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Treatment Strategy Profiles in Substance Use Disorder Treatment Programs: A Latent Class Analysis

Mary Bond Edmond^a,

101B Barrow Hall, Athens GA, 30602, United States of America, T: 1+(706) 542-6039, F: 1+(706) 652-6436

Lydia Aletraris^a,

112 Barrow Hall, Athens, GA 30602, United States of America, T: 1+(706) 542-6054

Maria Paino^b, and

506 Varner Hall, Rochester, MI 48309, United States of America, T: 1+(248)-370-4510

Paul M. Roman^a

106 Barrow Hall, Athens GA, 30602, United States of America, T: 1+(706) 542-6091

Mary Bond Edmond: medmond@uga.edu; Lydia Aletraris: lydia@uga.edu; Maria Paino: mpaino@oakland.edu; Paul M. Roman: proman@uga.edu

Abstract

Background—Modern treatment options for substance use disorder are diverse. While studies have analyzed the adoption of individual evidence-based practices in treatment centers, little is known about the specific make-up of treatment strategy profiles in treatment centers throughout the United States. The current study used latent class analysis to profile underlying treatment strategies and to evaluate philosophical and structural supports associated with each profile.

Methods—Utilizing three aggregated and secondary datasets of nationally representative samples of substance use disorder treatment centers (N=775), we employed latent class analysis to determine treatment strategy profiles. Using multinomial logistic regression, we then examined organizational characteristics associated with each profile.

Results—We found three distinct treatment strategy profiles: Centers that primarily relied on Motivational Interviewing and Motivational Enhancement Therapy, centers that utilized

Correspondence to: Mary Bond Edmond, medmond@uga.edu.

^aOwens Institute for Behavioral Research, University of Georgia

^bDepartment of Sociology, Anthropology, Social Work, and Criminal Justice, Oakland University

Conflict of Interest

The authors have no conflict of interest to declared.

Contributors' Disclosures

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psychosocial and alternative therapies, and centers that employed comprehensive treatments including pharmacotherapy. The multinomial logistic regression revealed that philosophical and structural center characteristics were associated with membership in the comprehensive class. Centers with philosophical orientations conducive to holistic care and pharmacotherapy-acceptance, resource-rich infrastructures, and an entrepreneurial reliance on insured clients were more likely to offer diverse interventions. All associations were significant at the .05 level.

Principle

Conclusion—The findings from this study help us understand the general strategies of treatment centers. From a practical perspective, practitioners and clients should be aware of the variation in treatment center practices where they may offer or receive treatment.

Keywords

Substance Use Disorder; Evidence-based practices; Latent Class Analysis; Medication-assisted treatment; Motivational Interviewing

1. INTRODUCTION

Substance use disorder (SUD) treatment in the United States (U.S.) is controversial. While few question the growing SUD problem, some do not believe that formal treatment is the appropriate response (Pescosolido et al., 2010). Others charge that much SUD treatment has limited effectiveness because of its adherence to the recovery principles of Alcoholics Anonymous (AA; Fletcher, 2013; Dodes, 2014). Nevertheless, care options include evidence-based practices (EBPs), like psychosocial and medication-assisted treatment (MAT), as well as alternative therapies, though center implementation of these is challenging. This is partly because translational processes from randomized clinical trials (RCT) to center implementation are notoriously problematic. For example, RCT generalizability is threatened when treatment realities are not reflected in study designs and research subject exclusions (Miller et al., 2006; Swearingen et al., 2003). Additionally, RCT findings may indicate statistically significant but substantively trivial differences when compared with treatment-as-usual. Promising RCT results may be ultimately lost when regulatory bodies, including insurance providers, reshape EBP delivery, such as altering treatment dosage by constricting the amount of time patients are allowed in treatment (Gotham, 2006). Finally, once an EBP is available, client preference (Rieckmann et al., 2007) or financial constraints, such as required co-payments (Morgan et al., 2013), may limit center utilization.

Previous literature has tended to address center adoption of single EBPs, and the majority of programs offer limited treatment options (Bradley and Kivlahan, 2014). This is despite research indicating that access to diverse treatment facilitates recovery by maximizing the likelihood of addressing clients' complex, individual needs (Webb, 2001). Little is known about how combinations of EBPs are available as treatment strategy profiles (TSPs) within individual centers. The purpose of the current study is to generate a classification of treatment centers based on their use of EBPs and to examine the philosophical and structural correlates of centers' offerings. Using representative, secondary data from three aggregated samples and latent class analysis, we examine the TSPs of SUD treatment centers across the

U.S. We then employ multinomial logistic regression to consider center-specific philosophical and structural supports as likely correlates of diverse EBP offerings.

As SUD treatment has evolved over the past 40 years, paradigms have emerged that support differing beliefs about SUD and its appropriate treatment. These include behavioral, medical, and comprehensive orientations. AA's 12-steps exemplifies the behavioral paradigm and encourages belief in a Higher Power, recognition of helplessness, importance of sustained motivation with social support, and complete abstinence. AA's philosophy has been intensely integrated into SUD treatment in the U.S. (The National Center on Addiction and Substance Abuse at Columbia University, 2012), but other behavioral therapies have attracted sufficient research attention to be recognized as EBPs, including contingency management (CM), multisystemic therapy (MST), and motivational enhancement therapy (MET). These share strategies for changing behavioral patterns for continued sobriety and relapse prevention, but may not always be compatible with the 12-steps, particularly when motivation is encouraged via external rather than internal processes, as is the case with CM and MST (McGovern et al., 2004; Vaughn and Howard, 2004). The behavioral paradigm seems particularly acceptable to those supporting treatment options for criminal justice (CJ) clients whose treatment is closely controlled by the state (Ducharme et al., 2007; Kubiak et al., 2009; Rich et al., 2005). Conversely, use of treatments emphasizing personal responsibility, like the 12-steps, has been criticized for female clients because they are more likely to have histories of trauma and victimization, suggesting risks of self-blame (Sanders, 2006; 2010).

In contrast to the behavioral model, the medical model frames SUD as an illness that is largely outside of individual control, a paradigm of long duration that has manifested in a variety of treatments (White, 2014). A key distinction between the medical and behavioral paradigm is the use of MAT. Starting with disulfiram in 1951, the U.S. Food and Drug Administration has approved several medications for SUD treatment. These include acamprosate, naltrexone, and buprenorphine. It is important to note that the medical model does not preclude psychosocial accompaniments and is usually recommended in conjunction with psychosocial treatments (Jhanjee, 2014), but because of its use of chemicals, this paradigm may be seen as antithetical to a behavioral orientation and complete abstinence.

Integrating aspects of the behavioral and medical model, comprehensive treatment may have its origins from the counselors and administrators in SUD treatment with backgrounds in social work. This model draws focus to the multi-faceted environment in which long term recovery occurs and the need to address individuals' medical, personal, and social problems that may be either linked or co-existing with their SUD. It has a strong emphasis on social support and access to multiple sources of help to maximize individual resilience. Recently, the U.S. government has encouraged broader treatments that utilize integrated approaches. The Patient Protection and Affordable Care Act (ACA; 2010) promotes greater healthcare integration for SUD clients, and the National Institute on Drug Abuse (NIDA; 2012) encourages wraparound service provision. The wraparound services that are core to the comprehensive paradigm shift from one-dimensional approaches to those that address individuals' multiple role demands in the spheres of family, the workplace and community life.

Treatment philosophies alone do not determine which treatments a center selects to implement and sustain. With the exception of the Minnesota Model (Cook, 1988), no clear models have been available to guide decisions on different arrays of treatment strategies. Centers' treatment strategies are thus dependent on varying access to information about new practices, structural opportunities to accommodate them, and funding to support them. A number of studies shed light on the importance of these factors, indicating that centers with national accreditation and more staff with advanced degrees tend to have greater access to information about new treatments and absorptive capacity to adopt them (Ducharme et al., 2006; Knudsen and Roman, 2004). Similarly, structural resources, like access to prescribing staff and infrastructural supports for coordinated care found in larger, older, and hospital-based programs, have been demonstrated to facilitate innovation (Abraham et al., 2010; Knudsen et al., 2007; Roman and Johnson, 2002). Finally, center reliance on competitive funding may increase pressure to provide a wide-range of treatments as is the case with entrepreneurial centers dependent on private funds, clients with insurance, or with for-profit status (Aletraris et al., 2015; Knudsen et al., 2006; 2007).

2. MATERIAL AND METHODS

2.1. Sample and procedures

Data were aggregated from three studies from the National Treatment Center Study, a family of studies of SUD programs in the U.S. for the purpose of secondary analysis. These studies produced three datasets, a sample of: nationally representative centers, privately-funded centers, and centers operating within NIDA's Clinical Trials Network (CTN), which were combined in one dataset (N=775). The data from each were collected between 2009–2012. The period of data collection is timely as the ACA was passed in 2010 and offers the opportunity to better understand SUD treatment during this pivotal time. The centers in each dataset offered at least one level of care between American Society of Addiction Medicine's Level I (structured outpatient treatment) and Level III (residential/inpatient treatment) services. For each study, interviews were conducted onsite and face-to-face with administrative and clinical directors. Data about internal management practices were provided by the administrative director. Information about patient care was provided by the clinical director. All research procedures were approved by the Institutional Review Board of the University of Georgia.

Centers were selected for the nationally representative and private study so that they were geographically representative and included a wide range of treatment facilities. This was accomplished through a statistical sampling process in which all counties in the U.S. were assigned to one of 10 geographic strata of equivalent population sizes. From this, random sampling of counties within strata was conducted. Computation of treatment centers in those sampled counties was completed primarily using federal and state treatment directories.

For selection in the nationally representative study, centers reported at least 25% of their patients as primarily alcohol dependent. Interviews were conducted between June, 2009 and January, 2012 with 307 treatment programs (response rate=68%). For selection in the private study, centers were considered eligible if they received less than 50% of their annual operating revenues from government grants or contracts. Data were collected between June,

2009 and the end of 2011 from 327 primarily privately-funded treatment programs (response rate=87.7%). The third study was a population study of centers participating in the CTN, a national network of university-based research centers and community treatment programs (CTPs) that implement structured clinical trials (Hanson et al., 2002). Data were collected from 2011 to 2012, from 167 CTPs (response rate=80%). Programs that could be classified as opioid treatment programs were removed from this analysis, leaving 142 CTN centers.

2.2. Measures

We measured 11 EBPs in three categories: MAT, psychosocial, and alternative therapies. All measures were dichotomous (1=offered; 0=not offered). Measures for MAT included tablet and injectable naltrexone, disulfiram, acamprosate, and buprenorphine. We measured whether a center offered CM, MI, MET, and MST as our indicators of psychosocial therapies. Finally, the alternative therapies measured included acupuncture, music therapy, and art therapy.

Five indicators of treatment philosophy were included. Two of these were service indicators, and three were client characteristics. Twelve-step meetings held onsite (1=yes; 0=no) was a measure of a center's investment in the 12-steps. Wraparound services was an index of 10 wraparound services that NIDA (2012) regards as essential for comprehensive treatment: primary medical care, mental healthcare, HIV testing, childcare, housing, family counseling, financial services, vocational services, legal aid, and educational services. Concerning client characteristics, we measured the percent of CJ referrals, including probation, drug courts, and DUI convictions. We also included the percentage of female and adolescent clients.

We conceptualized structural support as informational access, resources for coordinated care, and funding. We measured three indicators of informational access. National accreditation was a dichotomous variable indicating if a center was accredited by the Joint Commission, the Commission on Accreditation of Rehabilitation Facilities, or the Council on Accreditation (1=yes; 0=no). Administrator's advanced education was a dichotomous variable measuring whether s/he had a Master's degree or higher (1=yes; 0=no). We also measured the percent of a center's counselors with a Master's degree or higher. Six indicators of coordinated care resources were measured. Having a physician on staff was a dichotomous variable (1=yes; 0=no). Size was a continuous measure of the number of full-time equivalent employees (FTEs) employed by the center, which was logged to account for skew. Age was a continuous variable of operating years. We measured if a center was hospital-based with a dichotomous variable (1=yes; 0=no). The ratio of counselors to clients was constructed by dividing the total number of full-time counselors by the number of clients present the day of the onsite interview. The implementation of EHR was dichotomous (1=implemented; 0=not implemented). Finally, three measures provided funding information. Profit status was a dichotomous variable (1=for profit; 0=nonprofit). We measured the percent of annual revenues from private funds including insurance reimbursements, client fees, and capital funds. The percentage of clients with insurance was a continuous variable indicating the percentage covered under private insurance, Medicaid, or Medicare.

2.3. Analytic Strategy

To explore the configurations of EBPs across centers, we used latent class analysis (LCA) in Mplus 7. Maximum likelihood procedures (Muthén and Muthén, 2012) were used to avoid listwise deletion (Enders and Bandalos, 2001). Twenty-six centers were missing on all indicators and were excluded (N=775). In order to predict class membership by center characteristics, we conducted multinomial logistic regression in STATA 12. Diagnostic tests revealed no evidence of multicollinearity, but as 20.5% of our sample had missing information for at least one variable, we utilized multiple imputation in order to avoid problems associated with listwise deletion (Allison, 2001; Royston, 2004). This resulted in 20 imputed datasets. We also controlled for sample in this analysis with two dichotomous variables representing the private and CTN samples. The comparison group was the nationally representative sample.

3. RESULTS

Descriptive statistics are shown in Table 1. Overall use of MAT was low. Less than 30% of centers utilized each MAT. More variability was evident for psychosocial treatments; 34% used contingency management, 78% used MI, 45% used MET, and 18% used MST. Among alternative approaches, art therapy was the most prevalent with 38% using it, while 18% used music therapy, and 10% used acupuncture. Measures of treatment philosophy indicated that 56% of centers provided space for 12-step meetings. Holistic treatment approaches were low ($\mu=3.4$ services). The most common wraparound service offered was mental health services, which 75% of centers offered. Concerning client characteristics, an average of 49.4% of referrals came from CJ sources, while, on average, females and adolescents accounted for 36% and 10.1% of a center's caseload, respectively. Turning to structural support measures, 51% of centers were nationally accredited, while 69% were led by an administrator with an advanced degree. On average, about half (49.6%) of a center's counseling staff had at least a Master's degree. Concerning resources for coordinated care, 17% reported a physician on staff, while the mean of logged size was 2.8, representing 16.5 FTEs. The average center was 32.5 years old, and 21% of centers were hospital-based. The mean ratio of counselors to clients was .17, meaning each counselor cared for approximately 6 patients. Further, just under half of the centers (48%) had implemented EHR. Finally, centers' funding was diverse. Twenty-four percent of the sample was for-profit, and, on average, nearly 63% of funding came from private funds. An average of 44.5% of a center's clients had insurance.

Table 2 contains the fit statistics. The Bayesian Information Criterion (BIC), the adjusted BIC, and the Akaike Information Criterion (AIC) measure model fit (Everitt et al., 2001; Muthén and Muthén, 2012; Nylund et al., 2007). Lower scores indicate a better fitting model, while entropy scores higher than .7 signify good classification accuracy (Celeux and Soromenho, 1996; Reinecke, 2006). A significant Lo, Mendell, and Rubin's (2001) likelihood ratio test (LMR LRT) suggests that the model fit is improved by increasing the number of proposed classes. While fit measures should be considered, substantive meaning and parsimony should drive model selection (Kline, 2004; McCutcheon, 2002; Muthén and Muthén, 2000; Raftery, 1995). In our analysis, a three-class solution was the best fitting

model. The three- and four-class solution had the lowest fit statistics across models, acceptable entropy scores, and significant LMR LRT (Table 2). While a four-class solution had slightly lower AIC adjusted BIC than the three-class solution, the percentage reduction in these fit statistics was much greater between the two- to three-class solutions than between the three- to four-class solutions.

Table 3 shows the probabilities for the EBP indicators across classes, which represent our TSPs. Class 3 (C3; $n=384$) was the largest group, followed by class 1 (C1; $n=232$) and class 2 (C2; $n=159$) centers. C1 centers had higher probabilities for each MAT than both C2 and C3 centers. C2 and C3 only differed in their probability of acamprosate use, which was slightly higher for C2 ($p=.072$) than C3 ($p=.020$). For the psychosocial EBPs, both MI and MET had high ($p=.732-.848$) to moderate ($p=.405-.522$) probability of use. C2 centers had the highest probability of utilizing CM ($p=.586$) and MST ($p=.352$), as well as alternative therapies (acupuncture ($p=.153$), music therapy ($p=.503$), and art therapy ($p=.841$)). C1 had significantly higher probabilities for the alternative therapies than C3. Overall, C1 centers had the highest probabilities for MAT along with moderate to high probabilities for MI/MET, and music therapy. Because of these characteristics, we titled C1 the comprehensive class, representing 29.9% of centers. C2 was a smaller class, representing 20.5% of centers. As C2 had moderate to high utilization of most psychosocial and alternative therapies but low MAT utilization, we termed this class the psychosocial/alternative-focused class. Finally, C3 centers only had moderate to high probabilities of utilizing MI and MET. This was termed the motivational/limited class and was the largest, representing 49.5% of centers.

Next, we sought to determine how center characteristics were associated with TSPs derived from the LCA. Table 4 shows the multinomial logistic regression results using class membership as the dependent variable. We used the comprehensive class (C1) as our comparative class in each model. Model 1 displays the results for predicting membership in the psychosocial/alternative class (C2) compared to the comprehensive class. Model 2 shows the results when predicting membership in the motivational/limited class (C3) relative to the comprehensive class. We found significant relationships between philosophical orientation and class membership. While our 12-step measure did not reach statistical significance, centers that offered more wraparound services ($B=-.167$, $SE=.057$, $p<.01$) were less likely to belong to C3. Results concerning client characteristics indicated that centers with a heavier reliance on CJ referrals were more likely to belong to C3 ($B=.007$, $SE=.004$, $p<.05$) while centers with larger percentages of adolescent patients were more likely to belong in C2 ($B=.023$, $SE=.007$, $p<.01$) and C3 ($B=.015$, $SE=.006$, $p<.05$) compared to C1.

Structural supports of informational access, resources for coordinated care, and funding were also relevant. Accreditation was negatively associated with membership in C2 ($B=\text{minus};.670$, $SE=.276$, $p<.05$) and C3 ($B=\text{minus};.689$, $SE=.237$, $p<.01$), while larger proportions of counselors with a Master's degree or higher were negatively associated with membership in C2 ($B=\text{minus};.010$, $SE=.004$, $p<.01$) and C3 ($B=\text{minus};.011$, $SE=.003$, $p<.001$). Centers with a physician on staff were less likely to belong to C2 ($B=\text{minus};.851$, $SE=.319$, $p<.01$) and C3 ($B=\text{minus};.742$, $SE=.269$, $p<.01$). Size ($B=\text{minus};.490$, $SE=.112$, $p<.01$).

001) was also negatively associated with membership in C3, while hospital-based treatment centers ($B=-.772$, $SE=.348$, $p<.05$) were less likely to belong to C2 compared to C1. Finally, centers with higher percentages of insured clients were more likely to belong to C1 rather than C2 ($B=-.013$, $SE=.005$, $p<.01$) or C3 ($B=-.013$, $SE=.004$, $p<.01$). Concerning our sample control, centers from the CTN ($B=-.879$, $SE=.353$, $p<.05$) were less likely to be in C2.

4. DISCUSSION

We found three profiles representing varying degrees of treatment diversity. First, most centers relied heavily on MI/MET, which are behavioral treatments compatible with the 12-steps (Miller, 1999; Schilling et al., 2002). These centers were unlikely to use MAT or other psychosocial treatments, consistent with previous findings that MAT or psychosocial treatments that promote external motivation are often incompatible with internally motivated treatments (McGovern et al., 2004; Oser and Roman 2007; Vaughn and Howard, 2004). Furthermore, MI/MET require fewer structural supports, making them more accessible. Second, we found that 20.5% of centers used psychosocial and alternative treatments but did not widely use MAT. These centers may also be philosophically opposed to MAT and/or have limited care infrastructures, but likely not to the extent of the MI/MET limited class. Finally, 29.9% of centers offered the most diverse offerings, including MAT. These centers may be more likely to embrace comprehensive care orientations, and have the structural supports needed for complex coordination. In addition to offering competitive treatments, these centers are also the most compatible with recent federal guidelines expressed by NIDA and the ACA.

Our expectations that center profiles would be associated with treatment philosophy were largely supported. First, wraparound services are likely indicative of a more comprehensive treatment orientation, and we found that centers offering more wraparound services were more likely to belong to the comprehensive class. This is also consistent with Rogers' (2003) theory of innovations, which emphasizes that adoption of one innovation increases the likelihood that others are adopted as well. In contrast, we found that centers more reliant on CJ-affiliated or adolescent clients were less likely to belong to the comprehensive class. CJ-affiliated clients are subjects of the justice system and their SUDs are primarily categorized as behavioral problems. Others have found that treatments for CJ-affiliated clients are subject to limited reimbursement and MAT-resistance (Ducharme et al., 2007; Rich et al., 2005). Government controls may also influence adolescent treatment when adolescents are barred from some MATs (Fiellin, 2008; Upadhyaya and Deas, 2008). While reflective of more restrictive treatment philosophies, these findings can also be understood through resource dependency theory, which emphasizes how organizational reliance on revenue sources influences organizational behavior (Pfeffer and Salancik, 1978). Centers reliant on clients whose treatment is heavily regulated will likely respond with compliance, restricting EBP offerings.

Beyond philosophical indicators, we found that centers with structural resources of informational access, care coordination, and competitive funding were more likely to offer diverse EBPs. For example, we found that centers with more highly-educated counselors

and those that were accredited were more likely to belong to the comprehensive class, suggesting that these centers have greater access to innovation information. This echoes previous research establishing a link between staff education, accreditation, and EBP adoption (Abraham and Roman, 2010; Bride et al., 2010; Knudsen and Roman, 2004). While knowledge may be essential for EBP adoption, we also found that organizational characteristics promoting treatment coordination and consumer-market sensitivity were associated with comprehensive treatment. Centers that were larger, hospital-based, and had access to onsite prescribing physicians were more likely to offer comprehensive treatment. This is likely because larger and hospital-based centers have increased resources of personnel and technology which promote EBP adoption and organized care (Ducharme et al., 2006; Knudsen et al., 2007, 2005). Similarly, on-staff physicians allow for more treatment options to be administered efficiently. Finally, centers with greater reliance on insured clients were more likely to offer diverse treatments, making them more competitive in their operational environment. Other research has also found an association between reliance on competitive revenue and EBP adoption (Aletraris et al., 2015; Knudsen et al., 2006, 2007).

4.1. Limitations

Despite our data's breadth, our findings cannot be generalized to programs in Veterans Health Administration or correctional facilities. Our data are based on center leaders' self-reports, which may be subject to social desirability and recall bias. Nevertheless, self-reported data are common in organizational-level research. Further, the data are cross-sectional, restricting our ability to make causal inferences. Lastly, LCA is best used as an exploratory tool (Hagenaars and McCutcheon, 2009). Different indicators could result in different configurations, but our findings offer an important basis for understanding the likely make-up of TSPs in the U.S.

4.2 Conclusion

In the current study, analyses revealed three discrete TSPs evident in U.S. SUD treatment centers sampled between 2009–2012. We conducted analyses of philosophical and structural characteristics associated with these profiles and revealed considerable variation. We found that the majority of facilities relied primarily on MI/MET, while smaller proportions offered comprehensive treatment options, including MAT, or focus on psychosocial and alternative care. We found that centers with philosophical orientations conducive to holistic care and MAT-acceptance, resource-rich infrastructures, and an entrepreneurial reliance on insured clients were more likely to offer diverse interventions.

Our findings are especially salient given the ACA, which was passed during our period of data collection. The expectation of greater integration between SUD treatment and mainstream healthcare is likely to shift patterns of treatment services, creating a new environmental reality. Programs that offer MAT will be at an advantage to integrate other medical services, and programs that make up the comprehensive class, which are able to offer a wide range of core and wraparound services, will be most competitive. Our findings indicate that centers are more likely to emphasize psychosocial and alternative interventions compared to MAT, but this may limit their ability to offer medical services, restricting

conformity to new healthcare goals. On the other hand, if the ACA continues to result in more insured Americans (Blumenthal and Collins, 2014), centers may have increased opportunities to serve insured clients. This may increase their ability to offer more diverse care in the future.

The findings from this study clarify the general strategies of treatment centers and how those strategies are interconnected. Practitioners and clients should be aware of the variation in treatment center practices. Access to diverse treatment is beneficial, and centers with limited offerings could consider widening their treatment. Finally, future research is needed to understand how changes due to the ACA will affect SUD treatment service provision. In particular, future studies should examine whether health reform will significantly increase the adoption and implementation of MAT, while de-emphasizing psychosocial interventions in SUD treatment, or whether MAT will remain an adjunct to treatment that also includes behavioral interventions.

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Highlights

- We studied the treatment profiles of 775 substance use disorder treatment centers in the U.S.
- Three distinct treatment profiles were identified through latent class analysis.
- Philosophical and organizational characteristics were associated with comprehensive treatment profiles.
- This study broadens knowledge of the general strategies of treatment centers.

Table 1**Descriptive Statistics**

	M or %	SD or n	Range
Evidence-Based Practices			
<i>Medication-Assisted Treatment</i>			
Naltrexone	26.0	201	0,1
Disulfiram	20.0	155	0,1
Acamprosate	26.0	201	0,1
Buprenorphine	29.0	225	0,1
<i>Psychosocial Treatment</i>			
Contingency Management	34.0	263	0,1
Motivational Interviewing	78.0	604	0,1
Motivational Enhancement Therapy	45.0	349	0,1
Multisystemic Therapy	18.0	139	0,1
<i>Alternative Treatment</i>			
Acupuncture	10.0	77	0,1
Music Therapy	18.0	139	0,1
Art Therapy	38.0	294	0,1
Treatment Philosophy			
<i>Center Services</i>			
12-step Meetings Held Onsite	56.0	434	0,1
Wraparound Services	3.4	2.2	0–10
<i>Client Characteristics</i>			
Percent Criminal Justice Referrals	49.4	33.6	0–100
Percent Female	36.0	21.8	0–100
Percent Adolescent	10.1	22.0	0–100
Structural Support			
<i>Informational Access</i>			
National Accreditation	51.0	395	0,1
Administrator MA	69.0	535	0,1
Percent Counselors with MA	49.6	35.9	0–100
<i>Resources for Coordinated Care</i>			
Physician on Staff	17.0	132	0,1
Size	2.8	1.1	0–6.81
Age	32.5	15.8	3–167
Hospital-based	21.0	163	0,1
Ratio of Counselors to Clients	0.17	0.20	0–2.63
Electronic Health Records	48.0	372	0,1
<i>Funding Characteristics</i>			
For-Profit Status	24.0	186	0,1
Percent Reliance on Private Funds	63.0	35.7	0–100
Percent Clients with Insurance	44.5	35.6	0–100

M = mean

% = percent

Std. Deviation = Standard Deviation

n = number of centers representing the corresponding percentage

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Table 2

Latent Class Analysis Fit Statistics

1 Class Solution		2 Class	3 Class	4 Class	5 Class
9264.562	AIC	8537.8	8384.7	8352.536	8354.367
9315.743	BIC	8644.8	8547.5	8571.22	8628.886
9280.813	Adj BIC	8571.8	8436.4	8421.973	8441.533
NA	Entropy	0.848	0.768	0.781	0.801
NA	LMR LRT	741.46	174.93	55.464	21.894
NA	p value	0.00	0.00	0.027	0.277
	N=775	C1=540	C1=232	C1=49	C1=16
		C2=235	C2=159	C2=153	C2=56
			C3=384	C3=197	C3=185
				C4=376	C4=142
					C5=376

AIC: Akaike Information Criterion

BIC: Bayesian Information Criterion

Adj BIC: Adjusted Bayesian Information Criterion

LMR LRT: Lo, Mendell, and Rubin's (2001) likelihood ratio test

Table 3

Class Solution Characteristics

	Class 1 n=232	Class 2 n=159	Class 3 n=384	Across	χ^2 Tests of Difference C1 v C2 C1 v C3 C2 v C3		
<u>Medication-Assisted Treatment</u>							
Naltrexone	0.756	0.047	0.042	457.37(2) ***	***	***	***
Disulfiram	0.578	0.048	0.035	315.92(2) ***	***	***	***
Buprenorphine	0.753	0.126	0.084	355.12(2) ***	***	***	***
Acamprosate	0.785	0.072	0.020	490.66(2) ***	***	***	**
<u>Psychosocial Treatment</u>							
Motivational Interviewing	0.848	0.806	0.732	9.48(2) **		**	
Motivational Enhancement Therapy	0.460	0.522	0.405				*
Contingency Management	0.294	0.586	0.248	93.49(2) ***	***	*	***
Multisystemic Therapy	0.161	0.352	0.109	60.71(2) ***	***		***
<u>Alternative Treatment</u>							
Acupuncture	0.137	0.153	0.044	26.24(2) ***		***	***
Music Therapy	0.210	0.503	0.000	229.95(2) ***	***	***	***
Art Therapy	0.388	0.841	0.147	288.77(2) ***	***	***	***

*
p<.05;

**

p<.01;

p<.001

Table 4

Multinomial Logistic

Regression	Model 1: Class 2 v. Class 1			Model 2: Class 3 v. Class 1		
	B	se	95% CI	B	se	95% CI
Treatment Philosophy						
<i>Center Services</i>						
12-step Meetings Held Onsite	0.350	0.255	-0.151 0.851	0.116	0.217	-0.309 0.542
Wraparound Services	0.098	0.063	-0.025 0.221	-0.167**	0.057	-0.278 -0.055
<i>Client Characteristics</i>						
Percent Criminal Justice Referrals	0.008	0.004	0.000 0.016	0.007*	0.004	0.000 0.014
Percent Female	0.010	0.006	-0.001 0.021	0.002	0.005	-0.009 0.012
Percent Adolescent	0.023***	0.007	0.010 0.036	0.015*	0.006	0.003 0.028
Structural Support						
<i>Informational Access</i>						
National Accreditation	-0.670*	0.276	-1.211 -0.128	-0.689**	0.237	-1.153 -0.225
Administrator MA	-0.285	0.307	-0.886 0.316	-0.181	0.268	-0.706 0.344
Percent Counselors with MA	-0.010*	0.004	-0.017 -0.002	-0.011**	0.003	-0.018 -0.005
<i>Resources for Coordinated Care</i>						
Physician on Staff	-0.851**	0.319	-1.475 -0.226	-0.742**	0.269	-1.270 -0.214
Size	-0.134	0.127	-0.383 0.114	-0.490***	0.112	-0.710 -0.270
Age	-0.011	0.009	-0.028 0.007	-0.004	0.007	-0.018 0.010
Hospital-based	-0.772*	0.348	-1.454 -0.091	-0.364	0.263	-0.880 0.152
Ratio of Counselors to Clients	-0.356	0.614	-1.559 0.847	-0.889	0.562	-1.990 0.213
Electronic Health Records	-0.196	0.245	-0.676 0.285	-0.273	0.210	-0.685 0.140
<i>Funding Characteristics</i>						
For-Profit Status	0.413	0.330	-0.235 1.061	-0.041	0.283	-0.595 0.514
Percent Reliance on Private Funds	-0.006	0.005	-0.016 0.004	0.000	0.005	-0.009 0.009
Percent Clients with Insurance	-0.013**	0.005	-0.022 -0.003	-0.013**	0.004	-0.021 -0.005
Sample Controls						
Private	-0.369	0.299	-0.954 0.216	-0.430	0.261	-0.941 0.080

Regression	Model 1: Class 2 v. Class 1			Model 2: Class 3 v. Class 1		
	B	se	95% CI	B	se	95% CI
CTN	-0.879*	0.351	-1.568 -0.191	-0.388	0.303	-0.981 0.205
Constant	1.746*	0.702	0.369 3.123	4.646***	0.624	3.423 5.870

* p<.05;
** p<.01;
*** p<.001

Class 1 = Comprehensive Class, n=232
Class 2 = Psychosocial/Alternative Focused Class, n=159
Class 3 = Motivational/Limited Class, n=384