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## Organizational Factors Associated with the Use of Contingency Management in Publicly Funded Substance Abuse Treatment Centers

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### Abstract

A promising area within technology transfer studies is the identification of organizational factors that influence the adoption of treatment innovations. While studies have identified organizational factors associated with the adoption of pharmacological innovations, few studies have examined organizational factors in the adoption of psychosocial innovations, among which contingency management (CM) is a significant practice. Using data from a sample ( $n = 318$ ) drawn from the population of publicly funded treatment centers in the U.S., this study modeled organizational factors falling in the domains of structural characteristics, workforce variables, values and norms, and patient characteristics associated with the use of CM. Organizations were more likely to use CM if they: embrace a supportive therapeutic approach, are research-friendly, offer only outpatient levels of care, or serve drug-court patients. Implications for studying the diffusion and implementation of evidence-based psychosocial interventions are discussed.

### Keywords

contingency management; motivational incentives; organizational factors; adoption of innovations

### 1. Introduction

As has become well-known, there is a significant “gap” between scientifically-based knowledge of effective treatment techniques and what is implemented in practice by providers of treatment for substance use disorders (SUDs; Institute of Medicine, 1998; Marinelli-Casey, Domier, & Rawson, 2002). Effective techniques for technology transfer are thus an important focus of research. One promising area of research is the identification of organizational factors that influence the adoption of treatment innovations (Fuller, Rieckman, McCarty, Smith, & Levine, 2005; Simpson, 2002). Studies have identified

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organizational factors associated with the adoption of the pharmacological innovations of buprenorphine and naltrexone (i.e., Abraham & Roman, 2010; Ducharme, Knudsen, Roman, & Johnson, 2007; Fuller, et al., 2005; Oser & Roman, 2008; Roman & Johnson, 2002). Organizational factors that foster the adoption of psychosocial interventions differ from those related to the adoption of pharmacological innovations, possibly due to inherent differences in the technologies involved (Ducharme, et al., 2007). Yet few studies have examined organizational factors in the adoption of psychosocial innovations. The purpose of the present study was to address this research gap by examining organizational factors associated with the adoption of contingency management (CM), a significant evidence-based psychosocial intervention. CM is an especially germane focus because the copious amount of research produced over the past 30 years documenting its effectiveness has provided ample opportunity for organizations to have learned about and adopted CM as an innovative practice.

### 1.1. Contingency management

Also referred to as motivational incentives or voucher-based reinforcement therapy, CM has consistently demonstrated effectiveness in promoting abstinence and increasing treatment attendance (Lussier, Heil, Mongeon, Badger, & Higgins, 2006; Prendergast, Podus, Finney, & Roll, 2006). The effectiveness of CM in increasing abstinence and treatment engagement/retention has been demonstrated for SUDs related to alcohol (Petry, Martin, Cooney, & Kranzler, 2000), cocaine (Rash, Alessi, & Petry, 2008), methamphetamines (Roll, et al., 2006), opiates (Silverman, et al., 1996), and stimulants (Petry et al., 2005). CM has also shown positive results in different settings such as drug courts (Prendergast, Hall, Roll, & Warda, 2008), adolescent treatment programs (Corby, Roll, Ledgerwood, & Schuster, 2000; Kamon, Budney, & Stanger, 2005), methadone clinics (Griffith, Rowan-Szal, Roark, & Simpson, 1999), and programs for women on welfare (Bride & Humble, 2008)

CM is based on the principles of behavior modification where tangible reinforcement is provided whenever a target behavior such as abstinence or treatment attendance is demonstrated. Conversely, reinforcement is withheld when the target behavior is not observed (Petry & Simcic, 2002). Reinforcers that have been commonly cited in research reports include cash, methadone take-homes, methadone dosage increases, vouchers, and increased clinic privileges (Prendergast, et al., 2006). However, little is known about the patterns of reinforcer use in non-research, community-based treatment settings.

### 1.2. Organizational factors in the adoption of innovations

Diffusion theory predicts that organizational adoption depends on the compatibility between the innovation and the organization (Rogers, 2003). Thus organizations must be receptive to new ideas and certain characteristics of organizations make them more receptive to new technologies. A greater fit between an innovation and organizational factors such as structure, workforce characteristics, values and norms, and patient characteristics increases the likelihood that an organization will implement an innovation, in this case CM.

**1.2.1. Structural factors**—Organizational size may influence adoption behavior. Studies have found a positive relationship between size and innovation, presumably because larger organizations have more financial and human resources (Damanpour & Schneider, 2006). In studies of innovation adoption in SUD treatment, treatment center size as measured by the number of full-time equivalents (FTEs) has been positively associated with the adoption of buprenorphine (Knudsen, Ducharme, & Roman, 2006), integrated care for co-occurring disorders (Ducharme, Knudsen, Roman, 2006a), the adoption of injectable naltrexone for the treatment of alcohol use disorders (Abraham & Roman, 2010), and overall adoption of evidence-based practices (Friedmann, Taxman, & Henderson, 2007; Knudsen & Roman,

2004); but not with the adoption of disulfiram (Knudsen, Rpmann, Ducharme, & Johnson, 2005).

A second important structural characteristic is a treatment center's accreditation status. Accreditation is considered to be an indicator of quality in that it requires centers to meet a range of consensual quality standards (Ducharme, et al., 2007; Friedmann, Alexander, Jin, & D'Aunno, 1999; Knudsen, et al., 2006). Studies have found accredited treatment programs to be more open to evidence-based practices (Friedmann, et al., 2007; Knudsen, et al., 2006; Oser & Roman, 2007), although the only study to look at this in regards to CM adoption found accredited programs to be 35% less likely to adopt CM strategies (Ducharme, et al., 2007).

A third structural characteristic is center ownership. There has long been concern regarding disparities in the quality of services provided in public vs. private treatment centers (Knudsen, et al., 2006; Rodgers & Barnett, 2000; Yahr, 1986). However, studies that have examined differences between public and private centers in EBP adoption have typically operationalized this variable in terms of funding source, i.e. centers with the majority of funding from public sources defined as public centers (i.e., Knudsen, et al., 2006). Another way of differentiating public versus private centers is ownership: public centers are those owned by local, state, or federal governments and centers owned by any other entity considered to be private, regardless of source of funding.

**1.2.2. Workforce factors**—In terms of workforce characteristics, professional credentials have long been associated with innovation adoption (Damanpour, 1991). In the study of SUD treatment organizations, professional credentials have been operationalized as advanced degrees and certification (i.e., Knudsen, et al., 2006). Management theorists suggest that higher educational attainment indicates foundational knowledge that facilitates application of new knowledge (Cohen & Levinthal, 1990). Indeed, the percentage of counseling staff with graduate degrees has been found to be associated with adoption of disulfiram (Knudsen, et al., 2005), the adoption of injectable naltrexone (Abraham & Roman, in press), and overall adoption of EBPs (Knudsen & Roman, 2004) in SUD treatment centers.

A second workforce variable that is uniquely salient in the study of SUD treatment organizations is the recovery status of the counseling staff. Counselors who identify themselves as “in recovery” hold more favorable attitudes towards 12-Step approaches (Ball et al., 2002); and counselors who identify the 12-Step model as their primary treatment approach report less current use of CM (McGovern et al., 2004). These findings suggest that being in recovery may be a barrier to CM adoption. More recently, Kirby and colleagues (2006) however found no effect of recovery status on attitudes towards CM, noting that only 11.5% of counselors believed that CM was inappropriate because it is inconsistent with a 12-Step approach.

**1.2.3. Organizational values and norms**—Innovations compatible with an organization's values and norms are more likely to be adopted (Rogers, 2003). An organization's values and norms may be reflected in its treatment philosophy (Knudsen, et al., 2006). In one dimension, SUD treatment philosophies vary on the extent of confrontation versus support, with the former “tough love” strategy having deep roots in treatment history as necessary in order to breakthrough denial (Read, Kahler, & Stevenson, 2001). Research has failed to document positive outcomes of confrontational approaches (Miller, et al., 1995). In part developed as alternative to the confrontational approach, several empirically supported SUD treatment interventions (i.e., motivational enhancement therapy, community reinforcement approach, behavioral marital and family therapy) have

“supportiveness” as a core component (Read, et al., 2001). As such, endorsement of supportive counseling approaches would be congruent with a practice such as CM, which can be seen as supportive and definitely not confrontational. Indeed, Friedmann and colleagues (2007) found that a non-punitive culture was associated with adoption of EBPs in criminal justice settings.

A second aspect of organizational values in norms relevant to SUD treatment organizations is the degree to which a 12-Step approach is central to the treatment approach. A 12-step treatment philosophy has been found to be a barrier to the adoption of pharmacological innovations (Mark, et al., 2003; Oser & Roman, 2007). Although there has been little investigation into the role of 12-Step philosophy on the adoption of psychosocial treatment innovations, one of the few studies that have addressed this issue found that counselors who identify the 12-Step model as their primary treatment approach report less current use of CM (McGovern, et al., 2004).

A third relevant dimension of organizational values and norms is the degree to which an organization values research. Nelson and Steele (2007) found that positive attitudes toward research was a predictor of EBP adoption in mental health settings and that strong negative attitudes towards research significantly decreased the likelihood of EBP adoption. As such, an organizational culture that values research, including research participation, may be positively related to the adoption of CM in SUD treatment settings (Abraham, Knudsen, Rothrauff, & Roman, 2010).

**1.2.4. Patient Characteristics**—Characteristics of the population that a treatment center serves may also influence adoption behavior. Organizations are more likely to adopt innovations if they view the innovation as relevant to their clients’ needs (Backer, Liberman, & Kuehnel, 1986; Simpson, 2002). Thus, providing services to populations that may benefit most from an innovation is one mechanism that may contribute to implementation. CM is effective in increasing treatment retention which is an issue particularly relevant in treatment populations perceived to lack internal motivation for treatment, such as those involved in the criminal justice system and adolescents. Also related to patient characteristics is the level of care. Ducharme and colleagues (2007) found that programs offering outpatient-only programs were 35% less likely to adopt CM than those offering inpatient-only, residential-only, or a combination of inpatient/outpatient. Further, the vast majority of CM research has been conducted on outpatient populations, therefore it may be viewed as more relevant to programs that primarily treat outpatients.

## 2. Methodology

### 2.1. Sampling strategy

This study examines data from 318 publicly funded treatment programs collected in 2005 and 2006 as part of the National Treatment Center Study. Treatment centers were considered to be publicly funded if at least 51% of their operating budgets were derived from governmental sources such as block grants and contracts. Additional inclusion criteria required programs to offer treatment for substance abuse, be community-based, and offer at least a structured outpatient level of care in accordance with American Society of Addiction Medicine (ASAM) guidelines (Mee-Lee, Gartner, Shulman, & Wilford, 1998). Centers that only offered detoxification services, private practices, halfway houses, and centers whose sole modality was methadone maintenance were thus excluded. In addition, treatment centers located in Veterans Administration facilities or correctional settings were ineligible because they are not accessible to the general public.

A two-stage sampling process was used to identify the sample. The first stage involved assigning all counties in the United States to 1 of 10 strata based on population and then randomly sampling within strata to insure that treatment centers located in urban, suburban, and rural areas would be included in the study. The second stage involved the enumeration of all SUD treatment facilities in the sampled counties using published national and state directories. Treatment centers were then proportionately sampled across strata, with telephone screening used to establish eligibility for the study. Centers screened as ineligible were replaced by random selection of alternate centers from the same geographic stratum. Eighty percent of contacted treatment centers agreed to participate in the study. Face-to-face interviews were conducted with the administrator and clinical director of each eligible treatment program. Study procedures were approved by the Human Subjects Committee of the Institutional Review Board at the University of Georgia.

## 2.2. Measures

**2.2.1. Dependent Variable**—The dependent variable was the adoption of CM. A binary variable was created from a question that asked whether programs currently use motivational incentives. Programs currently using CM were coded ‘1’ and non-users were coded ‘0’.

**2.2.2. Independent Variables**—Consistent with prior research, organizational structure, workforce characteristics, organizational values and norms, and patient characteristics were used to examine patterns in the adoption of CM. Organizational structure included three variables: center size, accreditation, and center ownership. Center size was operationalized as the number of full-time equivalent employees (FTEs). Due to non-normality of this variable, log transformation of the number of FTEs was used in the regression model. Accreditation status and center ownership were dichotomous variables. Programs accredited by the Joint Commission (JC) or the Commission on Accreditation of Rehabilitation Facilities (CARF) were coded ‘1’ on the accreditation variable and programs owned by local, state, or federal government were coded ‘1’ on the center ownership variable.

Two workforce variables were included: professional credentials and recovery status. Professional credentials was operationalized as the percentage of a treatment center’s counselors who hold at least a Master’s degree. Recovery status was operationalized as the percentage of a treatment center’s counselors who identify as being in recovery.

Three variables were included to measure organizational values and norms: 12-Step orientation, supportiveness, and research participation. The 12-Step orientation variable was a dichotomous variable which indicates whether the program includes a 12-step component. To measure supportiveness, programs were asked to what extent they emphasize a supportive (i.e. non-confrontational) approach to individual and group counseling. Responses to these items were coded on a 1 to 5 Likert scale where 1 represent “no extent” and 5 represents “a very great extent.” A ‘supportiveness’ variable was created by summing the two responses with a possible range of 0–10. Support for research was a dummy coded variable. Programs reporting involvement in a research project utilizing clients in the past two years were coded ‘1’ and programs with no such experience are coded a ‘0’.

The patient characteristics domain included three variables: outpatient, drug court, and adolescent clients. First, we include a dummy coded variable indicating if programs offer only outpatient levels of care (1=outpatient only). Second, drug court was a dummy coded variable that denotes whether the program has drug court patients (1=program has drug court patients, 0=program does not have drug court patients). Third, we measured the average percentage of the program’s caseload that is adolescent.



**2.2.3. CM Implementation**—In addition, we asked a series of questions in order to gain an understanding of variation in the implementation of CM. Specifically, we asked respondents to identify target behaviors (abstinence, attendance, and punctuality, other), type of incentive used (goods, services, cash, other); and reinforcement schedule (continuous, intermittent). We also asked if motivational incentives were reserved for specific client groups or if motivational incentives were used with all clients. Lastly, we asked if the value of incentives increase as patients have consecutive positive outcomes on the desired behavior.

### 2.3. Data Analysis

Following data screening and confirmation that the data met the relevant assumptions, logistic regression was used to model the adoption of CM. Data were analyzed using STATA 10.0 (StataCorp LP, 2007). The pseudo  $R^2$  measure of McKelvey and Zavoinia (1975) is reported as a measure of logistic regression model fit.

## 3. Results

### 3.1. CM Adoption and Implementation

Of the 318 programs included in this study, 82 (26%) reported current use of CM as an intervention. Among the programs that have adopted CM, nearly all (95%) reported using motivational incentives with all patients, rather than using CM with particular patient populations (e.g., adolescents, opiate dependent patients). As would be expected, programs varied in their implementation of CM in terms of target behaviors, incentives used, and reinforcement schedule. We specifically asked about three target behaviors: abstinence as evidenced by urinalysis, treatment attendance, and punctuality (being on time for appointments, groups, etc.). Most programs provided incentives for treatment attendance (81%) and abstinence (57%), while less than half (46%) provided incentives for punctuality. In addition, 79% of programs using CM indicated that motivational incentives were used for other target behaviors. The most frequently of these additional targets include positive behaviors and compliance with program rules (29%), progress towards and completion of treatment goals (20%), and vocational (job search, obtaining and maintaining employment, etc.) or educational (i.e., school attendance, good grades, etc.) accomplishments (17%). Overwhelmingly, programs chose to use goods as incentives with 78% utilizing this method. More specifically, 35% of programs used food as an incentive, 18% used entertainment (primarily in the form of movie passes), 12% used toiletries, and 12% used clothing. One fifth (21%) of programs used services (i.e., increased clinic privileges) as incentives, and a very few (5%) used cash as an incentive. Programs also varied in how they distributed incentives. Two-thirds (66%) of programs followed a continuous reinforcement model whereby all occurrences of target behaviors were rewarded. A little more than one-quarter (27%) of programs followed an intermittent reinforcement model by using some variation of the “fishbowl” method in which an element of chance was involved in the delivery of incentives. Lastly, nearly half of programs (48%) increased the value or magnitude of the incentive with continued demonstration of target behaviors.

Table 1 presents data describing the programs included in the study and descriptive statistics for the independent variables included in the logistic regression are presented in Table 2 along with the results of the logistic regression. Slightly more than a third (37%) of programs were accredited, 23% were government owned, and nearly all (94%) were non-profit organizations, which include government and privately owned programs. In terms of workforce characteristics, programs reported an average of 39% of counselors with a masters degree or higher and 45% of counselors in recovery. Examination of organizational values and norms found that the majority (71%) of programs endorsed a 12-Step orientation

and 29% participated in a research project involving clients in the previous two years. Ratings of the extent to which programs emphasize a supportive approach to counseling averaged 8.97 (s.d. = 1.40) on a 5-point scale. The average proportion of patients served who were adolescents was 13.7% (s.d. = 26.8) and 46% of all programs served adolescents. Excluding those programs that did not treat any adolescents, the mean proportion of patients served who were adolescents was 30.1% (s.d. = 32.9) and ranged from 1–100%.

### 3.2. Logistic regression results

Contrary to our expectations, none of the organizational structure or workforce variables were associated with the adoption of CM. However, two measures of organizational culture were predictive of the adoption of CM. Programs which placed a greater emphasis on a supportive (non-confrontational) approach to individual and group counseling therapy (OR=1.34) were significantly more likely to use CM, and programs with prior research experience were almost two times more likely than programs without prior research experience to report use of CM (OR=1.99). Of the patient characteristics, all three variables were associated with CM adoption. As expected, programs offering only outpatient treatment services were significantly more likely to use CM (OR=2.60). The log odds of using CM were significantly higher in programs with drug court patients (OR=2.80). Lastly, the proportion of adolescent clients treated in the program was significantly associated with the adoption of CM (OR=1.02).

## 4. Discussion

Given the robust body of research supporting the effectiveness of CM and the fact that it has been the subject of study for more than 30 years, the rate of current use of CM (26%) is fairly low, though comparable with other research examining the adoption of CM (Ducharme, et al., 2007; Herbeck, Hser, & Teruya, 2008). Ducharme and colleagues (2007) found that 34% of treatment centers within the Clinical Trials Network of the National Institute on Drug Abuse (CTN) and 31% of centers outside the CTN had implemented CM. Herbeck and colleagues (2008), on the other hand, reported that only 7% of community-based treatment centers used CM “frequently” or “always” while 20% of centers “rarely” or “sometimes” used CM.

A finding of considerable importance that has not been discussed in previous research on CM is the strong linkage between adoption of CM and its full implementation. Research on innovations in SUD treatment almost always has shown that adopted innovations are only partially implemented, i.e. utilized with only part of the patient population for whom these interventions may be appropriate. The finding that 95 percent of the adopters use CM for all of their patients suggests a shift in organizational culture within these treatment programs. Consideration of the durability of this implementation over time is a suggested challenge for future research.

Unfortunately, this study did not offer the opportunity for data collection regarding the reasons why 74% programs have not adopted CM. One obvious possibility is that programs lack knowledge of CM or its effectiveness. However, recent studies on the diffusion of CM have found that between 74–82% of SUD counselors and program administrators have enough knowledge regarding CM to rate its effectiveness and acceptability (Bride, Abraham, & Roman, in press; Ducharme, Knudsen, Abraham, & Roman, in press; Willenbring, Kivlahan, Kenny, Grillo, Hagedorn, & Postier, 2004). Thus, we find it unlikely program administrators are unaware of CM.

Other more likely possibilities exist to explain non-adoption of CM. First, is the perceived acceptability of CM. There continues to be philosophical objections and negative attitudes

towards certain aspects, particularly the provision of tangible incentives, of CM (Ducharme, et al., in press; Kirby, Benishek, Dugosh, & Kerwin, 2006; Willenbring, et al., 2004). Second, is the perceived cost of CM (Amass & Kamien, 2004; Kirby, et al., 2006). In many CM studies patients can earn up to \$1000 worth of goods and average earnings are \$600 (Petry & Simcic, 2002); amounts that are prohibitive for many treatment programs, particularly non-profit agencies. Although some studies indicate that CM procedures lose their effectiveness when the magnitude of the incentive gets too low (Silverman, Chutuape, Bigelow, and Stitzer, 1999), recent studies have found success with lower cost CM designs (Bride, & Humble, 2008; Petry et al., 2004; 2005).

The results of this study also provide some insight into the way programs have chosen to implement CM. The fact that fewer programs reward abstinence than attendance may suggest a shift in treatment in that relapses are tolerated; a move away from an all or none philosophy. Goods are overwhelmingly being utilized as incentives over services/clinic privileges and very few programs utilize cash. Previous research has identified cost as a major obstacle to implementation of CM. However, by providing services/increased or additional privileges, programs may provide incentives at little or no additional cost. Most programs also utilized continuous reinforcement rather than intermittent reinforcement which may both be more effective and less costly. This study did not provide the opportunity for data collection regarding the cost and financing of CM interventions.

Despite expectations based upon previous research, center size, accreditation status, and professional credentials did not influence the adoption of CM. With the exception of one study that examined accreditation and CM (Ducharme, et al., 2007), the prior studies that found relationships between these variables and organizational adoption were based upon adoption of pharmacological treatments or composite variables of innovation adoption and comprehensive services, rather than CM specifically. As such, one explanation for our results is that the organizational decision to adopt pharmacological innovations is different than for psychosocial innovations in general, or CM specifically. For example, CM adoption requires broader intra-organizational support in that successful implementation of CM requires buy-in and cooperation from counselors, whereas adoption of pharmacological treatments requires only the cooperation of medical staff.

There were also a number of findings that were consistent with our expectations. Organizational values and norms and patient characteristics were associated with CM adoption. Organizations that valued a supportive approach to counseling were 1.34 times more likely to use CM than those that did not. In addition, research-friendly organizations were twice as likely to report using CM. These findings are congruent with Rogers' (2003) theory that organizational values and norms influence receptivity to innovations. In terms of the patient characteristics domain, all three variables were significantly related to CM use. Programs that were exclusively outpatient were 2.60 times more likely to use CM as an intervention than inpatient-only programs or programs offering both inpatient and outpatient services. Programs that serve drug-court patients were also significantly more likely to have adopted CM. Lastly, programs that served higher percentages of adolescent patients were more likely to use CM, although the odds ratio (1.02) suggests that this difference may not be substantively meaningful. The latter two findings support an earlier observation regarding the particular applicability of CM for patients who may be resistant to treatment engagement but responsive to external inducements. Patients referred from the criminal justice system are more likely in this category, and possibly more likely to be younger, thus partly overlapping with the adolescent clients. The drug court referral linkage also ties back to the research of Friedmann et al (2007) on the notable attraction of CM to treatment programs working within the criminal justice system.



These findings must be considered in light of the limitations of the study. One limitation concerns the generalizability of the findings. While we identified several organizational factors associated with the adoption of a specific psychosocial intervention, namely CM, further research is needed to determine if these findings are replicable with other psychosocial interventions such as motivational enhancement therapy or cognitive behavioral therapy. Similarly, further research is needed to determine if similar associations exist in privately funded treatment centers, therapeutic communities, or programs run by the Department of Veterans Affairs. A second limitation concerns our reliance on the self-report of administrators and clinical directors. Due to logistical and cost factors, we did not conduct record reviews or interview patients to assess the accuracy of self-report nor were we able to determine fidelity. However, the data was collected on-site by trained interviewers who ensured that respondents focused on a single innovation at a time. After assessing whether or not programs used a particular innovation, a series of detailed questions allowed interviewers to check for internal consistency of respondents' answers and for real-time clarification and correction in the event of apparent discrepancies. A third limitation is the absence of items regarding the financing of CM in those programs who had adopted it. Financial constraints are a widely cited obstacle to organizational decisions to adopt CM. Future research should take care to investigate how programs are able to fund CM interventions. Despite the inherent limitations, our results provide additional understanding of the organizational factors that may influence the adoption of psychosocial innovations in SUD treatment. These findings can inform future efforts to disseminate contingency management and other evidence-based SUD interventions, thereby reducing the research-to-practice gap.

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**Table 1**

## Characteristics of SUD Treatment Organizations.

	N	%	M (SD)
Size (FTEs)	318		11.06 (21.55)
Non-Profit	298	93.7	
Research Experience (in past 2 yrs)	93	29.2	
Medication trials	9	2.9	
Behavioral therapy trials	43	13.5	
Other Research	45	14.2	
Levels of Care			
Inpatient Detoxification	41	12.9	
Inpatient CD	37	11.6	
Residential	113	35.5	
Partial Hospitalization	30	8.8	
Intensive Outpatient	172	54.1	
Outpatient	216	67.9	



**Table 2**

Multivariate Logistic Regression of Organizational Factors on Use of Contingency Management.

Predictor	Mean (SD) or %	b (SE)	OR (95% CI)
Structural Variables			
Total FTEs (log)	2.78 (.99)	0.130 (.16)	1.14 (0.83–1.56)
Accredited (%)	37.1	-0.314 (.31)	0.73 (0.40–1.34)
Government owned (%)	22.6	-0.383 (.35)	0.68 (0.34–1.37)
Workforce Variables			
Master's counselors (%)	39.2	-0.005 (.01)	0.99 (0.98–1.00)
Recovering counselors (%)	44.9	0.001 (.01)	1.00 (0.99–1.01)
Organizational Values and Norms			
12-step orientation (%)	71.4	0.373 (.34)	1.45 (0.75–2.80)
Supportiveness	8.97 (1.40)	0.293 (.12)*	1.34 (1.05–1.71)
Research experience (%)	29.2	0.690 (.30)*	1.99 (1.10–3.61)
Patient Characteristics			
Outpatient (%)	53.8	0.957 (.32)**	2.60 (1.38–4.92)
Drug court (%)	75.2	1.030 (.39)**	2.80 (1.29–6.07)
Adolescent (%)	13.7	0.016 (.00)**	1.02 (1.01–1.03)
McKelvey & Zavonia's R <sup>2</sup> = .214			

\* p &lt; .05,

\*\* p &lt; .01