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Natural Recovery From Cocaine Dependence

Tony Toneatto, Linda C. Sobell, and Mark B. Sobell
Center for Addiction and Mental Health

Eric Rubel
Warren Sheppell and Associates

Studies of natural recoveries from alcohol, heroin, and cocaine abuse have indicated that many individuals are able to change their drug or alcohol use when the benefits of using the drug are outweighed by the negatives. The present study investigated the recovery process using 50 abstinent (≥1 year) untreated former cocaine users and 21 untreated and nonrecovered cocaine users. The recovered group did not differ from the untreated, active cocaine users in terms of demographic variables, lifetime substance use history, psychiatric history, or cocaine-related consequences. Recovery was most frequently related to a cognitive evaluation of the pros and cons of continued cocaine use. Discrete life events triggering cessation were less frequently reported by the recovered respondents. Implications of this research for the treatment of cocaine dependence are discussed.

In the past decade, the use and abuse of cocaine have dramatically escalated in North America, especially after the introduction of crack cocaine. Rates of cocaine use in the United States are estimated to be three to five times greater than those reported in Canada (Adlaf, Smart, & Canale, 1991; Substance Abuse and Mental Health Services Administration, 1993). The increased prevalence of cocaine use and abuse has led to increased treatment seeking (e.g., Rawson, Obert, McCann, Castro, & Ling, 1991) and interest in the development of efficacious treatments.

Parallel to the development of interventions for clinical populations of cocaine abusers has been a series of community-based natural history studies of cocaine users (Bielemann, Diaz, Merlo, & Kaplan, 1992; Chitwood & Morningstar, 1985; Cohen & Sas, 1994; Erickson & Weber, 1994; Mugford, 1994; Waldorf, Reinarman, & Murphy, 1991). This work complements research on the natural history of recovery from heroin abuse (Biernacki, 1986; Klingemann, 1992; Waldorf et al., 1991) and from alcohol abuse (Humphreys, Moos, & Finney, 1995; Ludwig, 1985; Sobell, Cunningham, & Sobell, 1996; Sobell, Toneatto, Leo, & Sobell, 1993; Tuchfeld, 1981) and has provided considerable evidence undermining the assumption that without intervention illicit drug use inevitably leads to progressive deterioration. For example, Miller, Gold, and Millman (1989) have asserted that "addiction to cocaine is rapid and overwhelming, rendering the user powerless over the choice to abstain or moderate the use of cocaine" (p. 115). In contrast, the natural history and natural recovery studies have demonstrated that drug use (illicit or licit) has a variable and fluctuating course.

The phenomenon of stopping cocaine use without treatment contact has been reported by several investigators. For example, Erickson,

Tony Toneatto, Linda C. Sobell, and Mark B. Sobell, Clinical, Social and Evaluation Research Department, Addiction Research Foundation Division, Center for Addiction and Mental Health, Toronto, Ontario, Canada; Eric Rubel, Warren Sheppell and Associates, Toronto, Ontario, Canada.

Linda C. Sobell and Mark B. Sobell are now at the Center for Psychological Studies, Nova Southeastern University, Fort Lauderdale, Florida.

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Correspondence concerning this article should be addressed to Tony Toneatto, Addiction Research Foundation Division, Center for Addiction and Mental Health, 33 Russell Street, Toronto, Ontario, Canada MS1. Electronic mail may be sent to ttoneatt@arf.org.

Adlaf, Smart, and Murray (1994) reported that 16 of 54 (29.6%) regular cocaine users followed up a year after their initial interview had stopped using cocaine. Similarly, Cohen and Sas (1994) followed up 64 (of 160) regular cocaine users 4 years after their initial interview and found that 30 (46.9%) had stopped using cocaine. Only 6% of the followed-up sample, however, had sought treatment to help them reduce or stop using cocaine. Waldorf et al. (1991), who followed up 21 of 27 cocaine users 10 years after their initial interview, found that a third ($n = 7$) had stopped using cocaine. Despite these studies, the processes by which natural recoveries occur remain relatively uninvestigated.

Studying the natural recovery process is a potentially fruitful method of understanding how behavior change occurs in substance abusers. With regard to recovery from cocaine abuse, such an approach would be inductive in that it would begin by observing the phenomenon in individuals who had recovered and exploring the strategies and techniques that they reported aided in this process. As a result, conceptual models of recovery could be developed that were unique to cocaine. This would differ from a deductive approach that generalized the recovery processes from other substances to cocaine.

With two exceptions, studies of the natural history of cocaine use have not investigated the process of recovery. Waldorf et al. (1991) and Shaffer and Jones (1989), who studied natural recoveries, have described variables influencing the decision to stop cocaine use. However, Shaffer and Jones's research is reported as qualitative descriptions, and Waldorf et al. did not separate results of treated and untreated quitters.

Method

Respondents

Individuals who had successfully resolved a cocaine problem without obtaining formal treatment were recruited through advertisements in major newspapers and local community papers in Toronto, Ontario, Canada. The advertisement read as follows:

> HAVE YOU SUCCESSFULLY OVERCOME A COCAINE PROBLEM ON YOUR OWN? The Addiction Research Foundation of Ontario is interested in interviewing anyone who has overcome a cocaine problem without treatment. We feel that you could provide valuable information which may help improve cocaine treatment programs. Confidentiality will be strictly maintained.

Advertisements were used for several reasons: (a) This strategy has been very successful in previous studies of alcohol and opiates abusers (e.g., Klingemann, 1992; Ludwig, 1985; Sobell et al., 1993; Tuchfeld, 1981) and cocaine abusers (Erickson et al., 1994; Erickson & Alexander, 1989); (b) naturally recovered respondents, by definition, do not present themselves to treatment agencies; and (c) comparable recruitment methods can be used to recruit control groups of nonresolved respondents (e.g., this strategy successfully recruited a group of nonresolved, nontreated alcohol abusers; Sobell et al., 1993). This method of recruitment may lead to reduced generalizability due to self-selection biases, for example. Other means of recruiting from this population, (e.g., snowball technique) would, however, not eliminate the self-selection bias and possibly introduce other confounds (e.g., respondents who are known to each other and share several demographic characteristics such as gender, age, or ethnic background).

Eligible recovered respondents met *Diagnostic and Statistical Manual of Mental Disorders* (3rd ed., rev.) (*DSM–III–R;* American Psychiatric Association, 1987) criteria for cocaine dependence for at least 1 year before the resolution of their cocaine problem. Note that *DSM–III–R* criteria were used as the study commenced, just before the introduction of *DSM–IV* (American Psychiatric Association, 1994). *Recovery* was defined as abstinence from any cocaine use for at least 1 year. Similar to the study of alcohol abusers by Sobell et al. (1993), the resolution of the cocaine problem must have occurred in the absence of *formal help* or *treatment,* defined as any inpatient, outpatient, or residential therapy, attendance at Cocaine Anonymous, or contact with any health professional for the express purpose of addressing the cocaine problem. Detoxification from cocaine without additional treatment, treatment for a substance use disorder other than cocaine, attendance at only one or two Cocaine Anonymous meetings, and treatment for nonsubstance medical or psychiatric disorders were not used as exclusionary criteria. Eligible respondents also had to provide the name of a collateral to corroborate their self-reports. Similar to other studies, respondents and collaterals were not financially remunerated for their participation.

Because the intention of this study was to investigate change processes in respondents who have never received treatment for cocaine problems, a control group of 50 respondents who were still actively using cocaine and had never received treatment for cocaine also was to be recruited.

Although treated respondents could also have been included as a comparison group, the study of the change process in this population might reflect the specific treatment the individual had received. As a result, only active cocaine users were included in the comparison group. Advertisements for these respondents read as follows:

> DO YOU USE COCAINE? The Addiction Research Foundation of Ontario is interested in interviewing anyone who uses cocaine but has never received treatment. This study does not involve participation in treatment but we feel that you could provide valuable information which may help improve cocaine treatment programs. Complete confidentiality of all those applying or participating in the study will be maintained.

Despite the placement of several advertisements over several months, the response rate for current cocaine users was lower than expected. Many callers requested more information and indicated some suspicion about the study.

Individuals who responded to the advertisement were screened by telephone to ensure that they met the inclusion criteria for the study before being invited to participate. In total, 93 individuals responded to advertisements for the cocaine quitters. Of these, 34 (36.6%) were screened out of the study, and 59 (63.4%) were invited to participate in a 2-hr interview about their cocaine recovery. Fifty respondents attended and completed the interview. Thirty-two persons responded to the advertisements for untreated cocaine users. Of these, 14 (43.8%) were screened out, and 18 (56.2%) were invited to participate in the study, of whom 15 attended and completed the interview. To increase the size of the cocaine-using sample, interviewed respondents were asked if they knew other cocaine users who might be interested in participating. Six additional respondents were recruited using this strategy (1 participant completed only a portion of the interview). The interviews took place in a location convenient to the respondents. Of the 71 total interviews, 85.9% ($n = 61$) took place at the Addiction Research Foundation, with the remainder occurring in respondents' homes.

Study Design

The final cohort of 71 respondents (50 resolved and 21 nonresolved) was administered a semistructured interview by one of two interviewers (Eric Rubel or Tony Toneatto). All interviews were audiotaped. At the beginning of the interview, respondents were asked to (a) read and sign a consent form describing the purpose and nature of the study, (b) provide a breath sample to measure levels of carbon monoxide and to detect the presence of alcohol, and (c) provide the name and address of one collateral who could verify their self-reports of cocaine use and recovery.

Although the interview included both structured and open-ended questions, as well as checklists, it also was designed to encourage respondents to freely comment throughout the interview. Much of the interview paralleled areas probed in an earlier study of natural recovery from alcohol problems and used instruments adapted from that research (Sobell et al., 1993) as well as the Waldorf et al. (1991) study of cocaine natural recovery. The interview covered the following areas:

Drug use history. Eleven drug classes were assessed with respect to current use, age at first use, age when last used, development of problematic use, treatment history, positive effect of drug, and negative effect of drug (Sobell, Kwan, & Sobell, 1995).

Lifetime drinking history. A chronological history of lifetime alcohol use was obtained. For each pattern, average days of drinking per month and the number of standard drinks per drinking occasion were assessed (Skinner & Sheu, 1982).

Lifetime cocaine history. We obtained a chronological history of cocaine use by asking the respondent to describe discrete phases in his or her cocaine history. For each pattern, average days of use per month, average amount of use per occasion, and main reason for changing pattern of cocaine use were obtained. This approach paralleled the Lifetime Drinking History (Skinner & Sheu, 1982).

Smoking history. Details of smoking history (e.g., delay to first cigarette of the day, number of cigarettes, current smoking, preferred brand, most common smoking situations) and quit attempts (e.g., strategies used, reasons for quitting smoking, number of quit attempts) were assessed as described in Sobell, Sobell, and Toneatto (1992).

Cocaine dependence. The nine items defining dependence were used to evaluate the severity of cocaine dependence on the basis of the *DSM–III–R*. The diagnostic period included the 6 months before the interview (for the nonresolved respondents) or before the decision to stop cocaine use (for the resolved group).

Consequences of cocaine use. We assessed the consequences of cocaine use (e.g., family, school, work, health, legal problems) by means of a 10-item checklist adapted from Sobell et al. (1992) and Waldorf et al. (1991). This form also included a checklist assessing common psychiatric symptoms occurring during cocaine use (e.g., hallucinations, paranoid thinking; Waldorf et al., 1991).

Resolution of cocaine problem. To understand the processes related to untreated recovery, we asked

resolved respondents to provide a detailed description of the events related to their decision to stop using cocaine. Respondents were permitted as much time as needed to answer the following question:

> In the previous form you told us about the things that were happening in the year prior to resolving your cocaine problem. Can you give us a description of how all of these happenings led you to make that decision to quit. Why did you quit on that date and not on an earlier or later date?

Tony Toneatto and Eric Rubel independently coded the open-ended responses into categories of reasons for quitting similar to those used in Sobell et al. (1992). Percentage agreement exceeded 90%, with any discrepancies jointly resolved. This question was not asked of the nonresolved respondents.

Maintenance of cocaine resolution. Factors in the first year after recovery from cocaine dependence that helped respondents maintain their resolution (e.g., family support, change of address, change of jobs, religion) were assessed with a 14-item checklist adapted from studies of naturally recovered alcohol abusers (Sobell et al., 1993; Tuchfeld, 1981; Waldorf et al., 1991). This form was not administered to the nonresolved respondents because they were currently using cocaine.

Triggers/urges to use cocaine. Respondents were asked to complete a 20-item checklist of common urge triggers and an 18-item checklist of coping techniques adapted from a previous study of natural recovery from alcohol dependence (Sobell et al., 1993). This questionnaire was not administered to the nonresolved respondents.

Family history. This questionnaire assessed the respondents' familial history of alcohol or drug problems in biological parents, grandparents, and siblings (Mann, Sobell, Sobell, & Pavan, 1985).

Psychiatric history. The history of outpatient and inpatient mental health contacts by the respondents and their immediate family was obtained. This questionnaire was adapted from the Mental Health Unit Intake Form used to assess psychiatric history of clients presenting to the Addiction Research Foundation for outpatient treatment.

The Michigan Alcoholism Screening Test (MAST). The MAST, a widely used and validated measure of problem drinking (e.g., Hedlund & Vieweg, 1984), screened for current alcohol problems (Selzer, 1975).

At the end of the interview, we asked respondents if they had any additional comments regarding the study, thanked them for their participation, and reminded them to inform their collaterals that they would be contacted by the interviewer within the next 2 weeks. Because very few participants either could identify a suitable collateral or were willing to supply one (20% of resolved; 8% of nonresolved), these data are not presented in this article.

Data Analysis

When group comparisons were appropriate, statistical significance was assessed with two-tailed t tests for continuous variables and the Pearson chi-square for categorical variables. Distributions for continuous variables were checked for violations of normality. Alpha values were set at $p \leq .01$, to assess statistical significance when multiple comparisons were made, to reduce Type I errors.

Results

Comparison of Resolved and Nonresolved Groups

Demographic Characteristics

At the time of the interview, the mean age for the resolved and the nonresolved samples was 32.7 years (SD = 7.2) and 29.0 years (SD = 7.0), respectively ($p > .05$). There were no statistically significant differences between the resolved and nonresolved groups for gender (56% vs. 57% males, respectively); years of education (M = 11.9, SD = 2.4, vs. M = 12.9, SD = 2.3, respectively); marital status (34% vs. 19% partnered, respectively); and employment status (44% vs. 57% employed, respectively).

Psychoactive Substance Use History

Cocaine use history. Cocaine use histories were similar for the resolved and the nonresolved groups. For both groups, cocaine tended to be one of the last illicit drugs to be used (age of onset for resolved vs. nonresolved: M = 22.3 years, SD = 6.4, and M = 20.5 years, SD = 4.9, respectively; $p > .05$). Almost all respondents (90% of resolved; 100% of nonresolved) had used crack cocaine. Although not significant, duration of cocaine use was about 1½ years longer for the resolved group (M = 10.3 years, SD = 4.2) as compared with the nonresolved group (M = 8.7 years, SD = 5.6). The amount of cocaine used per day also did not differ significantly between groups (resolved: M = 2.5 g, SD = 1.8; nonresolved: M = 1.6 g, SD = 1.7). Estimated lifetime episodes of cocaine use also were similar (M = 944.1, SD = 972.4, vs. M = 945.8, SD = 1,103.7, for

resolved vs. nonresolved, respectively). That the resolved and nonresolved groups did not differ significantly in terms of demographic and cocaine use history variables supported the use of the nonresolved group as a control for the resolved group.

At the time of their interview, the resolved respondents had been abstinent for a mean of 3.7 years (SD = 2.3). When they resolved their cocaine problem, the respondents' mean age was 29.0 years (SD = 6.9), 18% were partnered, and about half (52%) were employed.

Other psychoactive substances: Lifetime use. The two samples did not differ statistically in the number of psychoactive substances ever used (M = 5.6, SD = 1.8, and M = 5.8, SD = 1.8, for resolved vs. nonresolved, respectively). Table 1 shows the mean age of first use and percentages of groups with lifetime use and current use for 11 drug classes. Nicotine, alcohol, and cannabis tended to be the first drugs used. There were no significant differences (alpha set at .01 to correct for multiple comparisons) between resolved and nonresolved groups on mean age of first use for any drug, although the sample sizes for some comparisons were too small to conduct statistical analyses.

The resolved group reported drinking a mean of 8.5 standard drinks of alcohol (1 standard drink = 13.6 gm absolute alcohol; SD = 6.9) per drinking day, compared with a mean of 7.5 standard drinks (SD = 6.5) for the nonresolved group ($p > .05$). Similarly, there was no significant difference in the duration of the drinking history (M = 18.4 years, SD = 7.6, and M = 15.4 years, SD = 8.6, for the resolved and nonresolved groups, respectively).

Other psychoactive substances: Current use. Current drug use for the resolved group, also shown in Table 1, was restricted almost totally to the two licit drugs, alcohol (72%) and nicotine (76%), with cannabis reported by 40%. In the nonresolved group, more extensive current use of drugs other than cocaine was reported. Alcohol, nicotine, and cannabis were used by a higher percentage of these individuals (90.5%, 85%, and 85.7%, respectively) compared with the resolved respondents; however, only the cannabis comparison reached statistical significance $\chi^2(1, N = 71) = 12.43, p < .01$.

Consequences of Cocaine Use

The resolved group did not statistically differ from the nonresolved group in the number of cocaine-related consequences reported (M = 6.3, SD = 2.1, vs. M = 5.3, SD = 2.0, respectively). Interpersonal problems were the most commonly reported negative consequences by both groups (i.e., with spouse or romantic partner,

Table 1
Mean Age (in Years) of First Use and Percentage of Group With Lifetime Use and Current Use for 11 Drug Classes

	Resolved (n = 50)						Nonresolved (n = 21)					
			Lifetime use		Current use				Lifetime use		Current use	
Drug	M	SD	%	n	%	n	M	SD	%	n	%	n
Cocaine	22.3	6.4	100	50	0	0	20.5	4.9	100	21	100	21
Alcohol	14.6	2.2	94	47	72	36	15.1	2.9	100	21	90.5	19
Cannabis	15.6	3.7	92	46	40	20	14.9	2.7	100	21	85.7	18
Nicotine	13.6	3.2	92	46	76	38	15.1	5.0	90[a]	18	85[a]	17
Stimulants	18.2	3.6	84	42	0	0	19.4	5.4	66.7	14	14.3	3
Hallucinogens	17.4	4.2	70	35	0	0	17.1	2.7	85.7	18	14.3	3
Anxiolytics	21.2	6.9	36	18	6	3	17.1	2.3	38.1	8	4.8	1
Opiates	20.9	6.2	30	15	2	1	18.9	2.8	38.1	8	0	0
Sedatives	19.6	4.4	22	11	0	0	17.8	1.5	28.6	6	4.8	1
Heroin	22.2	6.0	20	10	0	0	23.6	6.6	23.8	5	14.3	3
Solvents	11.0	4.1	8	4	0	0	15.5	0.7	9.5	2	0	0

[a]Percentage based on n = 20.

friends, or family), along with a negative impact on self-concept (see Table 2).

Table 2 also shows the proportion of both groups reporting the most common psychiatric symptoms during episodes of cocaine use. Symptoms of anger, irritability, anxiety, and depression were most common, with extreme anxiety and psychotic symptoms relatively less frequent. The resolved group did not statistically differ from the nonresolved group in the number of psychiatric symptoms reported ($M = 5.1$, $SD = 2.1$, vs. $M = 4.9$, $SD = 2.2$, respectively).

We asked the nonresolved respondents about their reasons for continued cocaine use despite their reported negative consequences. Their most frequent reason for use was the desire for cocaine-induced euphoria and escape from problems ($n = 11$; 52.4%). This was comparable to the number of resolved respondents ($n = 27$; 54%) who also identified euphoria and escape as the most desirable aspects of cocaine use before their recovery.

Table 2
Psychiatric Symptoms and Negative Consequences Associated With Cocaine Use by Group

Variable	Resolved ($n = 50$)		Nonresolved ($n = 20$)	
	n	%	*n*	%
Psychiatric symptom				
Irritability	41[a]	83.7	18	90.0
Anger	36[a]	73.5	17	85.0
Depression	40[a]	81.6	18	90.0
Anxiety	36[a]	73.5	16	80.0
Panic	24[b]	50.0	9	45.0
Suicidal ideation	22[b]	45.8	7	35.0
Paranoid thinking	33	66.0	13	65.0
Hallucinations	21[a]	42.9	6	30.0
Problems with				
Spouse or romantic partner	36[c]	90	18	90
Friends	31[d]	70	12	60
Family	27[e]	57	14	70
School or work	29[f]	70	13	65
Money	37	74	14	70
Health	32	64	9	45
Law	14	28	3	15
Sexual functioning	31	62	10	50
Self-concept	42	84	18	90

Note. For some variables, *n*s are less than 50 due to missing data (see footnotes).
[a] $n = 49$. [b] $n = 48$. [c] $n = 40$. [d] $n = 46$. [e] $n = 47$. [f] $n = 41$.

Psychiatric History

All respondents met *DSM–III–R* diagnostic criteria for cocaine dependence. Seventy percent ($n = 35$) of the resolved respondents were severely dependent on cocaine, 24% ($n = 12$) were moderately dependent, and 6% ($n = 3$) were mildly dependent. Of the 20 (one participant did not complete the interview) nonresolved respondents, 65% ($n = 13$) were severely dependent, 20% ($n = 4$) were moderately dependent, and 15% ($n = 3$) were mildly dependent.

Substantial proportions of resolved and nonresolved respondents had visited a psychiatrist (52% vs. 40%, respectively) or a psychologist (54% vs. 55%, respectively), had been hospitalized on a psychiatric ward (18% vs. 20%, respectively), or had been prescribed a psychotropic medication (24% vs. 20%, respectively) at some time in their life for problems other than cocaine use. Paternal alcohol problems (defined as a probable or definite alcohol problem) were reported by 48% of the resolved respondents and 45% of the nonresolved respondents. However, none of these differences were statistically significant.

Analysis of the Resolved Group

Reasons for Quitting Cocaine Use

Cognitive evaluation, the most common reason, was mentioned by 39 of the 50 resolved respondents as the major reason for quitting. *Cognitive evaluation* refers to the conscious weighing of pros and cons of cocaine use and deciding that continued use is undesirable (Miller & Rollnick, 1991). Other reasons that were frequently reported as associated with the decision to quit were external pressures or ultimatums exerted by significant others—usually family, friends, or spouses ($n = 23$), to stop cocaine use; financial problems ($n = 19$); health problems ($n = 15$); tired of cocaine-using lifestyle ($n = 12$); fear of consequences of continued cocaine use ($n = 11$); and observation of effect of cocaine on others ($n = 9$).

Resolved respondents were asked if there had

been one especially significant or salient trigger that immediately preceded the decision to quit cocaine use. Only one trigger event was permitted per participant. The most common specific triggers for those who reported one (n = 44; 88%) was a decisional process (n = 16 of 44; 36.4%), which was described as an explicit reevaluation of cocaine in the light of the negative consequences associated with its use, and interpersonal conflict (n = 9 of 44; 20.5%).

Reasons for Adopting Abstinence From Cocaine Versus Controlled Use

Unlike some studies of cocaine natural recovery (e.g., Waldorf et al., 1991), all resolved respondents in this study were abstinent from cocaine. Respondents, when asked why they chose abstinence, responded with several reasons. Many believed that controlling cocaine use would be too difficult (n = 11; 22%), some feared the negative effects of any cocaine use (e.g., illness, death, legal problems; n = 6; 12%), and almost half felt that there was no other available option (n = 23; 46%). Slightly more than half (n = 28; 56%) of the resolved respondents knew either one (n = 11 of 28; 39.2%) or two (n = 9 of 28; 32.1%) individuals who had quit cocaine use without formal treatment.

Degree of Difficulty Resolving Cocaine Use

Respondents were asked to rate the difficulty of quitting cocaine. Half (n = 25) of the sample indicated it was somewhat or extremely difficult, 38% indicated that it was somewhat or extremely easy, and the remaining 6 respondents (12%) said it was neither. For those who reported that quitting cocaine was difficult, the most frequent reason was the presence of urges or cravings (n = 13 of 25; 52%). For those who reported that quitting cocaine was easy, the most frequent reasons were strong determination and motivation to stop using (n = 7 of 19; 36.8%) and unpleasant memories of cocaine use (n = 5 of 19; 26.3%).

Maintenance of Problem Resolution

To assess how resolved respondents maintained their recovery from cocaine once they had stopped using, we asked them to indicate how important various factors were in helping them maintain their recovery (cf. Sobell et al., 1993). The most important factors they reported in maintaining their resolution were an improved self-concept (i.e., better self-esteem and more confidence and pride; n = 46; 92%); change of friends (i.e., avoidance of cocaine users; n = 38; 76%); change in social life (i.e., avoidance of social situations in which cocaine might be available; n = 35; 70%); support from spouse (n = 17 of 26; 65.4%), friends (n = 29; 58%), family (n = 20; 40%); change in drug use (i.e., increase in cannabis and alcohol use; n = 28; 56%); change of address (n = 27; 54%); and change in job (n = 16 of 49; 32.7%).

Urges to Use Cocaine: Prevalence and Coping

With reference to the first year of the respondents' recovery, 20% (n = 10) reported no strong urges or cravings to use cocaine. For the other 80% (n = 40), the most frequent triggers for urges were cocaine-related stimuli. The most commonly reported urge triggers were the euphoric recall of pleasant cocaine effects (n = 29 of 40; 72.5%), talking about cocaine (n = 23 of 40; 57.5%), and being in the presence either of cocaine (n = 21 of 40; 52.5%) or of someone using it (n = 19 of 40; 47.5%). Alcohol consumption was reported as a trigger by 35% (n = 14 of 40) of the respondents. Negative mood states (n = 12 of 40; 30%) and boredom (n = 13 of 40; 32.5%) were more frequent elicitors of urges than were positive mood states (n = 4 of 40; 10%). Cognitive coping strategies were the most frequently reported coping behaviors for urges in the first year postrecovery. Such strategies included the deliberate recall of the negative consequences of cocaine use (n = 31 of 40; 77.5%), learning to "tough out" or accept the urge (n = 26 of 40; 65%), recall of the positive consequences of not using cocaine (n = 23 of 40; 57.5%), and distraction (n = 19 of 40; 47.5%).

Reasons for Maintaining Resolution

At the end of the interview, resolved respondents were asked for the main reason that they would not resume cocaine use. The most common response was the awareness of the negative consequences that had resulted from their cocaine use ($n = 23$; 46%), followed by the lack of desire or need for cocaine ($n = 8$; 16%) and the adoption of a lifestyle incompatible with cocaine use ($n = 7$; 14%). Family support and feeling good about oneself each were reported by 5 respondents (10%).

Discussion

Individuals who had resolved their cocaine problem without formal treatment were similar to their nonresolved, cocaine-using counterparts in terms of demographic variables, psychoactive substance use history, cocaine use, psychiatric history, familial substance abuse and psychiatric histories, and negative psychiatric and psychosocial consequences of cocaine dependence. They also resembled cocaine users in two previous studies of the natural history of cocaine use (Erickson et al., 1994; Waldorf et al., 1991) with respect to age, gender, cocaine-related psychiatric symptoms, and cocaine-related psychosocial consequences. These similarities were found despite the relative difficulty in recruiting the nonresolved respondents and concerns that this might jeopardize the generalizability of the results. However, the results of this study appeared to be highly consistent with previous work with this population. The rate of lifetime use of drugs other than cocaine also was similar in this study to that reported by Waldorf et al. (1991). In general, alcohol, nicotine, tranquilizers, and cannabis tended to be widely used by the entire sample, whereas drugs such as amphetamines, heroin, and hallucinogens were used by fewer respondents in both groups. Alcohol consumption tended to be high for both groups, indicating that alcohol might be of clinical relevance regardless of whether the individual was presently using cocaine. Of some concern, 56% of resolved respondents reported an increase in alcohol and cannabis use as important for maintaining their recovery.

In the present study, the cognitive evaluation that led to the decision to quit cocaine appeared to be related to multiple negative consequences related to cocaine use. In some cases, discrete life events served as a trigger for respondents evaluating their cocaine use. During the first year postresolution, the resolved respondents avoided situations and people associated with cocaine use, obtained social support from significant others, and reported a greatly improved self-concept to help maintain their recovery.

Cognitive reevaluation of the costs and benefits of drug use as a major mediator of recovery is a theme common to much of the natural recovery research. Biernacki (1986) has called this process "a fundamental reorientation of the person's frame of reference and perspective" (p. 62). This process is frequently conscious, explicit, and rational and appears to describe the process of recovery most commonly reported by the respondents in the present study as well. It appears that cocaine use is modified in a manner similar to how other undesirable behaviors are modified (i.e., concluding that the negative effects of a behavior heavily outweigh any benefits of continued engagement in the behavior). In the context of natural recovery from heroin addiction, Biernacki (1986) has reported that "addicts come to a point in their lives where they rationally and explicitly decide to stop using opiates. Often this point occurs after a cumulation of negative experiences coupled with some particularly significant and disturbing personal event" (p. 49). Waldorf et al. (1991) have drawn similar conclusions on the basis of their study of recovered (many untreated) cocaine addicts, "As the cocaine high was transformed, the ratio of positive to negative consequences shifted and the scales were tipped toward the negative" (p. 225).

The strategies the resolved respondents reported using most frequently to cope with urges were cognitive. Respondents reported thinking about the negative aspects of cocaine use and the benefits of not using cocaine and resolving to endure the urge. Thus, respondents coped with urges by conducting a cost-benefit analysis similar to that which occurred in their decision to quit cocaine use. This finding is consistent with findings reported by Sobell, Sobell, and Kozlowski (1995) in their study of natural recovery among alcohol abusers. Other kinds of

distracting activities (e.g., physical activity or social support) also were reported, but less often.

The present findings suggest that therapists might consider having clients use a cognitive appraisal process to examine the consequences of their cocaine use. They also suggest the importance of avoiding stimuli associated with cocaine use in the early phases of abstinence and the use of cognitive techniques to cope with urges to use cocaine. Such strategies already are a component of cognitive–behavioral approaches to addiction treatment (Beck, Wright, Newman, & Liese, 1993; Miller & Rollnick, 1991). Therapeutic interventions might be viewed as catalysts of the natural change or recovery processes in individuals who are unable to accomplish their recovery without assistance, but where the processes motivating recovery are essentially the same regardless of which recovery pathway is followed.

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