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Organizational Implementation of Evidence-Based Substance Abuse Treatment in Racial and Ethnic Minority Communities

Erick G. Guerrero,

School of Social Work, University of Southern California, 655 West 34th Street, Los Angeles, CA 90089-041, USA

Amy He,

School of Social Work, University of Southern California, 655 West 34th Street, Los Angeles, CA 90089-041, USA

Ahraemi Kim, and

School of Social Work, University of Southern California, 655 West 34th Street, Los Angeles, CA 90089-041, USA

Gregory A. Aarons

Department of Psychiatry, University of California, San Diego, San Diego 92093, CA, USA

Erick G. Guerrero: erickgue@usc.edu; Amy He: ahe@usc.edu; Ahraemi Kim: ahraemik@usc.edu; Gregory A. Aarons: gaarons@ucsd.edu

Abstract

We evaluated organizational factors associated with the implementation of contingency management treatment (CMT) and medication-assisted treatment (MAT) in substance abuse treatment (SAT) programs serving racial and ethnic minority communities. Analysis of cross-sectional data collected in 2010–2011 from a random sample of 148 publicly funded SAT programs showed that accepting private insurance was positively associated with CMT and MAT implementation, whereas larger programs were associated with greater implementation of MAT. Supervisorial openness to and expectations about implementing evidence-based practices (EBPs) and attributes for change were strongly associated with CMT, whereas the interactions between openness to EBPs and programs that accept private insurance and that are governed by parent organizations were positively associated with MAT. These external expectations and managerial attitudes supported the implementation of psychosocial and pharmacotherapy treatments in SAT. Implications for improving standards of care in minority communities are discussed.

Keywords

Implementation; Evidence-based practices; Contingency management; Medication assisted treatment

Correspondence to: Erick G. Guerrero, erickgue@usc.edu.

Introduction

Implementation of evidence-based practices (EBPs) in community-based treatment settings is both challenging and complex (Aarons 2006; Aarons and Palinkas 2007; Chaffin and Friedrich 2004; Swain et al. 2010). It is especially necessary to increase effectiveness in service delivery and reduce variation in care for vulnerable populations (Institute of Medicine 2006; National Council for Community Behavioral Healthcare 2012). In particular, delivery of evidence-based care in racial and ethnic minority communities is an important element in reducing health disparities (Alvarez et al. 2004; Amaro et al. 2006; Delva et al., 2005). However, substance abuse treatment (SAT) programs in these communities generally suffer from unstable funding, passive leadership, high staff turnover, and limited technical resources to conduct clinical operations and support fidelity in the implementation process (D'Aunno 2006; Office of Applied Studies 2007; Roman et al. 2006). Organizational research in this area has explored outer-context factors, such as funding support and regulatory expectations (D'Aunno 2006) affecting evidence-based care; few studies have explored the intersection of the outer context with internal factors in SAT organizations such as leadership (Broome et al. 2007; Edwards et al. 2010), staff readiness for change (Simpson and Flynn 2007), and provider attitudes about EBPs (Aarons et al. 2011). In the current study, we integrated these frameworks to examine the relationship of outer and inner context factors of SAT programs in minority communities and the implementation of two different treatment approaches with significant evidentiary bases: contingency management treatment (CMT) and medication-assisted treatment (MAT).

There is a growing body of literature on both cultural and contextual barriers to the implementation of effective SAT services in minority communities. Emerging studies have shown that limited organizational capacity to deliver culturally responsive behavioral health services represents a major barrier to accessing services for African American and Latino communities (Alegría et al. 2006; Guerrero and Andrews 2011; Guerrero 2012; Zaller et al. 2009). In addition, research has shown that limited funding and infrastructure directly affects the number and quality of onsite services provided to Latinos (Marsh et al. 2009; McCarty et al. 2001). Research has focused on client barriers to accessing SAT care, largely ignoring access to evidence-based care. Because the treatment system needs to adapt to a new financial and service delivery environment that demands greater accountability, increased efficiency in service delivery, and reduced variation in care for vulnerable populations (Institute of Medicine 2006; National Council for Community Behavioral Healthcare 2012), research is needed to examine the extent to which SAT programs in ethnic minority communities deliver evidence-based care.

Contingency management and MAT are well-established evidence-based treatments with promising outcomes for ethnic minority groups (Cunningham et al. 2008; Korthuis et al. 2011). CMT is a psychosocial intervention with empirical support and is based on principles of behavior modification in which concrete reinforcements and rewards are presented when a client achieves a targeted behavior or withdrawn if desired behavior is not achieved (Petry and Simcic 2002; Prendergast et al. 2006). Similarly, MAT can be an integral part of effective SAT, with sufficient evidence that medications such as buprenorphine can replace

methadone and supplement psychosocial treatment (Amass et al. 2004; Ling and Compton 2005; Walsh and Eissenberg 2003).

Conceptual Framework

Recent conceptual models of implementation and organizational change in public sector services have indicated that the implementation of new practices requires outer (i.e., system and interorganizational) and inner (i.e., within organization) contextual factors that support EBPs (Aarons et al. 2011; Center for Substance Abuse Treatment 2006, 2009a, b; Damschroder et al. 2009; Simpson and Flynn 2007). Our heuristic model of implementation was drawn from hierarchical levels that precipitate change and reach from the outer context through the inner context, or the actual practice setting in which providers and consumers interact (Greenhalgh et al. 2004). There is a dearth of research assessing the effect of these constructs and their interaction on the implementation of EBPs in SAT programs servicing minority communities.

Publicly funded community-based programs are uniquely different than private mainstream SAT programs. Community-based programs are relatively small, with an average of five full-time counselors and an annual budget of less than $3 million (Guerrero 2012). In addition, these programs are historically founded on the 12-step recovery model and continue, sometimes exclusively, to abide by this model with limited exposure to evidence-based treatment interventions (Roman et al. 2006).

Outer Contextual Factors Supporting CMT and MAT Implementation

SAT organizations rely heavily on their regulatory and funding environment for financial and nonfinancial (i.e., professional expertise) resources, making them vulnerable to funders and regulators expectations (D'Aunno 2006; Guerrero 2010). This is consistent with resource-dependence theory, which posits that high dependence on necessary resources determines an organization's selection of core service technologies (Pfeffer and Salancik 1978). Studies have identified funding, regulation, and professional accreditation as outer contextual factors associated with provision of EBPs (D'Aunno 2006; Knudsen et al. 2011; Roman et al. 2011). In particular, organizational adoption of CMT is most likely in larger programs with state licenses and clinically licensed staff (Ducharme et al. 2007; Haug et al. 2008; McCarty et al. 2007). Similarly, program size, state license status (Roman et al., 2011), and public funding through Medicaid insurance reimbursement (Knudsen et al. 2011) were associated with adopting MAT in community-based SAT programs. Finally, emerging studies examining the implementation of CMT and MAT found that the use of vouchers (CMT) was more common in public SAT centers, whereas use of buprenorphine (MAT) was more likely in large private centers with parent organizations and more resources (Roman et al. 2006). Hence, Hypothesis 1 posited that state licensure, professional accreditation, public funding, and insurance reimbursement capacity would be positively associated with implementation of CMT and MAT in SAT programs.

Inner Contextual Factors Supporting CMT and MAT Implementation

The empirical literature on implementation of CMT and MAT has also highlighted inner contextual factors that serve as drivers of the implementation process. Professional

development models have increasingly focused on staff perceptions of leader and manager capacity as critical components to enhance the implementation process of EBPs (Edwards et al. 2010; National Council for Community Behavioral Healthcare 2012). We defined managerial capacity to implement EBPs in SAT as the formal education, work experience, openness, and knowledge and attitudes of clinical supervisors about EBPs and their implementation in services (Center for Substance Abuse Treatment 2006, 2009a). Considering that clinical supervisors and directors have significant influence on all practices of small SAT programs located in minority communities (Guerrero 2013a), it is also critical to examine inner context factors (leadership, managerial capacity, and staff resources for change) that may explain CMT and MAT implementation.

Director and Staff Characteristics

Leadership is an increasing focal point in terms of supporting staff implementation of new practices (Aarons et al. 2011; Broome et al. 2007; Edwards et al. 2010; Guerrero 2010, 2012). In publicly funded mental health treatment organizations, studies have found that leadership played key roles in the EBP implementation process (Aarons 2006; Aarons et al. 2011a, 2011b), whereas in SAT settings, leadership was associated with generating buy-in from staff to facilitate early adoption of EBPs (Center for Substance Abuse Treatment 2009a, b; D'Aunno 2006; Simpson and Flynn 2007). In particular, staff perceptions of leader behavior such as transactional (guiding performance) and transformational (leading by example and motivating self-growth) leadership has been associated the implementation of mental health treatment practices (Claus et al. 2007). Hence, Hypothesis 2 posited that positive perceptions among clinical supervisors of the leadership style of their directors would be positively associated with implementation of CMT and MAT.

The organizational process associated with the implementation of new technologies or knowledge in SAT has also been described and tested using the organizational readiness-for-change framework (Lehman et al. 2002; Simpson and Flynn 2007). This framework highlights the inner context of SAT programs represented by staff characteristics such as motivation and attributes (attitudes and training) and program resources (technologies) and climate as key analytical constructs in the process of implementing new practices. Staff motivation and training have been associated with implementing CMT and MAT (Fuller et al. 2007). Program resources in particular have supported the provision of CMT (Bride et al. 2011; Hartzler et al. 2012), whereas investment in physician and pharmacist staffing was associated with adoption of MAT (Abraham et al. 2010; Knudsen et al. 2006; Knudsen et al. 2005). Thus, Hypothesis 3 posited that supervisors' positive rating of their staff resources for change would be positively associated with implementation of CMT and MAT.

Clinical Supervisor Characteristics

Supervisor background and experience (e.g., education, licensure, and job tenure) are often grouped together to reflect managerial capacity and generally included in conceptual models of implementation of innovative practices in SAT (Friedmann et al. 2010; Guerrero 2010, 2012; Knudsen et al. 2006). However, clinical supervisors, as influential middle managers, also require openness to change and commitment to EBPs to promote these attitudes among their staff and drive the implementation process (Aarons 2006; Aarons and Palinkas 2007;

Chaffin and Friedrich 2004; Swain et al. 2010). Emerging research in mental health services has shown that staff commitment to EBPs is not only associated with implementation but also with leadership and staff readiness for change (Aarons 2004, 2005). In SAT, staff openness to implementing EBPs is also related to staff readiness for change (Saldana et al. 2007). Thus, Hypothesis 4 posited that managerial capacity, namely supervisors' graduate education, years of experience, attitudes regarding EBPs, and attributes associated with readiness for change, would be positively associated with implementation of CMT and MAT.

Finally, the research literature suggests that the implementation of EBPs relies on both outer and inner contextual factors. Organizational characteristics related to the outer context may have a unique effect compared to inner contextual factors and director, supervisor, and staff characteristics. But overall, when resources, expectations, and provider attitudes and investment interact, they may have a significant effect on the implementation of EBPs. In particular, managed care pressures programs to deliver evidence-based care and larger organizations have more resources to improve standards of care (D'Aunno 2006). Faced with high expectations and resources, managers with high openness to EBPs may be better able to implement EBPs (Aarons 2004, 2005) that are costly but reimbursed by private insurance, particularly MAT. Thus, Hypothesis 5 posited that the relationship between private insurance and parent organization and implementation of CMT and MAT will be moderated by supervisors' openness to EBPs.

Methods

Sampling Frame and Data Collection

The sampling frame considered all 408 addiction health services programs funded by the Department of Public Health in Los Angeles County, California. A program was defined as a treatment unit in which SAT constituted at least 75 % of services. Data collection involved a random selection of 147 outpatient programs drawn from the 350 programs located in communities with a population of 40 % or more African Americans, Latinos, or both in Los Angeles County. Latino residents represented more than 56 % of the county's population (US Census Bureau 2010). Ninety-two percent of clinical supervisors responded to the online survey. Consistent with nationally representative organizational studies in SAT, we relied on clinical supervisors as key informants of program structure and practices (see D'Aunno 2006; Knudsen et al. 2006; Roman et al. 2011). Follow-up site visits were completed with 91 % percent of the sample to validate measures.

Validation of survey measures involved three steps: (1) a review of program characteristics and service delivery information reported to the funding organization (L.A. County Department of Public Health); (2) qualitative report with one counselor per program; and (3) a review of material available at each provider site (e.g., brochures, group activities, posted signs, website). Consistent information from at least two of the three sources of data on the main independent and dependent variables was necessary to include data for each program in the analytical sample. For instance, we checked data from brochures and websites to verify funding, regulation, and use of CMT or MAT practices. We excluded 14 programs that had inconsistent data and 11 programs that had recently closed.

Analytic Sample

Our final analytic sample consisted of 122 eligible standard outpatient programs with full and verified information. Our final analytic sample decreased from 147 to 122 because 12 programs did not respond to the survey, we excluded 10 programs due to inconsistent data, and 3 programs closed prior to data collection. The 25 excluded programs did not differ from the analytic sample based on main independent variables ($p > 0.05$). Missing data was less than 4 % across all survey measures.

This final sample of 122 supervisors representing each program was deemed adequate for our modeling framework because our power analysis (Raudenbush and Liu 2000) suggested that data from at least 99 programs featuring 18 variables would have 80 % power to detect a standardized effect size of $\delta = 0.24$ (Cohen, 1988). The average age of our sampled supervisors was 46 years and the racial/ethnic composition was 39 % Latino, 25 % Asian, 22 % Black, 6 % White, and 8 % mixed race or other. Supervisors reported more than 12 years of experience and had direct responsibility for the implementation of EBPs.

Measures

Dependent Variables—Our two outcomes (implementation of CMT and MAT) were rated on 5-point Likert scales (1 = *never* to 5 = *always*); respondents were asked how often CMT or MAT practices were used in their program. The distribution of the CMT measure was even (1 = 8 %, 2 = 20 %, 3 = 26 %, 4 = 18 %, and 5 = 26 %), whereas the MAT responses were positively skewed (1 = 63 %, 2 = 14 %, 3 = 9 %, 4 = 8 %, and 5 = 4 %). Although previous research on SAT has relied on managers to report whether or not they have implemented EBPs (Bride et al. 2010; Friedmann et al. 2010; Knudsen et al. 2006; Oser et al. 2009), this study sought to capture the degree of implementation of CMT and MAT using Likert scales. Table 1 shows all of the included dependent and independent measures and describes how they were scored.

Independent Variables

Organizational Characteristics: Outer context organizational measures included regulation, public funding, and insurance capacity. Regulation measures included two items: whether the program had a state license and accreditation by The Joint Commission. We also included measures of percentage of public revenue in each program's budget and whether the program accepted Medicaid (Medi-Cal in California) and private insurance.

Inner context factors included measures of director, staff, and supervisor characteristics as reported by clinical supervisors. Organizational structure included program-level measures, such as whether the program was owned by a larger parent organization and the percentage of staff with graduate degree in the program. See Table 1 for descriptive statistics and response formats for all variables.

Director and Staff Characteristics: A 9-item measure represented agency director leadership, including two subscales of transformational (7 items, $\alpha = 0.92$) and transactional (2 items, $\alpha = 0.77$) leadership (Edwards et al., 2010). Director leadership was rated by clinical supervisors on a 5-point scale (1 = *strongly disagree* to 5 = *strongly agree*) and

scores were totaled as suggested by the measure's authors (Edwards et al. 2010). Higher scores represented increased leadership capacity among directors as perceived by clinical supervisors. Cronbach's alpha for leadership capacity was $\alpha = 0.94$. Staff resources for change were measured using the resource subscale of the organizational readiness-for-change measure (Lehman et al. 2002). These resources included offices, staffing, training, equipment and Internet access, which can be critical to providing CMT or MAT. All items were rated on a 5-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*). Higher scores represented more staff resources to respond to change as perceived by supervisors. We summed the items, as suggested by the authors of the measure, producing a composite measure of resources for change with a Cronbach's alpha of $\alpha = 0.63$.

Clinical Supervisor Characteristics: Attitudes toward EBPs were measured using 15 items comprising four subscales that measured supervisor attitudes in terms of openness (4 items), requirements to adopt EBP (i.e., regulation; 3 items), appeal (4 items), and divergence (4 items) toward EBPs (Aarons 2004). All items were rated on a 5-point Likert scale (1 = *not at all to* 5 = *to a very great extent*). All 4 items on the divergence subscale were reverse coded to maintain consistency with other items. Higher scores indicated stronger support for EBPs among supervisors. Cronbach's alpha for attitudes toward EBPs was $\alpha = 0.82$. Further, we generated two moderator variables, one representing the interaction between private insurance and supervisors' openness to EBPs and the second reflecting the interaction between parent organization and supervisors' openness to EBPs.

Supervisor attributes pertaining to readiness for change was measured using the staff attribute subscale of organizational readiness for change. These attributes included five subscales: growth, efficacy, influence, orientation, and adaptability. All items were rated on a 5-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*). Higher scores represented higher levels of readiness for change among supervisors. We summed across these five sub-scales, as suggested by the authors of the measure, producing a composite measure of supervisors' attributes related to readiness for change ($\alpha = 0.76$). Finally, supervisor field tenure was measured using years of experience in drug abuse treatment services, whereas supervisor education was assessed with a dichotomous measure of whether or not the supervisor had a graduate degree.

Statistical Analysis

Maximum likelihood estimation in multivariate regressions was used to effectively respond to missing data, which was assumed to be missing at random. Using maximum likelihood with the current rate of missing data (highest rate was 4 %) is considered the most adequate way to obtain unbiased estimation parameters (Allison 2002). This procedure was conducted in **Stata**/SE Version 12.

Stata/SE Version 12 was also used to conduct bivariate correlation analysis and multivariate regression analysis with robust standard errors relying on a hierarchical and cumulative approach. Because the conceptual framework indicated that organizational characteristics related to the outer context may have a unique effect compared to inner contextual factors and director, supervisor, and staff characteristics, a hierarchical nested regressions analysis

was conducted to capture the unique explained variance in the outcome for each conceptual block (organizational, director and staff, and supervisor) across three cumulative statistical models per EBP. Note that this was not a hierarchical linear regression, but rather three nested and sequential regression models. The first regression model identified the R^2 estimate of outer context characteristics embodied at the organizational level associated with degree of implementation of both CMT and MAT. The second model included inner context director and staff characteristics, whereas the third cumulative hierarchical model included all outer and inner context independent variables, including variables for managerial capacity. The R^2 estimate for each cumulative model was computed to examine the contribution of the outer and inner context to the degree of CMT and MAT implementation.

Results

Findings from bivariate correlation analysis suggested that hypothesized relationships were relevant and in the expected direction. Although not all of our variables of interest were related to implementation of CMT and MAT, many were. As shown in Table 2, implementation of CMT was positively associated with accreditation ($r = 0.32$), private insurance ($r = 0.26$), leadership ($r = 0.13$), all attitudes towards EBPs ($r > 0.15$), supervisor's field tenure ($r = 0.12$), and attributes for change ($r = 0.28$). In contrast, MAT implementation was positively related to outer context factors such as public funding ($r = -0.21$), state licensure ($r = 0.13$), accreditation ($r = 0.14$), Medicaid ($r = 0.19$), private insurance ($r = 0.14$), and parent organization ($r = 0.17$), as well as inner context factors such as leadership ($r = 0.12$), openness toward EBPs ($r = 0.15$), and appeal of EBPs ($r = 0.15$).

Outer Context Hypothesis

Tables 3 and 4 show results of multivariate analyses for CMT and MAT, respectively. Analyses offered partial support for Hypothesis 1, which posited that state licensure, professional accreditation, public funding, and insurance reimbursement capacity would be positively associated with implementation of CMT and MAT. Programs accepting private insurance were more likely to offer both CMT (B = 0.56, $SE = 0.23$, $p < 0.05$) and MAT (B = 1.72, $SE = 0.39$, $p < 0.05$).

Inner Context Hypotheses

Analyses did not support Hypothesis 2, which posited that clinical supervisors' perceptions of the leadership style of their directors would support the implementation of CMT and MAT. Leadership was only marginally associated with implementation of CMT at $p < 0.10$. Findings also did not support Hypothesis 3, which posited that supervisors' rating of staff resources for change would be positively associated with implementation of CMT and MAT.

Regression analyses provided partial support for Hypothesis 4, which posited that managerial capacity, namely supervisors' graduate education, years of experience, attitudes regarding EBPs, and attributes associated with readiness for change, would be positively associated with implementation of CMT and MAT. Supervisor attitudes toward EBPs, specifically openness (B = 1.44, $SE = 0.21$, $p < 0.05$) and regulation (B = 1.32, $SE = 0.19$, p

< 0.05), were statistically significantly related to CMT implementation. In addition, the most robust statistically significant relationship was found between supervisor readiness-for-change attributes and CMT (B = 2.17, *SE* = 0.62, $p < 0.01$). Supervisors' openness towards EBPs was also associated with MAT (B = 1.31, *SE* = 0.18, $p < 0.05$).

Findings provided partial support for Hypothesis 5, which posited that the relationship between private insurance and parent organization and implementation of CMT and MAT would be moderated by supervisors' openness to EBPs. The interaction effect between private insurance and openness to EBPs was statistically significant (B = 0.22, *SE* = 0.12, $p < 0.01$), as well as the interaction of parent organization and openness to EBPs (B = 3.22, *SE* = 1.71, $p < 0.05$).

Hierarchical nested regressions analysis of the contribution of outer and inner context by first, organizational (Model 1), director and staff (Model 2), and supervisor (Model 3) characteristics revealed that accepting private insurance and supervisors' openness to EBPs and attributes for change played the most significant role in the implementation of CMT. In other words, the largest adjusted R^2 change was from Model 2 to Model 3 (0.18), suggesting that supervisors' managerial capacity (Model 3) played a significant role beyond the effect of organizational, director, and staff characteristics in the implementation of CMT.

The three models of MAT implementation indicated only a marginally significant association of implementation with Medicaid ($p < 0.10$), whereas private insurance and supervisor openness to EBPs accounted for the most explained variance in MAT. The adjusted R^2 changed was also statistically significant across Models ($p < 0.05$), and the R^2 change of 0.16 from Model 2 to Model 3, suggested that the EBP implementation capacity of middle managers and the interaction with accepting private insurance had an important effect on MAT implementation.

Discussion

This study offered a unique perspective on the implementation of EBPs in SAT settings in several aspects. First, this study drew its sample from supervisors of community-based treatment programs located in underserved racial and ethnic minority communities, where EBPs are less likely to be provided (Fixsen et al. 2005). In particular, main characteristics of these programs were that they were located in low-resourced and densely populated communities. Second, we drew from several frameworks related to implementation to examine external and internal factors that may explain the implementation of two distinct EBPs in SAT. Because social services supervisors have frequent access to and influence both upper administration and frontline workers (Packard 2009), their thoughts on these matters provided insight into the relationship between these factors and the translation of CMT and MAT.

Findings suggested that there is no one particular organizational characteristic that supports the implementation of these two distinct EBPs. Inner context factors such as leadership and resources for change were expected to be associated with provision of both treatment practices because leaders are generally considered champions of change and resources are

needed to implement EBPs (Guerrero 2013b; Fixsen et al. 2005). Yet, findings from this paper highlighted the role of outer context factors such as private insurance and internal factors of attitudes and openness toward EBPs in increasing the implementation of both CMT and MAT. These two EBPs require different forms of support. Although CMT is more institutionalized and less costly, MAT requires licensing, medical staff, and more technical support to be implemented. Factors such as the costs associated with obtaining licenses, hiring medical doctors and pharmacists, and providing training beyond what supervisors can offer (Abraham et al. 2010; Knudsen et al. 2005, 2006) may explain our results. The statistically significant interaction between private insurance and supervisors' openness to EBPs in the implementation of MAT suggests that when external demands and resources are present, supervisors' positive attitudes about EBPs may lead to the implementation of pharmacotherapies. This finding opens opportunities to further explore the relationship between external and internal factors in the implementation of these and other EBPs in community-based SAT programs. These programs, although operating with low resources and generally abiding by 12-step recovery models, show potential to expand their psychosocial and pharmacotherapy treatment options if they invest in improving staff attitudes about EBPs and readiness for change.

The aim of this study was to contribute to the knowledge base regarding how external and internal factors influence the uptake of EBPs in low-resourced, community-based outpatient settings. This study highlighted organizational factors (i.e. supervisors' attitudes about EBPs and attributes for change) that may inform training protocols for national public health programs that seek to train leaders on implementation factors that may enhance quality of care and consequently improve health equities (e.g., the National Council for Community Behavioral Healthcare's Addressing Health Disparities Leadership Program).

Study Limitations

Several issues, including methodological challenges, complicated the relationships between organizational factors and the implementation of CMT and MAT and should be considered when interpreting these findings. The structure of the survey data did not allow for establishing causality, directionality, or implementation of practices over time. These are cross-sectional data and explored factors may be bidirectional (e.g., programs with greater implementation of CMT may attract directors with greater leadership capacity). In addition, the cross-sectional data and the dependent measure did not allow for longitudinal and sequential assessment of implementation. We also acknowledge that the study's sampling frame of low-resourced, community-based outpatient settings may have led to reduced variation in our outcomes limiting our ability to fully test the theoretical arguments.

This study relied on single-item indicators, and although there is precedent and support for the use of single-item indicators in some studies (Bergkvist and Rossiter 2007; Gill et al. 2012), we acknowledge this type of measurement is not optimal for implementation research. Given the limited knowledge about community-based service practices in SAT, this study offers baseline knowledge about two concrete EBPs. Moreover, our sample was limited to one county and to publicly funded SAT programs, limiting generalizability. However, because the sample represented a service area that includes more than 7 million

residents from urban and highly diverse backgrounds, implications from this study may have applicative merit to large metropolitan areas.

Finally, we relied on a key informant model with cross-validation to collect data. Some studies have suggested relying on multiple informants to identify significant variability among staff members on organizational climate variables (Courtney et al. 2007) or reduce response bias from managers when asked to rate implementation of EBPs (e.g., Adams et al. 1999; Lee and Cameron 2009). However, other studies have found that the organizational readiness-for-change scales did not discriminate between responses of staff and supervisors, using aggregates in the final analysis (Saldana et al. 2007). Our single-informant model with cross-validation checks allowed us to collect system data from a larger number of programs. Although this approach may not have been optimal, we attempted to reduce response bias by completing validity checks (using funding data, counselor interviews, and printed and online program materials) with 91 % of the sample during site visits. As a result, we excluded 14 programs with inconsistent responses. Despite these methodological challenges, analysis of this random sample of programs located in minority communities and in the largest SAT system in the United States provided preliminary evidence of promising organizational factors that may enable programs to deliver EBPs to racial and ethnic minority communities.

Conclusion

Because publicly funded SAT programs in minority communities generally lack evidence-based care due to limited resources, the present study highlighted areas in which health care management policy makers should invest. Although large programs with parent organizations and several insurance reimbursement options appear to have the greatest capacity to provide these psychosocial and pharmacotherapy treatments, attitudes about EBPs and attributes related to readiness for change among middle managers may also contribute to the implementation process, particularly for MAT.

Implementation of MAT may require resources and regulation in addition to internal ideological support from middle managers. Structural resources, such as Medicaid and parent organizations, were along the margins of significance, as expected from our theoretical framework. The study design could have been strengthened to fully test hypotheses as the presented theories did not fully describe the factors that account for adoption of EBPs, particularly adoption of MAT.

As health care reform promotes the acceptance of Medicaid and private insurance by SAT programs, as well as the integration of a medical home model in which medication-based EBPs are emphasized, clinical supervisors supportive of EBPs are in a particularly strong position to quickly adapt to these financial and service delivery changes to improve access to evidence-based SAT care in racial and ethnic minority communities.

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Table 1

Organizational, director, supervisor, and staff characteristics (*N* = 122)

Variable	*M* (*SD*) or %	Response format
Organization		
CMT	3.33 (1.23)	How often is CMT provided?
MAT	1.75 (1.27)	How often is MAT provided?
State licensure	95.1	1 = yes, 0 = no
TJC accreditation	16.7	1 = yes, 0 = no
Public funding	67.0 (38.0)	Percentage of public funding in total budget
Medicaid	69.0	Percentage of programs accepting Medicaid
Private insurance	48.0	Percentage of programs accepting private insurance
Parent organization	35.3	1 = yes, 0 = no
Director and staff		
Director leadership	3.90 (0.69)	9 items (e.g., Does management inspire others with plans for facility's future?)
Staff resources for change	4.03 (0.39)	5 subscales (offices, staffing, training, equipment, Internet)
Staff education	35.08 (39.20)	Percentage of treatment staff with graduate degree
Clinical supervisor		
Field tenure	12.90 (9.40)	Years of experience in drug abuse counseling
Education	31.5	1 = graduate degree, 0 = no graduate degree
Attitudes toward EBP		
Openness	3.32 (0.73)	4 items (e.g., I like to use new types of therapy)
Regulation	3.91 (0.93)	3 items (e.g., Would you adopt a new therapy if required?)
Appeal	3.58 (0.76)	4 items (e.g., Would you adopt a new therapy if it was intuitively appealing?)
Divergence	2.20 (0.65)	4 items (e.g., I know better than academic researchers how to care for clients)
Attributes for change	4.02 (0.43)	5 subscales (growth, efficacy, influence, orientation, adaptability)

Note Items on all scales have a range of 1 to 5. *CMT* contingency management treatment, *MAT* medication-assisted treatment, *TJC* the joint commission

Table 2

Correlation matrix of organizational, director, staff and clinical supervisor characteristics (*N* = 122)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Organization																	
1. CMT																	
2. MAT	0.09																
3. State licensure	−0.11	0.13*															
4. TJC accreditation	0.32**	0.14*	0.06														
5. Public funding	−0.09	−0.21**	−0.15*	0.01													
6. Medicaid	0.01	0.19**	0.19**	0.24**	−0.08												
7. Private insurance	0.26**	0.14*	0.16**	0.46**	0.08	0.31**											
8. Parent organization	−0.07	0.17**	0.14*	0.17**	0.13*	−0.12	0.08										
Director and staff																	
9. Director leadership	0.13*	0.12*	−0.03	−0.07	0.15*	0.07	0.00	0.15									
10. Staff resources for change	−0.04	0.02	−0.06	−0.23	0.13*	−0.09	−0.18**	−0.21**	0.42**								
11. Staff education	0.01	0.03	−0.10	−0.16**	0.07	0.18	0.01	−0.11	0.19**	0.27**							
Clinical supervisor																	
12. Field tenure	0.12*	0.11	−0.10	0.11	0.04	0.04	0.11	0.05	−0.07	−0.07	−0.06						
13. Education	0.06	−0.07	0.06	−0.03	0.17*	−0.14*	0.05	0.22**	0.07	0.06	−0.15	0.05					
14. EBP openness	0.16**	0.15*	−0.07	−0.00	−0.08	−0.17	0.05	0.19**	0.07	−0.05	−0.02	0.01	0.15*				
15. EBP regulation	0.19**	0.04	−0.08	0.13*	0.23**	−0.11	0.04	0.27**	0.15*	0.16**	0.10	0.13*	0.03	0.13*			
16. EBP appeal	0.18**	0.15*	0.04	0.22**	0.13*	0.11	0.22**	0.34**	0.03	−0.05	−0.05	−0.03	0.13*	0.29**	0.68**		
17. EBP divergence	−0.17**	−0.07	−0.09	0.04	0.18*	0.12*	0.08	−0.07	0.15*	0.06	0.17**	0.13*	0.02	−0.05	−0.11	−0.07	
18. Attributes for change	0.28**	0.08	0.07	−0.03	0.16*	−0.01	−0.14*	0.06	0.32**	0.31**	−0.01	−0.09	0.12	0.14*	0.27**	0.21**	−0.11

Note CMT contingency management treatment, *EBP* evidence-based practice, *MAT* medication-assisted treatment, *TJC* the joint commission

* $p < 0.05$,

** $p < 0.01$

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Table 3

Implementation of CMT (*N* = 122)

Variable	Implementation of CMT					
	Model 1		Model 2		Model 3	
	B	*SE*	B	*SE*	B	*SE*
Organization						
State licensure	1.08	0.64	1.14	0.73	1.11	0.56
TJC accreditation	1.97*	0.64	1.86*	0.64	1.67†	0.51
Public funding	0.83	0.25	0.84	0.26	0.80	0.23
Parent organization	0.71	0.17	0.75	0.18	0.64*	0.14
Medicaid	0.63†	0.16	0.61†	0.15	0.79	0.19
Private insurance	1.68*	0.41	1.81*	0.44	1.72*	0.39
Private insurance × EBP openness					0.77	0.55
Parent organization × EBP openness					0.69	0.43
Director and staff						
Director leadership			1.25†	0.23	1.20†	0.17
Staff resources for change			1.06	0.25	1.02	0.22
Staff education			0.67	0.24	0.79	0.26
Clinical supervisor						
Field tenure					1.02†	0.01
Education					0.97	0.07
Attitudes toward EBP						
Openness					1.44*	0.21
Regulation					1.32*	0.19
Appeal					0.88	0.13
Divergence					0.77	0.15
Attributes for change					2.17**	0.62
Constant	32.41**	19.89	11.08*	12.13	0.16**	0.24
Adjusted R^2	0.17		0.21		0.39	

Note Multivariate regression parameter estimates with robust standard errors from two-tailed tests. *CMT* contingency management treatment, *TJC* the joint commission

† $p < 0.10$,

* $p < 0.05$,

** $p < 0.01$

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Table 4

Implementation of MAT (*N* = 122)

Variable	Implementation of MAT					
	Model 1		Model 2		Model 3	
	B	SE	B	SE	B	SE
Organization						
State licensure	1.25	0.30	1.27	0.32	1.53	0.50
TJC accreditation	1.50	0.61	1.48	0.54	1.58	0.53
Public funding	0.60	0.20	0.56†	0.19	0.62	0.20
Parent organization	1.57†	0.40	1.34	0.34	1.21	0.33
Medicaid	1.49†	0.33	1.54†	0.34	1.46†	0.30
Private insurance	1.41	0.38	1.54*	0.40	1.60*	0.38
Private insurance × EBP openness					0.22**	0.12
Parent organization × EBP openness					3.22*	1.71
Director and staff						
Director leadership			0.97	0.13	0.96	0.14
Staff resources for change			1.19	0.26	1.28	0.27
Staff education			1.59	0.53	1.69	0.56
Clinical supervisor						
Field tenure					1.02	0.02
Education					1.13	0.08
Attitudes toward EBP						
Openness					1.31*	0.18
Regulation					0.84	0.11
Appeal					1.13	0.17
Divergence					1.13	0.21
Attributes for change					0.95	0.28
Constant	3.49**	2.11	1.91	1.56	0.25	0.37
Adjusted R^2	0.13		0.16		0.32	

Note Multivariate regression parameter estimates with robust standard errors from two-tailed tests. *MAT* medication-assisted treatment, *TJC* the joint commission

† $p < 0.10$,

* $p < 0.05$,

** $p < 0.01$