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Innovation Attributes and Adoption Decisions: Perspectives from Leaders of a National Sample of Addiction Treatment Organizations

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Abstract

Drawing on diffusion theory to further knowledge about evidence-based practices (EBPs) in the treatment of substance use disorders (SUDs), this study describes the perceived importance of innovation attributes in adoption decisions within a national sample of SUD treatment organizations. Face-to-face interviews were conducted with leaders of 307 organizations. A typology differentiated organizations reporting: (1) adoption of a treatment innovation in the past year (“recent adoption”), (2) plans to adopt an innovation in the upcoming year (“planned adoption”), or (3) no actual or planned adoption (“non-adoption”). About 30.7% of organizations reported recent adoption, 20.5% indicated planned adoption, and 48.8% were non-adopters. Leaders of organizations reporting recent adoption ($n = 93$) or planned adoption ($n = 62$) rated the importance of innovation attributes, including relative advantage, compatibility, complexity, and observability, on these adoption decisions using a Likert scale that ranged from 0 to 5. Innovation attributes most strongly endorsed were consistency with the program's treatment philosophy (mean = 4.47, SD = 1.03), improvement in the program's reputation with referral sources (mean = 4.00, SD = 1.33), reputational improvement with clients and their families (mean = 3.98, SD = 1.31), and reductions in treatment dropout (mean = 3.75, SD = 1.54). Innovation characteristics reflecting organizational growth and implementation costs were less strongly endorsed. Adopters and planners were generally similar in their importance ratings. There were modest differences in importance ratings when pharmacological innovations were compared to psychosocial interventions. These findings are consistent with diffusion theory and suggest that efforts to link EBPs with client satisfaction and potential reputational benefits may enhance the diffusion of EBPs. Attention to these attributes when developing and evaluating SUD treatment interventions may enhance efforts to increase subsequent adoption.

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Keywords

innovation adoption; diffusion theory; adoption of evidence-based practices; substance use disorder treatment organizations

1. Introduction

With an overarching goal of improving treatment quality, the past 15 years have seen substantial resource investment from influential stakeholders in federal agencies, state governments, and private foundations in promoting the adoption of evidence-based practices (EBPs) by organizations that delivery substance use disorder (SUD) treatment (Lamb, Greenlick, & McCarty, 1998; Martino, et al., 2010; Rieckmann, Kovas, Fussell, & Stettler, 2009; Schmidt, et al., 2012; The Addiction Technology Transfer Center (ATTC) Network Technology Transfer Workgroup, 2011). Despite these efforts, rates of EBP adoption continue to be quite low (National Advisory Council on Drug Abuse of the National Institute on Drug Abuse, 2012).

Concurrent with stakeholders' efforts to promote EBP adoption, a substantial body of research has focused on identifying organizational and environmental factors associated with adoption of EBPs by SUD treatment organizations. These studies have considered a range of EBPs: psycho-social interventions (Bride, Abraham, & Roman, 2011; Henggeler, et al., 2008; Lundgren, Chassler, Amodeo, D'Ippolito, & Sullivan, 2012; McGovern, Fox, Xie, & Drake, 2004; Miller, Sorensen, Selzer, & Brigham, 2006), comprehensive wraparound services (Ducharme, Mello, Roman, Knudsen, & Johnson, 2007; Friedmann, Lemon, Durkin, & D'Aunno, 2003; Knight, Edwards, & Flynn, 2010), and pharmacotherapies (Friedmann, Alexander, & D'Aunno, 1999; Friedmann, Jiang, & Alexander, 2010; Garner, 2009; Knudsen & Abraham, 2012; Knudsen, Roman, & Oser, 2010). Consistent with emerging frameworks from implementation science (Aarons, Hurlburt, & Horwitz, 2011; Damschroder, et al., 2009; Proctor, et al., 2009; Simpson, 2002; Simpson & Flynn, 2007), these studies have documented relationships between adoption, dimensions of organizational characteristics (e.g., culture, resources, readiness for change) and, to a lesser extent, influences from the external environment. Notably, the specific variables associated with adoption have varied between specific EBPs, making it difficult to generalize about a core set of organizational and environmental characteristics that are consistently associated with adoption.

An implicit assumption is that there is a compelling reason for adoption when randomized clinical trials comparing an EBP with “treatment as usual” reveal statistically better clinical outcomes, such as abstinence or treatment retention, with the use of the EBP (Stirman, Crits-Christoph, & DeRubeis, 2004). Less clear-cut is a qualifying assumption that organizations vary in their capacity to adopt specific EBPs, facing different sets of contingencies as they weigh adoption decisions. These assumptions are not unique to the field of SUD treatment. As noted by Dearing (2009, p. 509), “We assume that evidence matters in the decision making of potential adopters,” when in reality, evidence may matter in different ways for different adopters.

Within SUD treatment, it is not clear how strongly decision-makers weigh clinical evidence relative to other features of treatment innovations. As noted by Everett Rogers (2003) in his classic work, *Diffusion of Innovations*, the attributes of innovations are critical factors in promoting or inhibiting their adoption within a field. These attributes are more complex than simply the scientific evidence base favoring the use of a new practice.

For Rogers, key innovation attributes included relative advantage, compatibility, complexity, and observability. Relative advantage reflects anticipated benefits, both tangible and intangible, of an innovation relative to current practice. Compatibility is the congruence between the innovation and organizational values, previously adopted innovations, strategic plans, and perceived need for improvement. Complexity describes how difficult the innovation is to implement and whether its use will require resources such as new staff with unique skill sets or the re-training of existing staff. Observability is tied to what Moore and Banbasat (1991) have described as the attribute of image, or the social approval among key stakeholders that can be gained from adopting an innovation.

Within the emerging body of data about EBP adoption in SUD treatment, relatively little is known about how treatment organizations weigh innovation attributes in adoption decisions. Rather than specifying *a priori* a particular innovation and measuring its adoption, this study considered innovation adoption in a broader sense by asking treatment program administrators to describe a recent or planned innovation adoption decision and then rate the perceived importance of innovation attributes in influencing that decision.

2. Methods

2.1. Sample and Data Collection

This study relies upon a nationally representative sample of US treatment organizations that offer specialty treatment for alcohol use disorders (AUDs). The sampling frame was constructed using the 2008 Substance Abuse Treatment Services Locator, which was published by the Substance Abuse and Mental Health Services Administration (SAMHSA; <http://findtreatment.samhsa.gov/TreatmentLocator/faces/quickSearch.jspx>). To establish eligibility, telephone screening was used to ensure that organizations were open to the general public, had at least 25% of their patients with a primary AUD diagnosis, employed at least two full-time equivalent employees (FTEs), and delivered a minimum level of treatment equivalent to or greater than the American Society of Addiction Medicine's definition of structured outpatient services. Organizations that exclusively dispensed medications to treat opioid dependence (e.g., methadone programs), only offered detoxification without offering other levels of care, programs for DUI/DWI offenders, correctional programs, facilities located in the Veterans Administration, and individual counselors offering therapy were ineligible.

Face-to-face interviews were conducted with the administrator and clinical director (when such a position existed) of eligible treatment organizations (n=307; 67% response rate). Informed consent forms were sent in advance and collected before the start of the interview. Data collection occurred from mid-2009 to January 2012. All procedures were submitted to

and approved by the Institutional Review Boards of the University of Georgia and the University of Kentucky.

2.2. Measures

Prior to the questions about EBP attributes, administrators were asked about *recent or planned innovation adoption*. First, a dichotomous indicator measured whether the organization had made a significant change in its treatment processes, such as adopting a medication or psychosocial treatment technique in the last year. Negative responses were followed by an additional dichotomous question about whether the organization had any plans for making a significant change in its treatment processes by adopting a medication or adopting a psychosocial intervention in the next year. Based on the responses to these two items, a typology of three mutually exclusive categories was constructed: recent adoption (i.e., in the past year), planned adoption (i.e., in the upcoming year), and no adoption (i.e., neither recent nor planned). Those with recent adoption were asked to describe the most recent change, which was coded as a *medication or psychosocial intervention*; this innovation served as the referent for all additional questions about innovation attributes. Organizations indicating that they planned to adopt an innovation in the upcoming year were also asked to describe the innovation, which was then coded as a medication or a psychosocial intervention. Cases in which respondents indicated multiple innovations that included both pharmacotherapy and psychosocial interventions were rare, occurring in 10 of 153 cases. In these instances, the interviewer allowed the respondent to choose which innovation would be used as the referent.

Perceived attributes of the innovation were measured with a set of 14 items (see Table 2) that were developed by the research team for this study. Organizations with past-year adoption were asked the 14 items in the context of the question, "Thinking about the decision to implement that change, on a scale from 0 to 5, how important (0 = not at all important, 5 = very important) were the following reasons in the decision to adopt this [medication/intervention]." For organizations that were planning to adopt an innovation in the next year, administrators were asked, "Thinking about this planned change, on a scale of 0 to 5, how important (0 = "not at all important", 5 = "very important") are the following reasons in selecting this [medication/intervention] for adoption?" before answering the 14 items. Drawing on Rogers' (2003) theory, 7 of the 14 items measured the relative advantage of the innovation in terms of clinical, financial, and staffing benefits. Two items measured compatibility regarding the innovation's consistency with the organization's treatment philosophy and its limited impact on the center's operations. Complexity was addressed through 3 items about the costs of implementation and ease of staff training. Two items of observability tapped into how external stakeholders (e.g., referral sources as well as clients and their families) would perceive the impact of the innovation on the center's reputation.

An additional set of dichotomous indicators asked past-year adopters whether the innovation had resulted in organizational benefits (1=yes, 0=no); these items asked respondents whether the attributes of relative advantage and observability described above had actually materialized (see Table 3). Two additional items asked respondents whether the start-up costs and ongoing implementation costs were lower, higher, or consistent with expectations.

In addition to these measures regarding innovation adoption, participants provided considerable descriptive information about organizational structure, treatment services, treatment philosophy, and staffing. Structural measures included government ownership (=1; 0=privately owned) as well as organizational type, which differentiated hospital-based programs from those that were for-profit freestanding centers or non-profit freestanding organizations. Dichotomous measures also indicated whether the organization operated additional off-site satellite facilities (1= yes, 0=no), was a member of provider association (1= yes, 0=no), and was accredited by an external entity such as the Joint Commission, Commission on Accreditation of Rehabilitation Facilities (CARF), or Council on Accreditation (1=accredited, 0=non-accredited). Treatment services were measured by a typology of three mutually exclusive categories: outpatient-only (e.g., standard outpatient, intensive outpatient, and/or partial hospitalization services), inpatient-only (e.g., 30-day inpatient and/or longer-term residential care), or mixed levels of care (i.e., both inpatient and outpatient services). Four items measuring treatment philosophy indicated the extent to which the organization emphasized the twelve-step model, cognitive-behavioral counseling, the medical/psychiatric model of addiction, and spiritual counseling; each item was measured on a six-point Likert scale (0=no extent to 5=very great extent). Staffing was measured by the number of counselors employed by the organization, the percentage of counselors holding at least a master's-level degree, and access to physicians (with categories of having at least one physician on the payroll, at least one physician on contract, or no access to physicians).

2.3. Analysis

Descriptive statistics were employed to analyze the available data. Based on the typology of innovation adoption, organizational characteristics were compared using chi-square tests or one-way analysis of variance (ANOVA) with the Bonferroni correction, depending on the level of measurement for the whole sample. Four organizations were missing data on the innovation typology; other rates of missing data were generally low. Then, independent samples *t*-tests were used to compare the sub-sample of past-year recent adopters and planned adopters ($n = 155$) on the 14 innovation attributes; data were available from 154 to 155 organizations depending on the specific item. Additional independent samples *t*-tests compared organizations focused on pharmacological innovations to those focused on psychosocial interventions, with data available for 152 to 153 organizations depending on the measure; for these analyses, the recent and planned adopters were pooled. Finally, frequencies were calculated for the sub-sample of recent adopters ($n = 93$) regarding the perceived impact of the innovation on the organization, with the number of cases with missing data ranging from 2 to 6 depending on the item.

3. Results

3.1. Description of the Sample

Only 9.1% ($n = 28$) of programs were owned by governmental entities, while 68.7% ($n = 211$) of the sample operated as freestanding non-profit organizations. Only 11.7% ($n = 36$) were located within a hospital setting and 19.5% ($n = 60$) operated on a for-profit basis. About 59.2% ($n = 180$) of sampled organizations operated satellite facilities, and 49.3%

(n=150) were members of provider associations. Only 38.8% (n = 119) of organizations were accredited. The majority (61.8%; n = 188) of organizations only offered outpatient levels of SUD care; 23.4% (n = 71) offered a mixture of outpatient and inpatient services while only 14.8% (n = 45) only offered inpatient care. On average, cognitive-behavioral counseling was strongly emphasized in these programs (mean = 4.29, SD = 0.95). The mean for programs' emphasis on the 12-step model was above the midpoint of this Likert scale (mean = 3.22, SD = 1.68). Emphasis on the medical/psychiatric model (mean = 2.60, SD = 1.73) and spiritual counseling (mean = 2.37, SD = 1.62) were somewhat lower. The average organization employed about 12 counselors (mean = 12.14, SD = 51.72), nearly half of whom held at least a master's level degree (mean = 45.62, SD = 34.95). Organizations were fairly evenly distributed across the typology of physician access, with 28.2% (n = 86) employing at least one physician, 32.5% (n = 99) not employing any physicians but having a contractual relationship with at least one physician, and 39.3% (n = 120) having no access to physicians.

3.1. Innovation Typology and Organizational Characteristics

The typology of innovation adoption indicated that 30.7% (n = 93) of organizations had adopted a treatment innovation in the past year, 20.5% (n = 62) planned to adopt a treatment innovation in the next year, and 48.8% (n = 148) reported neither recent nor planned adoption. This typology was used to examine differences in organizational characteristics between the three groups. There were only three statistically significant differences. Organizational type varied across adoption ($\chi^2 = 18.42$, $df = 4$, $p = .001$); notably, for-profit freestanding organizations were more concentrated in the “no actual or planned adoption” group. The three groups also varied on the operation of satellite facilities ($\chi^2 = 9.44$, $df = 2$, $p = .009$), with the actual adoption group being considerably more likely than non-adopters to have satellite facilities. Finally, the three innovation groups differed in their distribution across the physician typology ($\chi^2 = 12.60$, $df = 4$, $p = .013$), with the planned adoption group being the most likely to have at least one physician on staff.

3.2. Innovation Attributes

The first column of Table 2 presents the average importance ratings for 14 innovation attributes as reported by 155 organizations with recent or planned innovation adoption. The four most strongly endorsed attributes were consistency between the innovation and the organization's treatment philosophy, its benefits for the program's reputation with referral sources, likely improvement in the center's reputation with clients and their families, and expected reduction in rates of treatment dropout. Less strongly endorsed attributes were those focused on the innovation's implications for staff as well as the financial costs and benefits of adoption.

Organizations with past-year adoption were compared to those planning to adopt an innovation on the perceived importance of these 14 attributes (Table 2). In general, the two groups were similar in their perceptions regarding the importance of these attributes. There were only two statistically significant differences. Past-year adopters rated attracting more clients to the center as less important than organizations planning to adopt an innovation ($t(152) = 2.04$, $p = .04$). Similarly, past-year adopters rated an increase in treatment capacity

as less important than organizations planning to adopt an innovation ($t(152) = 2.34, p = .02$). There was a trend for lower average importance ratings for actual adopters versus planned adopters with regard to increasing revenues from funding sources ($t(153) = 1.92, p = .06$), but this difference did not achieve statistical significance.

Of the organizations with recent or planned adoption, the majority of organizations (73.9%; $n = 113$) were focused on a psychosocial intervention. About 26.1% ($n = 40$) had adopted or planned to adopt an SUD medication. Additional analyses examined whether there were differences in the importance of innovation attributes based on whether the innovation was a medication or a psychosocial intervention. Due to small cell sizes, responses for actual versus planned adoption were pooled in this comparison. Ratings of two innovation attributes significantly differed between psychosocial interventions and medications. Organizations focused on medication adoption rated the importance of its impact on staff morale lower than organizations focused on a psychosocial intervention ($t(150) = 2.04, p = .04$). Second, the rating for the importance of low ongoing costs was significantly lower for medication-focused adoption than for adopting a psychosocial intervention ($t(150) = 2.26, p = .03$). The importance of the innovation's implications for staff turnover trended towards lower ratings by organizations focused on adopting a medication relative to those focused on adopting a psycho-social intervention ($t(151) = 1.68, p = .09$), although this difference was not statistically significant.

3.3. Perceived Impacts of Innovation Adoption

Finally, administrators of 93 SUD organizations that had adopted a new treatment innovation in the past year were asked about the impacts of that change. As seen in Table 3, the majority of administrators reported that the innovation had improved the center's reputation with referral sources, patients, and patients' families. Most administrators also reported positive impacts on treatment dropout and staff morale. With regard to costs, 78.3% ($n = 72$) of respondents reported that start-up costs had equaled their expectations; far fewer respondents reported start-up costs had exceeded expectations (10.9%; $n = 10$) or were less than expected (10.9%; $n = 10$). Similarly, a strong majority of respondents (79.8%; $n = 71$) indicated that ongoing costs associated with implementation were consistent with their expectations; just 10.1% ($n = 9$) reported costs greater than expected while 10.1% ($n = 9$) indicated ongoing costs were lower than expected.

4. Discussion

This study was novel in its consideration of the perspectives of leaders of SUD treatment organizations regarding the attributes of innovations that shaped decisions to adopt new treatment techniques. Leaders of organizations that had recently adopted a treatment innovation or were planning to adopt an innovation in the next year most strongly endorsed intangible attributes regarding the organization's philosophy and reputation with key stakeholders. The attribute ratings were largely similar in comparisons of recent adopters and those in the planning stage. Modest differences were detected depending on whether the innovation was a medication or psychosocial intervention.

Three overall findings provide some contrast with the conventional wisdom about barriers to the adoption and implementation of EBPs in SUD treatment organizations. First, these data indicate that the introduction of medications and psychosocial innovations seems to follow relatively similar dynamics rather than being dramatically different. Second, when examining the close correspondence between expectations and perceived impacts associated with EBP adoption, the data indicate that the apparent disruption was minimal, giving pause to the fears of organizational strain produced by innovation adoption among organizations that have not tried it. Notably, the importance ratings strongly endorsed the salience of having the innovation enhance the organization's reputation, and among recent adopters, the majority of leaders perceived that the innovation had been effective in that regard. Third, the comparison between adopters and anticipated adopters shows the latter having a significantly stronger emphasis on organizational "pay-offs" in terms of organizational growth, increased referrals, and greater revenues. It can be inferred that as implementation occurs, orientations shift away from these concrete and pragmatic goals to concerns about satisfaction among stakeholders and internal consistency in the organizations' treatment philosophies. Perhaps the aspirations of concrete pay-off become less important as other positive results are observed.

These findings align with the broader literature on innovation adoption, particularly with key tenets of diffusion theory and resource dependence theory. A key contribution of Rogers' diffusion theory (2003) was his emphasis on the notion of compatibility, or the fit between the innovation itself and the organizational context in which it is to be implemented. Klein and Sorra (1996) also emphasize the fit between innovation and the values within an organization. Our findings about the importance of alignment between innovations and treatment philosophy, which is inextricably linked with the organization's values, support this contention about compatibility made by Rogers and others. The findings regarding the high importance placed on the organization's reputation in the eyes of external stakeholders is consistent with resource dependence theory's proposition that organizational decision-making reflects attempts to manage relationships with the external environment (Pfeffer, 1987, Pfeffer, 1997).

The high degree of importance assigned to these attributes and lesser importance placed on other indicators of relative advantage was somewhat unexpected. In their review of the diffusion literature, Greenhalgh and colleagues (2004) contend that relative advantage, which they more narrowly define in terms of effectiveness and cost-effectiveness, as being essential features of an innovation. Our findings do not imply that administrators ignore clinical effectiveness or the financial implications of innovation, but these attributes were not rated as highly as the less tangible attributes of reputational benefits or consistency with their treatment philosophy.

A recent report to NIDA on adoption of EBPs recommended that intervention developers give some consideration to "adoption potential" earlier in the research process (National Advisory Council on Drug Abuse of the National Institute on Drug Abuse, 2012), and these findings are suggestive that there may be value in this approach. First, the strong salience of the compatibility between the innovation and the treatment center's philosophy suggests one direction for considering "adoption potential." An interesting finding from this research was

the heavy emphasis on cognitive-behavioral counseling in this sample of programs, such that it was nearly ubiquitous. There was somewhat lower emphasis on the 12-step model, which once thoroughly dominated the US treatment system (Roman, Johnson, & Blum, 2000), and now remains important but is not singular. It suggests a novel direction for dissemination research, meaning studies that seek to inform a targeted audience about a new EBP where similar innovations are already present. For example, a new EBP that includes elements of cognitive behavioral counseling might be most attractive to organizations that already have an emphasis on cognitive behavioral elements in their treatment practices, which would include a large proportion of the treatment centers in our sample.

The salience of treatment philosophy in influencing adoption decisions may also point to the need to consider integrating principles from implementation science into the intervention development process. Community-based participatory research (CBPR) has gained traction in recent years as a method for developing and then rigorously evaluating health-related interventions across a range of conditions (Minkler & Salvatore, 2012). Throughout the development process, stakeholders are engaged in an iterative process so that the resulting intervention is tailored to the needs of the community and is consistent with the values of the context in which it will eventually be implemented (Israel, Schulz, Parker, & Becker, 1998). CBPR is not simply asking for stakeholders' attitudes toward an already developed EBP; rather they are involved from the beginning (Wallerstein & Duran, 2010).

In the SUD treatment field, the efforts of NIDA's Clinical Trials Network (CTN) has certainly emphasized bidirectional communication between researchers and clinicians within that network (Tai, et al., 2010), but its focus on well-developed interventions for later-stage effectiveness trials brings clinical stakeholders to the research process much later than would be typical for CBPR. It may be worth considering the question: What would SUD interventions look like if treatment stakeholders, including administrators, counselors, patients, families, and individuals in recovery were engaged early in the development process and offered feedback throughout development? Such an approach does not preclude a research process that uses rigorous designs (e.g., NIDA's stage model; (Onken, Blaine, & Battjes, 1997; Rounsaville, Carroll, & Onken, 2001), and it may result in interventions that have a greater likelihood of being adopted and sustained.

In addition to considering the fit between treatment philosophy and new innovations in the development pipeline, treatment programs were highly attuned to how an innovation will be viewed by patients and their families. For intervention developers, this finding highlights the potential value in considering patients' perspectives regarding the acceptability of new treatment techniques. The randomized clinical trial is supposedly the gold standard for both development of EBPs and their specification to certain subpopulations, as has been demonstrated by NIDA's CTN. While their reported outcomes presently are almost exclusively clinical, there appears to be substantial opportunity for supplementing these data collections with additional patient-centered measures. Following completion of these trials, carefully designed investigation of patient and family experiences with the EBP could generate vital information about "consumer" reactions. Our current findings suggest that such data are likely to be vitally important for the providers who are pivotal in adoption and sustainment decisions.

There has been considerable discussion about the need for the broader system of medical care to be more patient-centered, with greater attention to patient preferences and values (Davis, Schoenbaum, & Audet, 2005; Institute of Medicine, 2001; Wise, Alexander, Green, Cohen, & Koster, 2011). Our findings are consistent with this theme. For SUD treatment organizations, patient satisfaction data may be a useful addition to clinical data regarding treatment effectiveness in promoting adoption. Furthermore, to the extent that treatment developers can engage families in research, such data on the acceptability of interventions from the perspectives of family members, who can play a critical role in supporting the recovery process, might also be persuasive for SUD organizations that are making decisions to change their treatment practices.

The comparison of innovation attributes between medication and psycho-social interventions revealed a high degree of similarity in ratings of attributes with two exceptions. There was a difference with regard to the innovation's impact on staff morale, with medication-focused organizations rating this attribute less strongly. To some extent, this difference may reflect how psycho-social interventions may impact a sizable portion of the center's staff, given that adopting this intervention requires counselors to gain knowledge about the EBP and then change how they perform their jobs. In contrast, medication adoption directly impacts medical staff, but may not require counselors to make large-scale changes to how they counsel patients beyond attention to medication adherence issues. The second difference was regarding ongoing costs of implementation, which was rated as less important by medication-focused organizations. Cost is a commonly endorsed barrier to adopting medications (Knudsen, Abraham, & Oser, 2011). It may be that SUD organizations that have identified medications as a viable option have either more munificent resources or have already identified methods for overcoming cost barriers. For example, programs that already employ physicians or programs that already bill private insurance or Medicaid (in states where medications are on the formulary) may be less likely to see ongoing cost as a salient barrier.

4.1. Limitations and Future Directions

There are a number of limitations that should be acknowledged. First, these cross-sectional data cannot be used to infer causality about the relationships between innovation attributes and adoption. Second, the response rate was somewhat lower than in some of our prior work; because this is a newly constructed sample, we were unable to compare participating and non-participating centers on organizational characteristics. While the sample is national in scope, there are a number of types of facilities were ineligible, so these findings may not generalize to opioid treatment programs, correctional facilities, SUD programs in the VA system, or counselors in private practice. The emphasis on recent or planned adoption reduced the size of the sample, which reduced statistical power to detect differences between these two groups. An additional limitation was that organizations with recent adoption were not also asked if they were planning to adopt an additional innovation in the upcoming year, which meant we could not examine if importance ratings were similar for organizations that had both recent and planned adoption. All data were self-reported by a single respondent, which may not reflect the opinions of all organizational stakeholders who may influence adoption decisions. Although the measures of innovation attributes were influenced by

Rogers' theory, there may be other critical attributes that were not measured but could be added to future studies.

There are a number of directions for future research. One important direction is to apply these measures to other contexts of SUD treatment to examine whether there are differences across contexts. Future research should consider the perceptions of other stakeholders, such as counselors as well as members of administrative boards that may influence the direction of the organization. Currently, it is unknown whether other stakeholders view innovation attributes similarly to program leaders, and whether discordant views among organizational stakeholders represent a barrier to implementation. Finally, future research should consider whether the perceived attributes of innovations are associated with how extensively they are implemented within the organization as well as the odds that the adopted innovation is sustained over time.

4.2. Conclusions

Expanding the reach of evidence-based treatment practices has been challenging in the field of SUD treatment. These findings from a large national sample of treatment organizations suggest that future dissemination and implementation efforts may benefit from considering whether EBPs share similarities with dominant treatment philosophies and by emphasizing both clinical effectiveness and the acceptability of such EBPs for patients and referral sources. It remains an important empirical question whether using such dissemination strategies can promote EBP adoption, but our findings suggest that may be a fruitful direction for future implementation research.

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Highlights for Review

- We interviewed 307 leaders of addiction treatment organizations about recent or planned adoption of new treatment techniques.
- About 30.7% of organizations reported recent adoption, 20.5% indicated planned adoption, and 48.8% were non-adopters.
- Innovation attributes most strongly endorsed were consistency with the program's treatment philosophy, improvement in the program's reputation with referral sources, clients, and families, and reductions in treatment dropout.
- Attention to these attributes when developing and evaluating SUD treatment interventions may enhance efforts to increase subsequent adoption.

Table 1
Organizational characteristics of treatment organizations by innovation adoption typology

	Typology of Innovation Adoption			Available N
	Actual Adoption% (N) or Mean(SD)	Planned Adoption% (N) or Mean(SD)	No Adoption% (N) or Mean (SD)	
<i>Organizational Structure</i>				
Government-Owned	6.5% (6)	12.9% (8)	9.5% (14)	303
Organizational Type**				303
Hospital	16.1% (15)	16.1% (10)	7.4% (11)	
For-Profit Freestanding	11.8% (11)	9.7% (6)	29.1% (43)	
Non-Profit Freestanding	72.0% (67)	74.2% (46)	63.5% (94)	
Center has satellites**	69.9% (65)	62.9% (39)	50.3% (73)	300
Center is member of provider association	50.5% (47)	54.1% (33)	46.6% (68)	300
Center is accredited	43.0% (40)	40.3% (25)	35.1% (52)	303
<i>Treatment Services and Philosophy</i>				
Levels of Care				301
Only outpatient (OP)	59.1% (55)	54.1% (33)	66.0% (97)	
OP and inpatient/ residential (I/R)	24.7% (23)	24.6% (15)	22.5% (33)	
Only I/R	16.1% (15)	21.3% (13)	11.6% (17)	
Emphasis on 12-step model	3.43 (1.52)	2.87 (1.68)	3.21 (1.76)	302
Emphasis on cognitive-behavioral counseling	4.20 (0.95)	4.42 (1.05)	4.29 (0.92)	299
Emphasis on medical/ psychiatric model of addiction	2.73 (1.68)	2.83 (1.75)	2.42 (1.76)	299
Emphasis on spiritual counseling	2.44 (1.60)	2.48 (1.64)	2.26 (1.63)	299
<i>Staffing</i>				
Number of counselors	18.05 (91.46)	10.31 (14.22)	9.32 (15.48)	300
% counselors with Master's degree	47.28 (34.28)	49.19 (35.06)	43.19 (35.59)	288
Physician Access*				301
>1 MD on payroll	32.3% (30)	41.0% (25)	20.4% (30)	
>1 MD On contract	29.0% (27)	34.4% (21)	34.0% (50)	
No access	38.7% (36)	24.6% (15)	45.6% (67)	

Notes: Innovation typology data was available for 303 organizations. Sample sizes for these analyses ranged from 288 to 303. Significant differences by innovation typology

* $p < .05$

** $p < .01$ (two-tailed tests). The four measures of treatment philosophy range from 0 = no extent to 5 = very great extent.

Table 2
Perceived importance of innovation attributes in adoption decisions in the sub-sample of organizations with recent or planned adoption (n = 155)

	Combined Sample Mean (SD)	Timing of Adoption		Type of Innovation	
		Recent Adoption Mean (SD)	Planned Adoption Mean (SD)	Medication Mean (SD)	Psychosocial Intervention Mean (SD)
Attract more clients to treatment at this facility	2.71 (1.96)	2.45 (1.96)*	3.10 (1.91)	2.93 (1.83)	2.63 (2.00)
Increase the treatment capacity of this center	2.52 (2.05)	2.21 (2.02)*	2.98 (2.02)	2.73 (1.87)	2.45 (2.11)
Increase the average length of stay in treatment	2.42 (1.97)	2.39 (2.05)	2.47 (1.85)	2.30 (1.80)	2.51 (2.02)
Reduce treatment drop-out rates	3.75 (1.54)	3.75 (1.59)	3.76 (1.47)	3.80 (1.51)	3.76 (1.53)
Improve staff morale	3.01 (1.72)	2.96 (1.73)	3.10 (1.72)	2.51 (1.75)*	3.16 (1.69)
Reduce staff turnover	2.16 (1.87)	2.04 (1.88)	2.34 (1.86)	1.75 (1.84)#	2.33 (1.88)
Low start-up costs	2.80 (1.92)	2.65 (1.98)	3.03 (1.83)	2.53 (1.95)	2.94 (1.90)
Low on-going costs	2.97 (1.92)	2.85 (2.01)	3.15 (1.78)	2.40 (1.79)*	3.19 (1.92)
Increase revenues received by this center from its funding sources	2.55 (1.98)	2.30 (1.98)#	2.92 (1.94)	2.75 (1.77)	2.43 (2.05)
Improve the reputation of this center among its referral sources in the community	4.00 (1.33)	3.87 (1.36)	4.19 (1.27)	4.10 (1.45)	3.95 (1.29)
Improve this center's reputation among clients and their families in the community	3.98 (1.31)	3.90 (1.37)	4.10 (1.21)	4.20 (1.29)	3.89 (1.32)
Consistent with this center's treatment philosophy	4.47 (1.03)	4.51 (1.00)	4.42 (1.08)	4.45 (1.08)	4.53 (0.92)
Would not require major changes to how the center operates	3.31 (1.75)	3.45 (1.70)	3.10 (1.82)	3.03 (1.67)	3.43 (1.76)
Easy to train staff to implement this intervention	3.46 (1.63)	3.44 (1.62)	3.48 (1.66)	3.13 (1.57)	3.59 (1.62)

Notes: Sub-sample consists of 155 organizations, but cell sizes vary based on missing data on the specific perceived importance measures. For the comparisons between recent and planned adopters, complete data were available from 154 to 155 organizations. Complete data were available from 152 to 153 organizations for the comparisons between those focused on medications versus psychosocial interventions. Differences between two groups,

$p < .10$,

* $p < .05$ (two-tailed).

Table 3
Perceived impact of innovation among past-year adopters

<i>“Based on the center’s experience so far, has adopting this [medication/intervention] been effective in achieving the following:”</i>	% Yes (N)	Available N
Attracting more clients to treatment at this facility	40.5% (36)	89
Increasing treatment capacity	33.3% (29)	87
Increasing the average length of stay	56.2% (50)	89
Reducing drop-out rates	72.2% (65)	90
Improving staff morale	73.3% (66)	90
Reducing staff turnover	30.0% (27)	90
Increasing revenues received by this center from its funding sources	27.8% (25)	90
Improving the reputation of this center among its referral sources in the community	82.4% (75)	91
Improving this center’s reputation among clients and their families in the community	82.4% (75)	91

Notes: Sub-sample of past-year adopters consists of 93 organizations, but cell sizes vary based on missing data on individual measures.