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Comparable efficacy of behavioral and pharmacological treatments among African American and White cocaine users

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Abstract

Multiple randomized clinical trials (RCTs) have evaluated a range of treatments for cocaine dependence, but few of these have focused specifically on the racial diversity observed among cocaine-dependent patients. The present analyses evaluated racial variation in cocaine use and addiction-related psychosocial outcomes at baseline and follow-up among 388 African American and White adults participating in 1 of 5 RCTs evaluating a range of pharmacological and behavioral treatments for cocaine use disorders. General linear modeling (GLM) indicated significant racial variation in cocaine and psychosocial indicators at baseline. At baseline, there were significant racial differences in the number of days paid for work in the 30 days prior to the study, age, days of cocaine use in the past month, age of first cocaine use, psychosocial problems (i.e., employment, cocaine, legal, and family), public assistance status, and prevalence of lifetime anxiety disorders. There were no significant main or interaction effects of race and study on treatment outcomes at posttreatment. These findings suggest that despite significant racial differences at baseline, the pharmacological and behavioral treatments resulted in fairly comparable outcomes across racial groups in these 5 RCTs.

Keywords

Adults; African American; cocaine; treatment; White

Introduction

A wide range of pharmacologic (Castells et al., 2010; Mariani & Levin, 2012) and behavioral (Penberthy, Ait-Daoud Vaughn, & Fanning, 2010; Schierenberg, van Amsterdam, van den Brink, & Goudriaan, 2012) treatments have been evaluated to treat cocaine dependence. No pharmacologic treatment has been found to be generally effective for cocaine dependence; however, among behavioral therapies there is comparatively strong support for contingency management (CM) and cognitive behavioral therapy (CBT; Dutra et al., 2008). Given the breadth of this literature, it is striking that relatively few reports have focused on the extent to which short- and longer-term treatment response may vary by race.

Two National Institutes of Health (NIH) initiatives, including the NIH Guidelines on the Inclusion of Women and Minorities (National Institutes of Health [NIH], 2001) and the Strategic Plan on Health Disparities Research of the National Institute on Drug Abuse (NIDA, 2004), require both the inclusion of racial minorities in clinical trials and analyses designed to detect differential treatment responses among racial minorities. Despite these NIH guidelines and recent studies on health disparity research (e.g., Burlew et al., 2011), few clinical trials have reported on racial differences by treatment response. This may occur because few individual studies may be adequately powered to detect such effects, making it difficult to determine whether findings from such RCTs are generalizable to individuals from diverse subgroups of the cocaine-using population (Burlew, Feaster, Brecht, & Hubbard, 2009).

Racial variation among cocaine users: Baseline and response to treatment

A limited number of randomized clinical trials (RCTs) have reported on racial/ethnic differences among cocaine-dependent adults at pretreatment assessment. For example, Bernstein et al. (2005) found racial variation in demographic variables, primary drug choice, psychosocial functioning, disclosure of heroin and cocaine use at follow-up, intervention success, and contact with the treatment system among African American, Hispanic, and White adults participating in a brief motivational intervention in an outpatient clinic of an inner-city academic hospital. Petry (2003) reported that African American adult cocaine users had more severe employment problems than their White counterparts at baseline and therefore might benefit from employment-training programs as an adjunct to traditional substance abuse treatment. White cocaine users were found to have more severe alcohol, legal, family/social, and psychiatric difficulties than African American individuals, suggesting a greater need for treatment that focuses on these areas. An analysis of baseline data from a recent trial comparing vigorous exercise to health education as a treatment for stimulant use disorders also revealed racial differences in baseline characteristics (e.g., drug use patterns and comorbid mental health and physical health conditions) among African American, White, and Hispanic illicit stimulant users (Sanchez et al., 2015).

A small number of studies have evaluated racial/ethnic differences in response to behavioral and pharmacological treatments. Montgomery, Burlew, Kosinski, and Forcehimes (2011) found that motivational enhancement therapy (MET) was not as effective in reducing substance use in a predominately African American sample as it was in reducing substance use among a predominately White adult sample participating in a multisite trial of MET conducted as part of the National Drug Abuse Treatment Clinical Trials Network (Ball et al., 2007). Field, Cochran, and Caetano (2012), comparing a brief motivational interviewing (MI) intervention to treatment as usual, also reported racial differences in outcomes among a sample of White, Black, and Hispanic individuals who screened positive for alcohol misuse. In that trial, Hispanic adults derived more benefit from the brief MI intervention than did their White and African American counterparts. In a more recent analysis of racially diverse adults enrolled in a trial of CM for cocaine use, Montgomery, Petry, and Carroll (2015) found that CM was not equally effective in reducing cocaine use among all racial groups, especially for African American adults who used cocaine upon treatment entry. In addition, only one study to date has examined the influence of race on disulfiram, a drug that has

shown the most promise in reducing cocaine use (Kenna, Nielsen, Mello, Schiesl, & Swift, 2007). Findings from two RCTs for cocaine use disorders revealed that African American adults who received disulfiram remained in treatment significantly longer than African American adults who did not receive disulfiram (Milligan, Nich, & Carroll, 2004).

The literature is mixed, however, and there have been several studies that do not support the relationship between race/ethnicity and treatment outcomes. For example, Barry, Sullivan, and Petry (2009) found that ethnicity was not related to treatment outcomes among African American, Hispanic, and White cocaine-dependent methadone maintenance clients in a clinical trial examining the effectiveness of CM. A recent study (Acevedo et al., 2012) also found no racial differences in substance abuse treatment engagement between African American, White, and Native American adults participating in publicly funded substance abuse outpatient treatment programs. However, the dearth of studies that focus on differential response to a range of evidence-based treatments limits the potential implications that can be drawn from this body of research. More studies examining differential response to a range of evidence-based substance abuse treatments are needed for the development and implementation of culturally competent care.

A possible reason for the lack of published data on race/ethnicity differences in treatment outcome among cocaine users may be that the sample size of single studies limits power to detect race by treatment interactions. Thus, combining data from multiple similar studies is one strategy that might address this issue and provide more reliable data on racial differences in substance abuse treatment. To address these issues, we used a pooled data set drawn from five RCTs of a range of pharmacological and psychological treatments for cocaine-dependent individuals to address the following research questions. First, to what extent do substance use and psychosocial problems differ at baseline between treatment-seeking African American and White cocaine users? Second, to what extent do retention and cocaine use outcomes vary by race? Drawing on existing literature (Milligan et al., 2004; Montgomery et al., 2011), we hypothesized that African Americans would have poorer retention and cocaine use outcomes than their White counterparts.

Materials and methods

Participants and study design

The sample who contributed data used in these analyses included 388 cocaine-dependent African American and White adults participating in one of five RCTs for cocaine-dependence treatment (Carroll et al., 2014). Protocol descriptions and CONSORT diagrams are available in the main study reports (Carroll et al., 2000, 2004, 2014; Carroll, Nich, Ball, McCance, & Rounsaville, 1998; Carroll, Nich, Shi, Eagan, & Ball, 2012). The five trials from which data were drawn shared a number of common characteristics: All were RCTs evaluating treatments for cocaine-dependent outpatients and used similar inclusion/exclusion criteria. All participants met Diagnostic and Statistical Manual (DSM-IV-TR) (American Psychiatric Association, 2000) criteria for cocaine dependence. All study treatments, with the exception of one (Carroll et al., 2009), were 12 weeks in duration with a one-year follow-up, with in-person interviews and urine specimen collection scheduled at one-, three- and six-month intervals. All used a common assessment battery that included measures of

psychosocial functioning (e.g., Addiction Severity Index [ASI]; McLellan, Cacciola, Alterman, Rikoon, & Carise, 2006) and substance use outcomes (at least weekly toxicology screens and timeline followback). This report utilized data from the 168 African American and 220 White adults participating in one of the five clinical trials. The low number of Hispanic, Native American, multiracial, and other racial/ethnic groups did not allow for an accurate analysis of outcomes among these groups ($N = 41$).

Overview of the randomized clinical trials

Study 1: Carroll et al., 1998, 2000—This was a 12-week outpatient trial that used a five-group incomplete factorial design to evaluate disulfiram or no medication with three types of manual-guided behavioral therapies: cognitive behavioral therapy (CBT; Carroll, Rounsaville, & Keller, 1991; Marlatt & Gordon, 1985), twelve-step facilitation (TSF; Nowinski, Baker, & Carroll, 1992), and medication management (MM; Carroll et al., 1994; Fawcett, Epstein, Fiester, Elkin, & Autry, 1987). Participants who were cocaine dependent and met criteria for current alcohol dependence or abuse were randomized to one of the following treatments: CBT plus disulfiram, TSF plus disulfiram, MM plus disulfiram, CBT alone, or TSF alone. Because the original rationale for use of disulfiram among cocaine–alcohol users was to reduce cocaine use through the expectation of the disulfiram–ethanol reaction, a no-medication rather than a placebo-control condition was used. Urine specimens were collected weekly during treatment. Of the 122 participants randomized for treatment, 86 (70%) of those contributed follow-up data and self-identified as African American or White adults.

Study 2: Carroll et al., 2004—This was a 12-week outpatient trial that used a 2×2 factorial design to evaluating disulfiram with a placebo control and two types of manual-guided therapy: CBT with disulfiram or placebo and interpersonal therapy (IPT) with disulfiram or placebo. Urine specimens were collected weekly during treatment. One hundred twenty-one cocaine-dependent individuals were randomized; of these, 102 (84%) were reached for follow-up and self-identified as African American or White adults.

Study 3: Carroll et al., 2009—This was an 8-week trial in which 78 outpatients meeting current criteria for any substance use disorder were randomized to standard outpatient treatment at a community-based treatment program or the same standard program with access to computerized CBT twice a week. Urine specimens were collected twice weekly. Of the 78 randomized, 45 met criteria for cocaine dependence and 32 of these (71%) were reached for follow-up and self-identified as African American or White adults.

Study 4: Carroll et al., 2012—This was a 12-week trial in which 112 cocaine-dependent individuals enrolled in a methadone maintenance program were randomized to one of four treatments in a 2×2 factorial study evaluating disulfiram (with a placebo control) and individual manual-guided TSF added on to standard treatment within the methadone maintenance program (typically daily methadone, weekly group, and access to other services). Urine specimens were collected three times weekly. Of the 112 participants randomized, 92 (82%) contributed follow-up data and self-identified as African American or White adults.

Study 5: Carroll et al., 2016—This was a 2×2 factorial trial evaluating disulfiram and contingency management (CM) as additions to weekly individual CBT for 99 cocaine-dependent outpatients. Participants were randomized to one of the following treatments delivered over 12 weeks: disulfiram + CM, placebo plus CM; disulfiram without CM; placebo without CM (CBT only). Urine specimens were collected three times weekly; 76 (77%) participants contributed follow-up data and self-identified as African American or White adults.

Measures

The Addiction Severity Index (ASI; McLellan et al., 2006) is a semistructured interview that was administered monthly throughout treatment and at each follow-up to evaluate psychosocial functioning and addiction-related problems in seven areas: medical, employment, legal, family/social, psychiatric, alcohol use, and other drug use. The Substance Use Calendar (SUC), an adaptation of the timeline followback (Ehrman & Robbins, 1994; Fals-Stewart et al., 2000; Sobell & Sobell, 1992) was used to collect participant self-reports of all types of substance use (including cocaine and other stimulants, opioids, cannabis, alcohol, nicotine) on a daily basis for the 30 days preceding baseline assessment, daily throughout treatment, and daily through the terminal follow-up. Urine specimens were collected between one and three times per week in each trial. For further details, see Carroll et al. (2014).

Data analysis

The skewness and kurtosis of continuous variables were examined to determine whether data transformations were needed prior to analyses. All variables were normally distributed and did not require transformations. General linear modeling (GLM) was utilized to test the association between race and continuous baseline and treatment outcomes. Treatment outcomes included the percentage of days abstinent from cocaine during treatment, percentage of negative urine screens, maximum days of consecutive abstinence, and the number of days in treatment, all shown to be predictive of long-term outcome (Carroll et al., 2014). Given the significant difference (and trend-level differences) in the racial distribution of each study, as shown in Table 1, all statistical models examined the main and interaction effects of race and study. Given the different durations of treatment in Study 3 (8 weeks) relative to the other four studies (12 weeks), the analyses were presented with (Table 2) and without (Table 3) Study 3 data to facilitate interpretation of outcomes. To control for multiple comparisons but allow for meaningful patterns to emerge from the data, significance level was set at .01.

Results

Baseline cocaine and psychosocial outcomes

Baseline sample characteristics by race are shown in Table 1. There were a number of statistically significant differences between the African American and White participants, including age, self-reported days of cocaine use in the past 28 days, age of first cocaine use, days of cocaine use in the 30 days preceding enrollment, ASI employment, cocaine, legal and family scores, number of days paid for working in the past 30 days, receipt of public

assistance, and prevalence of lifetime anxiety disorders. White adults reported a higher number of days of cocaine use 28 days prior to treatment, more cocaine, legal, and family problems, and a higher number of days paid for working in the past 28 days than African American adults. African American adults were older at baseline, reported initiating cocaine use at a later age, had more employment problems, and were more likely to report being supported by public assistance than their White counterparts. Subsequent analyses controlled for demographic differences between African American and White adults.

Within-treatment and follow-up cocaine outcomes

As shown in Table 2, there were no significant main effects of race or study or interaction effects of race and study on within-treatment and follow-up cocaine outcomes across all five RCTs. However, trend-level differences by race were found in the maximum number of consecutive days abstinent during treatment. In addition, trend-level differences by study were found in the days of treatment and days of cocaine use at follow-up months 1 and 3.

When Study 3 was dropped from the analysis due to a different duration in treatment (Table 3), results were very similar, with no statistically significant interaction effects between race and study. However, statistically significant differences were found by study on the maximum number of consecutive days abstinent in treatment and days of cocaine use at the first follow-up. Specifically, the highest number of consecutive days abstinent in treatment was found among participants in Study 5 (Carroll et al., 2016) and the lowest number was in Study 4 (Carroll et al., 2012). At the first follow-up, participants in Study 1 (Carroll et al., 1998, 2000) displayed the highest number of cocaine-using days while participants in Study 2 (Carroll et al., 2004) displayed the lowest number of cocaine-using days. In addition, trend-level differences were found in the following outcomes by study: days in treatment, percentage days abstinent from cocaine in treatment, percentage of cocaine-positive urine specimens, and days of cocaine use at follow-up month 3. Trend-level differences were also found in days of cocaine use at the first follow-up by race.

Discussion

This secondary analysis evaluated racial variation in psychosocial and cocaine outcomes at baseline, within treatment, and posttreatment among African American and White adults participating in one of five randomized clinical trials. With respect to baseline characteristics, White participants reported more legal, family, and cocaine problems than African American participants. By contrast, African American participants were older at baseline and reported more employment and socioeconomic problems than their White counterparts. These results are similar to results of other studies (e.g., Barry et al., 2009; Bernstein et al., 2005; McCaul, Svikiel, & Moore, 2001; Petry, 2003; Windsor, Dunlap, & Armour, 2012) and suggest that White adults might benefit from cocaine treatment that also addresses legal and family problems, while African American adults might benefit from cocaine treatment that addresses employment problems.

Once randomized to treatment, no statistically significant racial differences in retention or treatment outcomes were observed across the five studies. In contrast to multiple studies pointing to poorer substance use outcomes among African Americans (Field et al., 2012;

Montgomery et al., 2011; Montgomery, Carroll, & Petry, 2015), findings from the current analysis suggest comparable retention and efficacy of the behavioral and pharmacological treatments evaluated in these trials for African American and White cocaine users. This is a significant finding given the use of data from five carefully controlled RCTs examining the effectiveness of contingency management, cognitive behavioral therapy, twelve-step facilitation, interpersonal therapy, and disulfiram.

Although there were no significant racial differences found in outcomes across five clinical trials in the current study, it is important to note that one of these trials (Study 1) did report racial variation in outcomes in one of the five studies (Milligan et al., 2004). Specifically, among participants who expected improvement to take a month or longer, White adults remained in treatment longer than their African American counterparts in the Carroll et al. (1998) study. The inconsistent findings between the current study and the Milligan et al. (2004) study suggest that more research is needed on racial variation in retention among cocaine users. For example, there is a need for substance abuse research that not only focuses on the number of days in treatment, but also examines the type of treatment termination when examining racial health disparities in cocaine use outcomes. This call for examining termination type in retention research is supported by a recent study (Owen, Imel, Adelson, & Rodolfa, 2012) that found that racial/ethnic minority clients displayed a higher number of unilateral terminations (i.e., a client ending therapy without informing the therapist) than their White counterparts in counseling. Unilateral termination, which perhaps indicates that the end of treatment was unplanned or premature, is associated with poor therapeutic alliance and worse treatment outcomes (Owen, Smith, & Rodolfa, 2009; Vandereycken & Vansteenkiste, 2009). Focusing on concepts such as unilateral termination in substance abuse treatment research will shed more light on the disparity in retention rates among African American and White adults and its relationship to outcomes for each of the groups. This analysis has several strengths, including a comparatively large sample of African American and White cocaine-dependent adults across five RCTs. This analysis also examined the response to several evidence-based treatment interventions among a diverse sample of cocaine users. Further, the five trials in the current study used objective measures (e.g., urine testing) of treatment outcomes.

A few limitations should be noted as well. First, the low number of other racial groups across the five clinical trials, including Native American, Hispanic, and multiracial adults, did not allow for a more detailed analysis of outcomes among all racial groups. Second, the clinical trials in this secondary analysis were not originally designed to examine the influence of race on treatment outcomes. Third, the significant differences of racial distribution in the five studies did not allow an unbiased analysis of race on specific treatment conditions (e.g., disulfiram versus non-disulfiram conditions) and the null hypothesis cannot be proven. Other strengths and limitations of the design of each clinical trial are noted elsewhere (Carroll et al., 1998, 2000, 2004, 2009, 2012, 2016).

Despite these limitations, these data have useful implications for treatment planning for subgroups of cocaine-dependent adults. First, the racial differences found at baseline suggest that African American and White cocaine users enter treatment with different needs. For example, as discussed in previous studies (Petry, 2003), African Americans initiated cocaine

at a later age and were therefore older at baseline. White adults reported a higher number of days of cocaine use 28 days prior to treatment entry and had more cocaine-related problems than African Americans. Interventions that are tailored to older adults and severe cocaine users for African American and White adults, respectively, might result in improved treatment outcomes. Second, given that other studies have found racial differences in outcomes (Field et al., 2012; Montgomery et al., 2011, 2015), more research is needed to identify factors (e.g., socioeconomic status; Saloner & Cook, 2013) that might contribute to the inconsistent findings. Third, the inconsistent findings on racial health disparities in cocaine use outcomes suggest that additional studies are needed to disentangle the effects of race in treatment outcomes. However, it is important to note that all of the adults across the five NIDA-sponsored studies were participants of carefully controlled RCTs examining the effectiveness of evidence-based treatments, such as cognitive behavioral therapy and disulfiram, with important quality-control features such as manual-guided therapies, carefully trained and monitored therapists, provision of individual therapies, and several other features intended to implement study treatments at a high and consistent level. The similar outcomes for behavioral and pharmacological treatments for cocaine, despite racial differences in characteristics at baseline, among African American and White adults suggest that we are perhaps one step closer to eliminating racial health care disparities in cocaine use outcomes.

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Table 1
Racial differences in baseline demographic, psychiatric and cocaine use characteristics among White and African American adults.

	White			African American			Total			Race	
	M	SD	N	M	SD	N	M	SD	N	F, p	F, p
Number of days paid for working in past 30	12.2	9.6	219	7.8	9.6	168	10.3	9.8	387	20, .01	
Age (years)	35.0	7.9	220	38.8	7.3	168	36.6	7.8	388	23.8, .01	
Days of marijuana use, past 28	2.9	6.9	180	2.4	6.0	121	2.7	6.6	301	.53, .47	
Days of cocaine use, past 28	14.4	8.4	219	12.1	8.5	168	13.4	8.5	387	7.11, .01	
Days of cigarette use, past 28	22.5	10.2	43	22.2	10.1	65	22.3	10.1	108	.03, .87	
Days alcohol use, past 28	8.9	9.5	219	9.9	9.7	168	9.3	9.6	387	1.01, .31	
Age of first cocaine use	20.3	5.9	220	23.3	7.0	168	21.6	6.6	388	21, .01	
Years of regular cocaine use	8.8	7.3	219	10.0	6.9	167	9.3	7.1	386	2.75, .10	
ASI medical composite	0.1	0.3	219	0.2	0.3	168	0.1	0.3	387	.08, .78	
ASI employment composite	0.5	0.3	219	0.7	0.3	168	0.6	0.3	387	50.22, .01	
ASI alcohol composite	0.2	0.2	219	0.2	0.2	167	0.2	20.0	386	.02, .88	
ASI cocaine composite	0.7	0.2	219	0.6	0.2	167	0.7	0.2	386	20.86, .01	
ASI other drug composite	0.1	0.1	218	0.1	0.1	167	0.1	0.1	385	1.69, .20	
ASI legal composite	0.1	0.2	219	0.1	0.1	167	0.1	0.2	386	8.56, .01	
ASI family composite	0.2	0.2	218	0.2	0.2	167	0.2	0.2	385	10.95, .01	
ASI psychological composite	0.2	0.2	219	0.2	0.2	167	0.2	0.2	386	2.72, .10	
Lifetime number of arrests	6.0	9.0	219	5.3	8.0	167	5.7	8.6	386	.53, .47	
Number of outpatient treatment visits	2.3	3.9	181	1.9	2.1	121	2.1	3.3	302	1.09, .30	
Number of inpatient treatment visits	3.1	6.5	191	2.1	2.9	121	2.7	5.4	302	2.5, .12	
Categorical variables (%)											
Gender-female	65	29.5		66	39.3		131	33.8		4.04, .04	
Completed high school	181	82.3		128	76.2		309	79.6		2.17, .14	
Never married/living alone	158	71.8		120	71.4		278	71.6		.01, .93	
Unemployed	111	50.5		93	55.4		204	52.6		.92, .34	
Referred by criminal justice system	30	13.7		30	18.0		60	15.5		1.31, .25	
On public assistance	43	19.6		81	48.2		124	32.0		35.66, .01	
Lifetime alcohol use disorder	164	80.0		108	75.0		272	77.9		1.23, .27	

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	White			African American			Total			Race <i>F, p</i>
	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	
Lifetime affective disorder	36	34.0		27	36.5		63	35.0		.12, .73
Lifetime anxiety disorder	30	13.8		9	5.5		39	10.3		6.97, .01
Antisocial personality disorder	54	29.3		31	21.2		85	25.8		2.8, .09

Table 2

Racial differences in within-treatment and follow-up outcomes across five randomized clinical trials.

Outcome	White												African American												Statistical Models							
	Study 1		Study 2		Study 3		Study 4		Study 5		Total		Study 1		Study 2		Study 3		Study 4		Study 5		Total		Race		Study		Race × Study			
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	F	p	F	p	F	p		
Within-treatment cocaine use outcomes																																
Days in treatment	53.1	29.6	51.8	34.6	40.9	16.0	73.0	23.6	53.7	33.8	58.8	31.2	46.0	33.8	34.8	34.7	40.3	19.4	67.8	29.4	53.0	36.8	46.9	33.8	3.3	0.12	11.1	0.02	0.8	0.53	388	
Maximum number of consecutive days abstinent during treatment	27.6	255.0	20.8	25.8	17.0	19.3	18.6	20.4	28.0	28.1	23.4	24.9	26.3	24.9	17.5	26.9	22.7	20.1	13.7	16.0	28.0	27.1	21.9	24.4	11.9	0.02	0.3	0.91	0.3	0.91	362	
Percentage of days abstinence from cocaine	85.2	15.5	75.6	27.2	69.5	25.5	63.7	24.0	78.2	27.1	74.1	25.4	87.0	13.2	74.4	27.7	84.2	16.4	53.9	26.1	86.6	13.8	78.4	23.1	0.5	0.52	7.2	0.04	2.1	0.08	353	
Percentage of cocaine-positive urine specimens	60.0	40.9	58.4	38.9	63.9	42.8	72.3	28.9	49.2	38.0	60.7	37.0	60.3	42.5	54.8	41.5	49.3	44.3	86.1	18.3	42.6	39.9	58.2	40.9	0.2	0.67	7.3	0.04	1.0	0.41	336	
Follow-up (F/U) outcomes																																
Days of cocaine use F/U month 1	7.8	8.4	5.0	7.5	2.2	5.2	5.4	7.7	6.0	7.9	5.8	7.8	7.4	8.4	3.9	6.8	3.9	6.3	4.1	5.4	4.8	6.9	5.1	7.2	0.7	0.43	11.9	0.02	0.2	0.91	388	
Days of cocaine use F/U month 3	8.2	8.9	4.1	7.6	1.6	2.8	5.3	8.2	4.8	7.1	5.3	7.8	7.0	8.1	2.3	5.4	1.6	2.9	6.4	9.1	4.7	5.9	4.6	7.0	0.3	0.58	12.5	0.02	0.4	0.79	385	
Days of cocaine use F/U month 6	5.9	7.6	3.5	6.6	6.8	7.1	5.8	8.3	6.3	8.5	5.7	8.0	6.5	8.4	4.4	8.8	3.9	6.7	4.2	6.5	4.6	6.2	4.9	7.6	1.4	0.27	1.4	0.39	0.6	0.67	374	
Days of cocaine use F/U month 12	5.9	8.0	4.4	7.8	x	x	4.6	7.3	4.6	7.9	4.8	7.7	7.5	9.3	2.2	4.5	x	x	4.3	5.2	2.1	3.8	4.1	6.6	0.7	0.46	2.7	0.22	1.3	0.28	325	

Note. The cognitive behavioral therapy (CBT) pilot (Carroll et al., 2009; Study 3) did not include a 12-month follow-up.