitment” (Tonigan et al., 2002b), or other AA-related behavior (Morgenstern et al., 1997; Tonigan et al., 2000) have hypothesized that greater active participation in 12-step activities is associated with improved outcome. Results are conflicting. Some studies have found better substance use outcomes associated with attendance and active participation items combined (Humphreys et al., 1999; McKay et al., 1994; Morgenstern et al., 1997) or with each measured separately (Ouimette et al., 1998). Montgomery et al. (1995) found that greater participation predicted better drinking outcomes and attendance did not, while Tonigan et al. (2002b) found that neither was correlated with alcohol use. Toumbourou et al. (2002) reported that attendance and participation among Narcotics Anonymous members each predicted less hazardous alcohol use, but not the frequency of injection drug use.

In an earlier report from the pilot phase of the National Institute on Drug Abuse Collaborative Cocaine Treatment Study (NCCTS; Crits-Christoph et al., 1997), our group found that 12-step self-help group attendance and participation during the week prior to treatment entry predicted likelihood of attaining abstinence during the first month of treatment (Weiss et al., 1996). This paper extends those findings by examining a sample of patients from the main trial of the NCCTS and following the subset for whom weekly self-help data were collected through the entire 6-month treatment period. The purpose of our current study was to evaluate the relationship between 12-step self-help group attendance,

active participation, and cocaine outcomes among cocaine-dependent patients receiving professional treatment. We studied 12-step group attendance and participation in patients participating in the main trial of the NCCTS, a 24-week, randomized, controlled study comparing different forms of psychotherapy and drug counseling, posing two hypotheses:

Hypothesis 1. Attendance at 12-step groups is associated with reduced subsequent drug use.

Hypothesis 2. Active participation in 12-step activities is associated with reduced subsequent drug use.

2. Methods

2.1. Procedures

NCCTS patients were recruited at four academic hospitals and one community hospital. Inclusion criteria were a DSM-IV diagnosis of cocaine dependence; age 18–60; and cocaine use in the last month. The principal diagnosis of cocaine dependence was established using a 9-point severity rating scale (based on the Anxiety Disorders Interview Schedule-Revised; Dinardo and Barlow, 1988), incorporating the diagnostician’s evaluation of both subjective distress and functional impairment, as well as the absence of a principal diagnosis of alcohol or polysubstance use disorder. Exclusion criteria were ongoing pharmacotherapy or psychotherapy; imminent homicide or suicide risk; mandated treatment; concurrent opioid dependence; and hospitalization for cocaine dependence for more than 10 days in the past month. After complete description of the study to the patients, written informed consent was obtained.

The 24-week treatment included weekly group drug counseling (GDC; Mercer et al., 1994) for all patients to educate them about addiction and encourage 12-step group involvement. Patients were randomly assigned to individual treatment: either (1) individual drug counseling (IDC; Mercer and Woody, 1992), based on 12-step principles, emphasizing the disease concept of addiction and strongly encouraging 12-step group involvement; (2) supportive-expressive psychodynamic therapy (SE; Mark and Luborsky, 1992), focusing on conflictual relationships; (3) cognitive therapy (CT; Beck et al., 1993), emphasizing the importance of maladaptive cognitions; or (4) no individual treatment. Neither SE nor CT routinely urged 12-step attendance. For more details, see Crits-Christoph et al. (1997). Results from the study revealed that patients receiving IDC plus GDC had the greatest improvement on the Addiction Severity Index (ASI; McLellan et al., 1992) Drug Use Composite score, the fewest days of cocaine use, and the most abstinent months (Crits-Christoph et al., 1999).

2.2. Subjects

Data were collected on 487 patients, primarily white (57.9%), male (76.8%), unmarried (69.6%), and employed (60.3%), with a mean monthly income of \$1081 (S.D. = \$1492). Mean age was 33.9 years (S.D. = 6.3). Patients used cocaine regularly for a mean of 6.9 years (S.D. = 4.8); 79.0% used cocaine primarily by smoking, 18.9% intranasally, and 2.1% by injection. Patients used cocaine a mean of 10.4 days (S.D. = 7.8) in the past month, and spent a mean of \$ 143 (S.D. = 218) on cocaine during the past week. The mean ASI Drug Use Composite score was 0.24 (S.D. = 0.06), and the mean ASI Alcohol Use Composite score was 0.22 (S.D. = 0.23). One-third met DSM-IV criteria for alcohol dependence and 4.5% for cannabis dependence. Most patients (58.3%) had received prior treatment for substance use disorder. The mean ASI Psychiatric Severity Composite score was 0.19 (S.D. = 0.19), similar to that reported in other cocaine treatment studies (Carroll et al., 1994). For more details, see Crits-Christoph et al. (1999).

Inclusion criteria for the current report required a minimum of two Weekly Self-Help questionnaires (described below) in any month, and drug use data in the following month. Comparing the 336 patients reported in this paper to the remaining 151 with insufficient self-help data revealed the cohorts to be similar in substance use indices (length of use, amount spent, route of administration, and current ASI severity scores), marital status, treatment history, psychiatric severity, and assigned treatment. The patients analyzed were more likely to be white (61.0% versus 51.0%; $\chi^2(1) = 4.29$, $P < 0.04$) and male (79.8% versus 70.2%; $\chi^2(1) = 5.35$, $P < 0.02$); they were older (34.5 (S.D. = 6.4) versus 32.5 (S.D. = 5.8); $t(485) = -3.39$, $P < 0.001$); and were more likely to be employed (63.3% versus 53.6%; $\chi^2(1) = 4.04$, $P < 0.05$) than those excluded.

2.3. Measures

2.3.1. Self-help measures

Twelve-step group attendance and participation were assessed each week during treatment using the 29-item Weekly Self-Help questionnaire (WSH), which has demonstrated a high degree of internal consistency (Weiss et al., 1996). Attendance during a month was considered “consistent” if all weekly reports indicated attendance, with at least two WSH questionnaires completed. Attendance was considered “inconsistent” for a month if WSH reports indicated partial attendance (i.e., during some weeks and not others) or no attendance. Patients with partial attendance were similar to non-attenders in drug use outcomes, so these categories were combined. Consistent attenders ($n = 182/336$, 54.3% during Month 1) went to self-help groups a mean of 3.7 (S.D. = 2.2) days/week, while inconsistent attenders went a mean of 0.4 (S.D. = 1.0) days/week. “Participation” in a given week required speaking or performing duties (e.g., making coffee) at meetings, talking with a sponsor outside of a meeting, reading

Table 1

The relationship between 12-step group attendance and participation patterns during months 1–3 ($n = 325$)

Participation pattern	Attendance pattern		
	Low (170)	Increasing (43)	High (112)
Low	81.2%	30.2%	14.3%
Increasing	8.2	30.2	6.2
High	10.6	39.5	79.5

12-step literature, or working on a step. Since participation could occur without attendance, it was analyzed independently. Twelve-step participation was also categorized as either “consistent” or “inconsistent.” Consistent participators ($n = 178/336$, 52.9% during Month 1) performed self-help activities a mean of 5.2 (S.D. = 2.2) days/week, while inconsistent participators performed these activities a mean of 0.5 (S.D. = 1.4) days/week.

To examine attendance patterns longitudinally, we used hierarchical clustering procedures (Morral et al., 1997) to generate distinct temporal patterns. To preserve the temporal order of 12-step attendance occurring prior to drug use, 12-step attendance patterns were based on attendance during months 1–3, while drug outcomes were based on data collected during months 4–6. Sufficient cluster size was determined by the rule that each pattern must contain at least 10% of the effective sample size, resulting in 325 patients fitting into one of three attendance clusters. Patients in the “low” attendance cluster ($n = 170$; 52.3% of the sample) attended 12-step meetings an average of 7, 10, and 3% of the weeks in months 1–3, respectively. Those with “increasing” attendance ($n = 43$; 13.2%) attended an average of 39, 34, and 86% of the weeks in months 1–3. Patients with “high” attendance ($n = 112$; 34.5%) attended an average of 89, 92, and 86% of the weeks in months 1–3. Similar patterns were found for 12-step participation. Patients in the “low” participation pattern ($n = 167$; 51.4%) participated in 12-step activities for an average of 7, 8, and 4% of the weeks in months 1–3. Those with “increasing” participation ($n = 34$; 10.5%) participated an average of 38, 38, and 88% of the weeks in months 1–3. Patients with “high” participation ($n = 124$; 38.2%) participated an average of 91, 95, and 87% of the weeks in months 1–3. Twelve-step attendance and participation patterns were independent, not synonymous (symmetry statistic (3) = 4.32, $P < 0.23$; see Table 1); 73.5% of patients were concordant for attendance and participation.

2.3.2. Outcomes

Drug use was assessed monthly during treatment, using (1) the number of days of cocaine use in the previous 30 days, from the ASI and (2) the ASI Drug Use Composite score, an indication of the severity of drug problems.

2.4. Data analysis

Two approaches, both using general mixed models to address the within subject correlation in the repeated measures,

were used to examine the relationship between 12-step attendance or participation and subsequent drug use over the 6-month treatment period. The first approach was a lagged analysis: we examined the effects of both attendance and participation during each treatment month on drug outcomes in the following month. The binary monthly self-help measures (i.e., consistent or inconsistent) were entered as time-varying covariates predicting the next month's drug use. Additional fixed covariates included baseline cocaine use, month, site, psychiatric severity (measured by the ASI Psychiatric Severity Composite score), and treatment condition.

The second approach examined attendance and participation patterns during months 1–3 as predictors of drug use in months 4–6. Attendance and participation patterns were represented as discrete variables (three attendance patterns and three participation patterns, described above). The two approaches can be seen as complementary, thus increasing confidence in the findings.

The general mixed model implemented for both approaches does not assume a linear slope over time. It estimates averages over the repeated assessments. This analysis uses restricted maximum likelihood estimation and, unlike standard repeated measures analysis of variance, allows for flexibility in the covariance structure. Specific comparisons are based on linear contrasts from the general mixed model rather than analyses of subsamples. An advantage of repeated measures and linear contrasts for testing hypotheses is the inclusion of all available data, resulting in greater power for all analyses conducted. Because of the exploratory nature of this NCCTS substudy, no correction was made for multiple comparisons, as advocated by Rothman (1990).

3. Results

The 336 patients analyzed completed a mean of 12.2 (S.D. = 6.1) of 24 possible WSH questionnaires. Among those who ever attended 12-step groups (70.8%), the mean percentage of weeks attended was 59.0%. Results for participation were similar: 66.1% participated during at least 1 week, and the mean percentage of weeks participating among those who ever participated was 65.2%.

3.1. Hypothesis 1: Attendance at 12-step groups is associated with reduced subsequent drug use

Attendance at 12-step groups was not significantly related to subsequent drug use in either analysis described above. In the lagged-effect longitudinal model, attendance was not related to days of cocaine use ($F_{(1,631)} = 0.001, P < 0.98$) or ASI Drug Use Composite score ($F_{(1,631)} = 1.74, P < 0.19$) in the following month. Similarly, the three patterns of attendance (low, increasing, and high) in months 1–3 were not related to either days of cocaine use ($F_{(2,295)} = 0.76, P < 0.47$) or ASI Drug Use Composite score ($F_{(2,295)} = 1.58, P < 0.21$) during months 4–6.

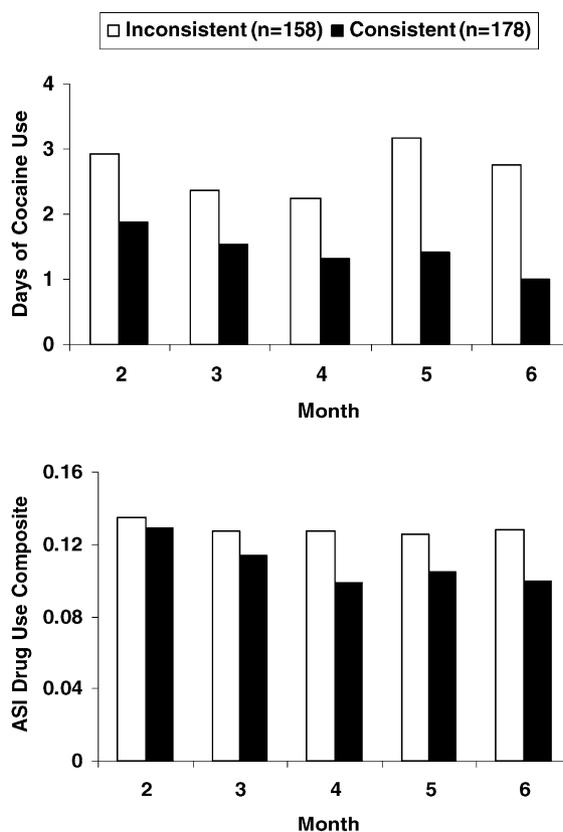


Fig. 1. The lagged effect of self-help participation in the prior month on drug outcomes during months 2–6. Upper panel: effect on days of cocaine use [$F_{(1,631)} = 3.93, P < 0.05$; effect size = 0.14]. Lower panel: effect on ASI Drug Use Composite scores [$F_{(1,631)} = 6.83, P < 0.01$; effect size = 0.20].

3.2. Hypothesis 2: Active participation in 12-step activities is associated with reduced subsequent drug use

Unlike attendance, 12-step participation did predict subsequent drug outcomes. Compared to patients with inconsistent participation, patients reporting consistent participation reported fewer days of cocaine use ($F_{(1,631)} = 3.93, P < 0.05$; see Fig. 1, upper panel) and lower ASI Drug Use Composite scores ($F_{(1,631)} = 6.83, P < 0.01$; see Fig. 1, lower panel) during the following month. Further, patients who increased their participation during months 1–3 had significantly fewer days of cocaine use ($F_{(2,295)} = 4.42, P < 0.02$; see Fig. 2, upper panel) and lower ASI Drug Use Composite scores ($F_{(2,295)} = 3.07, P < 0.05$; see Fig. 2, lower panel) during months 4–6 than did low participators. Drug use among high participators was intermediate and not significantly different from the other two patterns.

To examine the possible impact of missing data on the results, we specified and tested pattern-mixture models (Hedeker and Gibbons, 1997). This analysis showed that neither ASI Drug nor Alcohol Use Composite scores were dependent on the missing data pattern. Further, analyses showed no significant relationship between participation pattern and either treatment dropout status or baseline ASI Drug Use Composite scores.

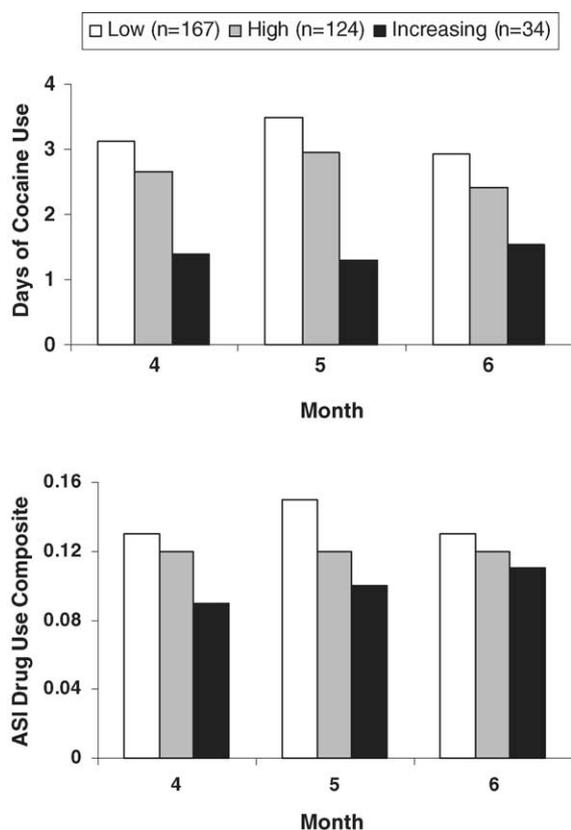


Fig. 2. The relationship between self-help participation patterns during months 1–3 and drug outcomes during months 4–6. Upper panel: days of cocaine use [$F_{(2,295)} = 4.42, P < 0.02$; effect sizes = 0.18 for low vs. high; 0.30 for increasing vs. high; and 0.47 for low vs. increasing]. Lower panel: ASI Drug Use Composite scores [$F_{(2,295)} = 3.07, P < 0.05$; effect sizes = 0.15 for low vs. high; 0.21 for increasing vs. high; and 0.36 for low vs. increasing].

3.3. Joint effect of attendance and participation

Since some WSH participation items require meeting attendance (“spoke at AA meetings”), while others do not (“read AA literature”), we examined the relative contributions of attendance, participation, and the combination to drug outcomes, using the lagged analysis described above. Results based on linear contrasts of attendance and participation patterns showed that patients who consistently participated in 12-step activities but attended meetings inconsistently (“non-attending participators”) had significantly lower ASI Drug Use Composite scores in the following month than did those with inconsistent attendance and participation (adjusted means = 0.11 for consistently participating only; 0.13 for attending and participating inconsistently; $F_{(1,629)} = 6.05, P < 0.02$). Non-attending participators also had significantly fewer days of cocaine use compared to consistent attenders who participated inconsistently (adjusted means = 2.12 for non-attending participators; 3.11 for consistently attending only; $F_{(1,629)} = 4.92, P < 0.03$). Furthermore, no differences were found between those who participated and attended consistently versus non-attending participators (adjusted means for days of cocaine use = 1.87 and 2.12, re-

spectively ($F_{(1,629)} = 0.12, P < 0.73$); adjusted means for ASI Drug Use Composite score = 0.11 for both groups ($F_{(1,629)} = 0.40, P < 0.52$)).

3.4. Is reduced drug use associated with IDC explained by increased 12-step group attendance and/or participation?

As reported previously (Crits-Christoph et al., 1999), NC-CTS patients who received IDC, based on 12-step principles, had the best drug outcomes. Moreover, we previously reported that patients receiving IDC were most likely to attend 12-step groups and participate in 12-step activities both over time and at the end of treatment (Weiss et al., 2000). Given this background combined with our findings that participation in 12-step self-help groups improved outcomes, we next examined the degree to which the superior drug outcomes among IDC patients could have occurred as a function of increased 12-step group participation. We thus modeled the effect of 12-step group participation during months 1–3 on drug use outcomes during months 4–6 as a function of treatment, by including a treatment (IDC versus non-IDC) by participation pattern (low, increasing, and high) two-way interaction in the general mixed model analysis. Post-hoc linear contrasts indicated significant differences for the combined effect of increasing 12-step group participation and receiving IDC compared to the joint effect of neither increasing participation nor receiving IDC. For days of cocaine use/month, the adjusted mean for patients with both IDC and increasing participation was 0.61 (S.D. = 1.13) versus 3.28 (S.D. = 0.28) for patients with neither IDC nor increasing participation ($t(292) = 10.14, P < 0.002$). For the ASI Drug Use Composite score, the adjusted mean for both increasing participation and IDC was 0.08 (S.D. = 0.02) versus 0.13 (S.D. = 0.01) ($t(292) = 6.77, P < 0.01$) for patients with neither. Further post-hoc tests indicated no difference for the effect of increasing participation without receiving IDC compared to the effect of receiving IDC without increasing participation. For days of cocaine use, the adjusted mean for patients with increasing participation without IDC was 1.62 (S.D. = 0.93) versus 1.77 (S.D. = 0.54) for patients with IDC and non-increasing participation ($t(292) = 0.19, P < 0.07$). For ASI Drug Use Composite score, the adjusted mean of patients with increasing participation but without IDC was 0.11 (S.D. = 0.02) versus 0.11 (S.D. = 0.01) for patients with IDC and non-increasing participation ($t(292) = 0.16, P < 0.69$). Hence the best outcomes were found among patients who received IDC and increased their 12-step participation during months 1–3, while patients who neither received IDC nor increased their participation had the worst outcomes. Intermediate outcomes were found among (1) patients who received IDC but did not increase their 12-step participation, and (2) patients who increased their 12-step participation but did not receive IDC. Effect sizes for days of cocaine use and the ASI Drug Use Composite score were 0.82 and 0.62, respectively, for the joint effect of increasing participation and IDC.

4. Discussion

Although attendance at 12-step groups did not predict subsequent drug use among cocaine-dependent patients in the NCCTS, participation in 12-step activities did. Specifically, patients with consistent participation in a given month reported fewer days of cocaine use and scored lower on the ASI Drug Use Composite in the subsequent month compared to patients with inconsistent participation. Moreover, patients with increased participation during the first half of treatment reported fewer days of cocaine use and scored lower on the ASI Drug Use Composite during the second half of treatment compared to patients with low participation.

A notable finding is the absence of an association between 12-step group attendance and subsequent drug use. Maintaining passive attendance over time may indicate a reluctance to fully embrace 12-step groups, including their goal of abstinence. Alternatively, active participation may itself propel people to reduce their substance use. This finding is consistent with some studies of alcohol-dependent patients, in whom attendance has been found to be less important than participation for drinking outcomes (Gilbert, 1991; Montgomery et al., 1995). Our results do not support the findings of other research, however, in which attendance and participation both predicted better alcohol and drug use outcomes (Ouimette et al., 1998).

It is unsurprising that patients who participated consistently over time had better drug outcomes than inconsistent participants. Interestingly, those with high levels of participation throughout the first half of the study did not have better outcomes than low participants, while those who increased their participation over time had the best outcomes. The importance of increasing participation was not part of an a priori hypothesis, but emerged from the data-driven cluster analysis. Nevertheless, its significance suggests a novel and potentially fruitful area for further inquiry. Possibly those with higher early participation were continuing an ongoing pattern of 12-step activity that had not previously helped them reduce their drug use. Conversely, those who increased participation during the study actively changed their behavior while receiving treatment, which may represent an important ingredient in their successful outcomes. These findings are consistent with previous research that entering drug abuse treatment with a plan to work hard despite great difficulties predicts good outcomes (Hall et al., 1991). Thus, an increased effort to recover may help explain these findings. The reason for the dramatic increase in attendance and participation in the “increasing” group between months 2 and 3 is unclear. Perhaps this indicates that the decision to participate in self-help groups may occur at an uneven pace rather than gradually over time.

Another interesting finding involved “non-attending participants,” who consistently participated in 12-step activities (e.g., reading AA literature, calling a sponsor) but inconsistently attended 12-step meetings. The fact that they achieved outcomes comparable to those who both participated and

attended meetings consistently could have implications for some substance-dependent patients who, for whatever reason, eschew attending 12-step groups. Our findings raise the possibility that such patients could be encouraged to benefit from 12-step activities that may not require group attendance, e.g., reading AA literature or participating in online AA meetings.

IDC and 12-step participation each offered discrete benefits. The combination of IDC plus increasing 12-step participation was associated with the best drug outcomes, including better outcomes than those found with either one alone. Moreover, this finding was characterized by large effect sizes. In contrast, the magnitude of the relationship between active participation and drug outcomes was more modest, similar to previous reports of the relationship between AA attendance and drinking outcomes (Emrick et al., 1993). Thus, IDC appears to offer something beyond encouragement to attend 12-step groups. We have previously found, for example, that patients receiving IDC had a better capacity to resist cocaine craving than did individuals assigned to other treatments (Weiss et al., 2003). It is unclear whether the excellent outcomes of IDC plus increasing 12-step participation occurred because of the mutual reinforcement of the professional treatment and 12-step participation (similar to a non-randomized study by Humphreys et al. (1999)), or whether IDC added something unique unrelated to 12-step activities.

Strengths of our study include the large, heterogeneous sample; random assignment to treatment; and a longitudinal design with weekly assessments. This is also the first study to focus on the role of 12-step groups in a large sample of cocaine-dependent patients while separating attendance from participation and reporting the importance of changing participation levels in recovery from substance abuse. Study limitations include the shortcomings endemic to longitudinal research: data missing due to missed assessments and the exclusion of patients with insufficient self-help data; as reported above, those excluded differed in some ways from study participants. The presence of missing data reduced sample sizes over time, thus increasing the likelihood of a Type II error in some of our analyses of self-help patterns. This could also reduce the stability and replicability of the findings. Since the NCCTS excluded patients requiring psychotropic medication, this study also cannot evaluate the response to 12-step groups among cocaine-dependent patients with greater psychiatric severity. Generalizability is further limited by the self-select nature of treatment-seeking study participants. Finally, we did not obtain self-help data following the completion of professional treatment. It would have been interesting to examine the relationship between self-help activity and substance use over a longer period of time, after treatment ended.

As the study of 12-step groups for substance-dependent patients expands, consistent language describing 12-step phenomena may help elucidate the mechanism of action of these groups. Tonigan et al. (1996), for example, have distinguished between 12-step group attendance and “involvement.” They

have also shown that some individuals consider themselves affiliated with AA long after they stop attending. Some, like our analogous “non-attending participators,” have had positive outcomes (Tonigan et al., 2002a). As we further understand the nature of 12-step group attendance, “participation,” “involvement,” and “affiliation,” and begin using common terminology when studying 12-step activities, we may understand more clearly this important phenomenon, as well as its interaction with professional treatment in recovery from substance dependence.

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