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Organizational Factors as Predictors of Tobacco Cessation Pharmacotherapy Adoption in Addiction Treatment Programs

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Abstract

Objectives—This study investigated three organizational factors (i.e., counseling staff clinical skills, absence of treatment program obstacles, policy-related incentives) as predictors of tobacco cessation pharmacotherapy (TCP) adoption (comprised of the nine available TCP) in addiction treatment programs using the innovation implementation effectiveness framework.

Methods—Data were obtained in 2010 from a random sample of 1006 addiction treatment program administrators located across the U.S. using structured telephone interviews.

Results—According to program administrator reports, TCP is adopted in approximately 30% of treatment programs. Negative binomial regression results show that fewer treatment program obstacles and more policy-related incentives are related to greater adoption of TCP. Counter to prediction, clinical skills are unrelated to TCP adoption.

Conclusions—Our findings suggest that organizational factors, based on established theoretical frameworks, merit further examination as facilitators of the adoption of diverse TCP in addiction treatment programs.

Keywords

tobacco cessation; smoking treatment; pharmacotherapy; co-occurring disorders; substance abuse

Introduction

Rates of tobacco use among individuals seeking addiction treatment are high, ranging from 65% to 87% (for a review of the literature, see Guydish et al. 2011). Individuals suffering from addictions start tobacco use earlier, are heavier tobacco users, and experience more difficulties with tobacco cessation than other adults (Breslau et al. 1996; Hays et al. 1999; Richter et al. 2002). Furthermore, individuals with addictions are more likely to die from

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tobacco-related diseases than from other addiction-related diseases (Hurt et al. 1996). In an effort to promote tobacco cessation in various health care settings including addiction treatment, the Public Health Service (PHS) issued guidelines for using a variety of evidence-based practices (EBPs) including counseling and tobacco cessation pharmacotherapy (TCP) (Fiore et al. 2008), the latter being the focus of the current study.

Despite tobacco cessation promotions, few addiction treatment programs offer TCP (Fuller et al. 2007; Friedmann, Jiang, and Richter 2008; Rothrauff and Eby 2010) although 44% to 80% of patients express an interest in tobacco cessation during addiction treatment (Ellingstad et al. 1999; Clarke et al. 2001; Rohsindow et al. 2003). In addition, findings indicate that when integrated into other addiction treatment, tobacco cessation has no unfavorable effects on treatment outcomes. In fact, it is associated with a lowered risk of alcohol and drug relapse, greater abstinence from alcohol and other drugs, and decreased alcohol consumption (for a review of the literature, see Kalman et al. 2010). Thus, it is recommended that tobacco cessation be integrated into addiction treatment (Fiore et al. 2008). As such, it is important to identify factors that hinder or promote the adoption of tobacco cessation services.

This study aims to contribute to the addiction treatment literature on TCP adoption in a number of areas. Existing research on TCP adoption is often limited by the selection of study variables that are not explicitly tied to any theoretical frameworks (e.g., Friedmann et al. 2008; Rothrauff and Eby 2010; Knudsen and Studts 2011), the inclusion of a limited number of TCPs (e.g., Knudsen and Studts 2011; Hunt et al. 2012;), and non-random samples (e.g., Rothrauff and Eby 2010; Knudsen and Studts 2011; Hunt et al. 2012). To overcome these limitations, we adopt Klein and Sorra's (1996) innovation implementation effectiveness framework to examine three organizational factors (i.e., counseling staff clinical skills, absence of program obstacles, policy-related incentives) as predictors of TCP adoption (composed of the currently nine available TCP) in a large random sample of addiction treatment programs.

Theoretical Framework for Examining Organizational Factors as Predictors of TCP Adoption

We draw on key elements of Klein and Sorra's (1996) theoretical framework of innovation implementation effectiveness to investigate organizational factors as predictors of TCP adoption in addiction treatment programs. This model is well established in the organizational science literature and has been used to understand the adoption and implementation of a wide range of phenomena (e.g., Dong et al. 2008; Choi and Chang 2009; Mohaghegh and Mosleh 2009; Schoenwald et al. 2009; Nembhard et al. 2009; Weiner et al. 2009). The framework suggests that the strength of an organization's climate for innovation is one of the main factors that influences the extent to which an innovation is first adopted, then implemented, and eventually sustained over time.

Climate for innovations consists of three indicators including employee skills related to the innovation (e.g., clinician education, licensure, certification), absence of organizational obstacles for innovation adoption (e.g., profit status, hospital-based status, level of care), and policy-related incentives that support the adoption of the innovation (e.g., tobacco-free

environment, reimbursement for tobacco cessation services). We take a unique approach in the current study by using formative measurement to create three aggregate organizational factors, each of which is comprised of numerous theoretically relevant individual measures that cause or lead to the resultant factor (MacCallum and Brown 1993; Diamantopoulus and Winklhofer 2001). This approach provides a more comprehensive view and discussion of each organizational factor that may predict the adoption of TCP.

While previous addiction studies have generally not used formative measurement to create the three organizational factors, there is support for a relationship between individual measures and the adoption of EBPs. For example, counseling staff clinical skills such as higher level of education, greater tenure in the addiction field, and more training have been shown to be associated with greater adoption of pharmacotherapy (not specific to TCP) (e.g., Knudsen et al. 2005; Rieckmann et al. 2011). Moreover, although counseling staff are not allowed to prescribe pharmacotherapy, they are the front-line people who are in direct contact with patients, educate them about available EBPs (including TCP), and develop patient treatment plans (Powell and Brodsky 2004). As such, it seems likely that clinical skills may predict TCP adoption.

H1: Addiction treatment programs with greater clinical skills have greater TCP adoption than programs with lower clinical skills.

Consistent with Klein and Sorra's (1996) theoretical model, several studies have also identified various predictors of TCP adoption that represent the absence of program obstacles. These include hospital affiliation and hospital-based treatment (e.g., Friedmann et al. 2008; Knudsen and Studts 2011), availability of mental health services (e.g., Friedmann et al. 2008), non-profit status (e.g., Richter et al. 2004; Friedmann et al. 2008), offering non-outpatient care (e.g., Knudsen and Studts 2011), and prevalence of smoking among clinicians (Ziedonis et al. 2006; Guydish et al. 2007). In the absence of program obstacles there may be greater awareness of healthy behaviors, tobacco-free environments, and access to prescription pharmacotherapy. This may increase the necessity for, and availability of, TCPs.

H2: Addiction treatment programs with a greater absence of program obstacles have greater TCP adoption than programs with a lower absence of program obstacles.

Klein and Sorra (1996) also discuss the importance of policy-related incentives in the adoption of innovations. In addiction treatment an arguably important incentive is reimbursement for the provision of tobacco cessation-related services. Treatment providers often have limited financial resources and tobacco cessation is frequently not a stand-alone billable service (Ziedonis et al. 2006). Thus, the ability to bill for tobacco cessation services is likely a facilitator of TCP adoption, particularly in the present situation of cost-containment and health care reform (Morgenstern et al. 2001).

H3: Addiction treatment programs with greater policy-related incentives have greater TCP adoption than programs with lower policy-related incentives.

TCP and TCP Adoption in Addiction Treatment Programs

Considering the serious and often long-lasting public health consequences as a result of tobacco use, a number of TCP have been developed and recommended for patients with addictions (Fiore et al. 2008). The PHS identified seven U.S. Food and Drug Administration (FDA) approved first-line TCP for improved long-term abstinence from tobacco products including five types of nicotine replacement therapy (NRT) (gum, inhaler, lozenge, nasal spray, patch), bupropion, and varenicline. Additionally, there are two second-line TCP available—clonidine and nortriptyline—that are efficacious for tobacco cessation treatment, particularly for patients who cannot use first-line TCP (Fiore et al. 2008).

Compared to placebo, each of the seven front-line TCP are associated with an approximately twofold increase in the likelihood of successful tobacco cessation (Fiore et al. 2008). However, because each pharmacotherapy has some unique contraindications, precautions, and side-effects, there is no single best pharmacotherapy for tobacco cessation treatment. Therefore, addiction treatment programs should make available as many TCP as possible to meet patient needs and preferences (Brigham, Schroeder and Schindler 2007; Fiore et al. 2008).

Previous studies on the availability of TCP in addiction treatment programs found low adoption, which is similar to findings in other mental health treatment settings (e.g., Ratschen et al. 2009). However, there are several limitations associated with existing research in addiction treatment contexts. Based on data from only eight purposively sampled treatment programs in the Midwest, Hunt and colleagues (2012) illustrated that only one treatment program offered NRT (defined as patch and gum; no other TCP were investigated). Knudsen and Studts (2011), using a large but also non-random sample of treatment program administrators and a four-year longitudinal design, discovered that 38% of addiction treatment programs offered NRT (defined as patch and gum) at the beginning of the study. However, only 34% of programs continued to offer NRT at the end of the study. No other types of TCP were examined.

In outpatient-only treatment programs, Friedmann et al. (2008) examined a greater range of TCP including NRT (defined as “patch, gum, etc.”) and “bupropion or other antidepressant therapy” (not further defined). They found that only 16% of the 85 programs surveyed adopted TCP, of which 25 offered “bupropion or other antidepressant therapy,” 27 offered NRT only, and 28 offered both “bupropion or other antidepressant therapy” and NRT. Further, Rothrauff and Eby (2010) examined all nine available TCP using a large national but non-random sample of counselors regarding their knowledge of the availability of TCP in their treatment programs. They found that 27% reported the availability of NRT (patch, gum, lozenge, nasal spray, and inhaler), 16% thought that varenicline was available, and 11% believed that their program offered bupropion.

METHODS

Study Design

Data for the current study were obtained from the first year of the Managing Effective Relationships in Treatment Services (MERITS III) project, which was conducted by

researchers affiliated with [author anonymity]. MERITS III is a longitudinal project started in 2010 and funded by the National Institute for Drug Abuse (NIDA) for the purpose of examining the impact that treatment program processes and management practices have on the adoption, implementation, and sustainability of tobacco cessation services in addiction treatment programs. All procedures were approved by [author anonymity] Institutional Review Board.

Addiction treatment programs listed in the Substance Abuse and Mental Health Services Administration (SAMHSA) directory in 2010 provided the sampling frame for the study. The SAMHSA directory includes programs that cover the full spectrum of addiction treatment, ranging from outpatient-only to long-term residential care. Eligible treatment programs had to provide addiction counseling services in a community-based setting. Prison-based programs, Veteran's Health Administration programs, military-based programs, driving-under-the-influence educational programs, and those offering only detoxification services were excluded.

Data for this study were collected in 2010 from 1006 addiction treatment programs across the U.S. Structured telephone interviews were conducted by trained research assistants who contacted each program administrator, most of whom held the job title of Director (64.31%), Manager or Supervisor (15.41%), and Owner/President/VP/CEO (8.35%). The interview took approximately 30 minutes to complete. Treatment programs received \$150 for each completed interview. Of the 1,599 eligible treatment programs that we were able to contact, 1,006 program administrators completed a survey, resulting in a basic response rate of 62.91% (for information on the calculation of basic response rates in phone surveys, please see Gripp, Luloff, and Yonkers 1994).

Sample

Program administrator reports indicated that 61.51% worked in a non-hospital-based outpatient program, 27.15% in a non-hospital-based residential/inpatient/detox program, 5.27% in a methadone maintenance/opioid program, 3.44% in a hospital-based outpatient program, and 2.63% in a hospital-based residential/inpatient/detox program. Furthermore, 57.93% of programs offered outpatient-only treatment, 20.74% residential-only treatment, and 21.34% both outpatient and residential treatment. Almost half of the programs were accredited (48.2%). Programs employed a mean of 2.29 ($SD = 3.17$) clinical supervisors and 9.27 ($SD = 12.93$) counselors. An average of 70.47% ($SD = 20.93$) of patients in their program smoked.

Measures

TCP adoption—Program administrators answered questions about the availability of nine TCP at their treatment program that are recommended by the PHS—nicotine patch, gum, lozenge, nasal spray, and inhaler as well as bupropion, varenicline, clonidine, and nortriptylene (Fiore et al. 2008). Response options were 0 = *no* and 1 = *yes*. The TCP adoption measure was created by summing the number of *yes* responses to the nine questions.

Organizational factors—Counseling staff clinical skills, absence of treatment program obstacles, and policy-related incentives are conceptualized as formative measures, which are comprised of numerous theoretically relevant individual measures that cause or lead to the resultant composite organizational factor (MacCallum and Brown 1993; Diamantopoulus and Winklhofer 2001). Formative measurement assumes that if any one of these measures increases, the resultant factor increases. With formative measurement there is no assumption of homogeneity of item content across individual measures that comprise the resultant factor and no assumption that individual measures “hang together” in a factor analysis, are correlated, or demonstrate internal consistency (Bollen 1984; Bollen and Lennox 1991; MacKenzie et al. 2005). Thus, although Cronbach's alphas and correlation ranges among the individual measures are reported for the formative measures, there is no expectation of internal consistency or correlation among individual measures (Bollen and Lennox 1991). Rather, each individual measure is viewed as contributing to the aggregate organizational factor. Each formative measure was selected prior to data collection with the intent of creating organizational factors.

The formative measure of *clinical skills* was assessed with five items. This included program administrator reports of the percentage of counseling staff in their program that are currently (1) licensed, (2) certified, (3) holding at least a bachelor's degree, (4) holding a master's degree or higher, and (5) the percentage of their total workforce (e.g., counselors, clinical supervisors, admissions personnel, nurses, social workers, psychologists) that has an educational background in medicine, public health, psychology, or a related field. Responses to each item ranged from 0% to 100%. The measure was created by calculating the mean across these five items ($\alpha = .55$; correlations ranged from .04 to .65).

The formative measure of *absence of treatment program obstacles* was measured with seven items. Program administrators reported whether their program (1) was affiliated with a hospital or other medical facility, (2) was hospital-based, (3) offered mental health care services, (4) provided medical services, (5) operated as a non-profit entity, (6) offered non-outpatient level of care, and (7) the percentage of clinicians who smoke. Response options for the first 6 items were 0 = *no* and 1 = *yes*. Response options for the last item ranged from 0% to 100%. The absence of treatment program obstacles measure was created in three steps because of the differences in response options between the first six items and the last item. First, the number of *yes* responses to the first six items were summed and then standardized. Second, the percentage of clinicians who smoke was reverse scored and then standardized. Third, both sub-measures were summed to create the absence of treatment program obstacles measure ($\alpha = .75$; correlations ranged from .01 to .55).

The formative measure of *policy-related incentives* were assessed with 10 items. Program administrators answered four questions regarding the extent to which tobacco cessation services were reimbursable in their program (Likert-type responses ranged from 1 = *not at all* to 4 = *a great extent*) including (1) counselor time spent providing individually-based tobacco cessation services, (2) counselor time spent providing group-based tobacco cessation treatment, (3) pharmacological interventions for tobacco cessation (e.g., bupropion, nicotine patch), (4) and other financial resources exist within their treatment program to support tobacco cessation (e.g., availability of training opportunities for staff on

tobacco cessation treatment). Program administrators also answered six questions pertaining to smoking policies in their treatment programs (responses were 0 = *false* and 1 = *true*) and included no smoking is allowed indoors for (5) patients, (6) staff, and (7) visitors, and no smoking is allowed outdoors for (8) patients, (9) staff, and (10) visitors. The policy-related incentives measure was created in three steps because of the differences in response options between the first four and the remaining six questions. First, the sub-measure with the first four questions was created by calculating the mean across the four items. Then the sub-measure was standardized. Second, the sub-measure with the six questions was created by summing the number of *true* responses. Then the sub-measure was standardized. Third, both sub-measures were summed to create the policy-related incentives measure ($\alpha = .50$; correlations ranged from .00 to .87).

Control variable—We controlled for the percentage of patients seeking addiction treatment in their program who smoke, because previous research has shown a positive association between the percentage of patients who smoke and availability of TCP (Friedmann et al. 2008). Responses ranged from 0% to 100%.

Data Analyses

Descriptive statistics were computed to examine the TCP adoption (see Table 1). Correlations among study variables appear in Table 2. Examination of Table 2 and additional statistical tests did not indicate any concerns regarding multicollinearity. Negative binomial regression was used to address the study hypotheses (see Table 3).

Results

TCP Adoption

As indicated in Table 1, the average number of TCP adopted is .99 ($SD = 1.93$). More specifically, 70.42% of treatment programs do not offer any TCP; 6%-7% adopted 1-3 TCP; 3%-4% adopted 4-5 TCP; and around 1% or less of treatment programs offered 6-9 different TCP. The most commonly adopted TCP is the nicotine patch, which is offered in approximately 1 out of 4 treatment programs (24.23%). Other TCP that are adopted by at least 10% of treatment programs include nicotine gum (17.56%), bupropion (16.40%), varenicline (12.55%), and nicotine lozenge (10.55%). The TCP adopted by even fewer treatment programs are clonidine (6.77%), nortriptyline (5.11%), nicotine inhaler (3.71%), and nicotine nasal spray (2.92%).

Correlations among Study Variables

Table 2 shows that TCP adoption is significantly positively related with clinical skills, absence of treatment program obstacles, and policy-related incentives. Additionally, significant positive relationships exist between clinical skills and both absence of treatment program obstacles and policy-related incentives as well as between policy-related incentives and absence of treatment program obstacles. The control variable, percentage of patients who smoke, is significantly negatively related with clinical skills and absence of treatment program obstacles.

Organizational Factors as Predictors of TCP Adoption

Results in Table 3 indicate that Hypothesis 1 is not supported—addiction treatment programs with greater clinical skills do not have greater TCP adoption than programs with lower clinical skills. In contrast, Hypothesis 2 and Hypothesis 3 are supported. Addiction treatment programs with a greater absence of treatment program obstacles and greater policy-related incentives have greater TCP adoption than programs with a lower absence of treatment program obstacles and programs with lower policy-related incentives. The control variable is not significantly related with the adoption of TCP.

Discussion

The current study adds to the addiction literature in several ways. Unlike previous research, this study used a large random sample of addiction treatment programs located across the U.S. to examine three organizational factors (counseling staff clinical skills, absence of treatment program obstacles, policy-related incentives) as predictors of TCP adoption (including all nine available TCP). The three predictors were selected based on key elements from Klein and Sorra's (1996) innovation implementation effectiveness framework. Findings show certain organizational factors are significantly related to TCP adoption, although TCP adoption is generally low.

Organizational Factors as Predictors of TCP Adoption

Findings from our study provide support that new ways of creating organizational factors based on theoretical frameworks outside of addiction treatment are useful for examining their relationship to TCP adoption. Treatment programs with fewer treatment program obstacles and greater policy-related incentives report greater TCP adoption. These findings are consistent with prior addiction research based on non-random samples that has examined adoption of TCP and individual measures related to the absence of treatment program obstacles (e.g., Richter et al. 2004; Friedmann et al. 2008; Rothrauff and Eby 2010; Knudsen and Studts 2011) and a review of the literature that discussed barriers related to the reimbursement (policy-related incentives) of tobacco cessation treatment (Ziedonis et al. 2006).

However, despite theoretical support (Klein and Sorra 1996) and prior empirical findings on individual characteristics (e.g., Knudsen et al. 2005; Rieckmann et al. 2011), we did not find that greater clinical skills are related to greater TCP adoption. One explanation for the lack of support for clinical skills may be that we did not ask specifically about clinical skills related to tobacco dependence. As such, rather than abandon this line of research completely, future research should examine more specific clinical skills such as training received on TCP, knowledge of the risks associated with tobacco use, knowledge of tobacco cessation modalities and effectiveness, and knowledge of tobacco pharmacology.

Low TCP Adoption

Although this is the first study to examine the adoption of the full range of recommended TCP for the treatment of tobacco dependence (Fiore et al. 2008) using a random sample of addiction treatment program administrators, we find similarly low TCP adoption compared

to prior studies (e.g., Friedmann et al. 2008; Rothrauff and Eby, 2010; Knudsen and Studts, 2011; Hunt et al. 2012). TCP adoption of any kind is not extensive in our study, occurring in only one third of addiction treatment programs. The TCP most popular, yet adopted in less than one quarter of programs, are the nicotine patch, nicotine gum, and bupropion. These three “preferred” TCP coincide with the generally limited TCP examined in previous studies using non-random samples that also found low availability of NRT (e.g., Knudsen and Studts 2011; Hunt et al. 2012) and low availability of bupropion (e.g., Friedmann et al. 2008; Rothrauff and Eby 2010).

Our findings further highlight the research to practice gap in the addiction treatment field (e.g., Hansen, Leshner, and Tai 2002; Roman et al. 2010) considering that of the nine recommended TCP, an average of one TCP is made available in addiction treatment programs across the country. The low adoption raises the concern that patients may not have adequate access to TCP that are approved by the FDA, recommended as treatment options for better tobacco cessation outcomes, and most appropriate for or preferred by patients (e.g., Brigham et al. 2007; Fiore et al. 2008). This is an overlooked chance within the addiction treatment field because patients are interested in quitting smoking (Ellingstad et al. 1999; Clarke et al. 2001; Rohsindow et al. 2003), and tobacco cessation treatment is associated with better overall addiction treatment outcomes (Fiore et al. 2008; Baca and Yahne 2009; Kalman et al. 2010).

Conclusions

Additional research is needed to provide more answers to why there is a lack of TCP adoption in addiction treatment programs. For example, qualitative studies, open-ended survey questions, and follow-up prompts will allow program administrators and other staff to elaborate on their TCP adoption experiences, decision-making, and provide different insights into the TCP adoption process. Future research should also pay special attention to explicitly drawing on theoretical frameworks to support the selection of study variables to predict TCP adoption. Theories can come from the addiction treatment field as well as other disciplines such as mental health, nursing, business, administration, organizational psychology, or sociology. Testing different theoretical frameworks will provide new perspectives on factors that explain the (lack of) adoption of TCP. Findings can then be used to better understand barriers and facilitators of TCP adoption and develop interventions to improve the adoption of TCP.

One limitation of our study was the cross-sectional design that allows us to examine organizational factors as predictors of TCP adoption at one point in time. This design does not allow us to make inferences about causal relationships among variables (e.g., policy-related incentives *affect* or *influence* TCP adoption) or changes in the TCP adoption over time (e.g., treatment programs with a greater absence of obstacles *increase* their TCP adoption over time). Longitudinal data are needed to investigate the changes and predictors of changes in TCP adoption. This is especially important because some studies found longitudinal changes in the adoption, implementation, and sustainability of TCP (e.g., Knudsen and Studts 2011).

A further limitation is the selection of the variables regarding the clinical skills measure. As discussed above, it is possible that the non-significant relationship between TCP adoption and clinical skills is a function of the more general measures that were used to create the formative counseling staff clinical skills measure. In addition to evaluating more diverse clinical skills, future research should examine whether tobacco status at admission and subsequent treatment planning are related to the adoption of TCP. These variables could not be considered in our study and are also acknowledged as limitations.

Another limitation is the use of structured telephone interviews with addiction treatment program administrators. As such, we are able to answer our specific hypotheses about TCP adoption in relationship to organizational factors. However, we are unable to answer other questions that arise from the current findings such as treatment programs' preferences for one TCP over another TCP and reasons for low TCP adoption. Answers to these questions are of utmost importance to the addiction treatment field considering the high prevalence of smoking among patients in treatment (Guydish et al. 2011), the known health consequences associated with tobacco use (U.S. Department of Health and Human Services [USDHHS], 2004), and the benefits of providing tobacco cessation alongside other addiction treatment (Kalman et al. 2010).

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References

- Bollen KA. Multiple indicators: internal consistency or no necessary relationship? *Qual Quantity*. 1984; 18:377–385.
- Bollen KA, Lennox R. Conventional wisdom on measurement: A structural equation perspective. *Psychol Bull*. 1991; 110:305–314.
- Breslau N, Peterson E, Schultz L, et al. Are smokers with alcohol disorders less likely to quit? *Am J Public Health*. 1996; 86:985–990. [PubMed: 8669523]
- Brigham GS, Schroeder G, Schindler E. Addressing smoking in community drug abuse treatment programs: practical and policy considerations. *J Psychoactive Drugs*. 2007; 39:435–441. [PubMed: 18303700]
- Choi JN, Chang JY. Innovation implementation in the public sector: an integration of institutional and collective dynamics. *J Appl Psychol*. 2009; 94:245–253. [PubMed: 19186909]
- Clarke JG, Stein MD, McGarry KA, et al. Interest in smoking cessation among injection drug users. *Am J Addict*. 2001; 10:159–166. [PubMed: 11444157]
- Diamantopoulos A, Winklhofer HM. Index construction with formative indicators: An alternative to scale development. *J Mark Res*. 2001; 38:296–277.
- Dong L, Neufeld DJ, Higgins C. Testing Klein and Sorra's innovation implementation model: an empirical examination. *J Eng Technol Manage*. 2008; 25:237–255.
- Ellingstad TP, Sobell LC, Sobell MB, et al. Alcohol abusers who want to quit smoking: implications for clinical treatment. *Drug Alcohol Depend*. 1999; 54:259–264. [PubMed: 10372799]
- Fiore, MC., et al. Treating Tobacco Use and Dependence: 2008 Update. 2008. Available at http://www.surgeongeneral.gov/tobacco/treating_tobacco_use08.pdf. Accessed April 20, 2013

- Friedmann PD, Jiang L, Richter KP. Cigarette smoking cessation services in outpatient substance abuse treatment programs in the United States. *J Subst Abuse Treat.* 2008; 34:165–172. [PubMed: 17509809]
- Fuller BE, Guydish J, Tsoh J, et al. Attitudes toward the integration of smoking cessation treatment into drug abuse clinics. *J Subst Abuse Treat.* 2007; 32:53–60. [PubMed: 17175398]
- Gripp SI, Luloff AE, Yonkers RD. Reporting response rates for telephone surveys used in agricultural economics research. *Agricultural Res Econ Rev.* 1994; 23:200–206.
- Guydish J, Passalacqua E, Tajima B, et al. Smoking prevalence in addiction treatment: a review. *Nicotine Tob Res.* 2011; 13:401–411. [PubMed: 21464202]
- Guydish J, Passalacqua E, Tajima B, et al. Staff smoking and other barriers to nicotine dependence intervention in addiction treatment settings: a review. *J Psychoactive Drugs.* 2007; 39:423–433. [PubMed: 18303699]
- Hansen GR, Leshner AI, Tai B. Putting drug abuse research to use in real-life settings. *J Subst Abuse Treat.* 2002; 23:69–70. [PubMed: 12220602]
- Hays JT, Schroeder DR, Offord KP, et al. Response to nicotine dependence treatment in smokers with current and past alcohol problems. *Ann Behav Med.* 1999; 21:244–250. [PubMed: 10626032]
- Hunt JJ, Cupertino AP, Garrett S, et al. How is tobacco treatment provided during drug treatment? *J Subst Abuse Treat.* 2012; 42:4–15. [PubMed: 21831563]
- Hurt RD, Offord KP, Croghan IT, et al. Mortality following inpatient addictions treatment: Role of tobacco use in a community-based cohort. *JAMA.* 1996; 275:1097–1103. [PubMed: 8601929]
- Kalman D, Kim S, DiGirolamo G, et al. Addressing tobacco use disorder in smokers in early remission from alcohol dependence: the case for integrating smoking cessation services in substance use disorder treatment programs. *Clin Psychol Rev.* 30:12–24. [PubMed: 19748166]
- Klein KJ, Sorra JS. The challenge of innovation implementation. *Acad Manag Rev.* 1996; 21:1055–1080.
- Knudsen HK, Ducharme LJ, Roman PM, et al. Buprenorphine diffusion: the attitudes of substance abuse treatment counselors. *J Subst Abuse Treat.* 2005; 29:95–106. [PubMed: 16135338]
- Knudsen HK, Studts JL. Availability of nicotine replacement therapy in substance use disorder treatment: longitudinal patterns of adoption, sustainability, and discontinuation. *Drug Alcohol Depend.* 2011; 118:244–250. [PubMed: 21531090]
- MacCallum RC, Brown MW. The use of causal modeling in covariance structure models: Some practical issues. *Psychol Bull.* 1993; 114:533–551. [PubMed: 8272469]
- MacKenzie SB, Podsakoff PM, Jarvis CB. The problem of measurement model misspecification in behavioral and organizational research and some recommended solution. *J Appl Psychol.* 2005; 90:710–730. 2005. [PubMed: 16060788]
- Mohaghegh Z, Kazemi R, Mosleh A. Incorporating organizational factors into Probabilistic Risk Assessment (PRA) of complex socio-technical systems: a hybrid technique formalization. *Reliability Eng Syst Saf.* 2009; 94:1000–1018. 2009.
- Morgenstern J, Blanchard KA, Morgan TJ, et al. Testing the effectiveness of cognitive-behavioral treatment for substance abuse in a community setting: within treatment and posttreatment findings. *J Consult Clin Psychol.* 2011; 69:1007–1017. [PubMed: 11777104]
- Nembhard IM, Alexander JA, Hoff TJ, et al. Why does the quality of health care continue to lag? Insights from management research. *Acad Manage Perspect.* 2009; 23:24–42. 2009.
- Powell, DJ.; Brodsky, A. Clinical supervision in alcohol and drug abuse counseling: Principles, models, methods. Jossey-Bass; San Francisco, CA: 2004.
- Ratschen E, Britton J, Doody GA, et al. Tobacco dependence, treatment and smoke-free policies: a survey of mental health professionals' knowledge and attitudes. *Gen Hosp Psychiatry.* 2009; 31:576–582. [PubMed: 19892217]
- Richter KP, Ahluwalia HK, Mosier MC, et al. A population-based study of cigarette smoking among illicit drug users in the United States. *Addict.* 2002; 97:861–869.
- Richter KP, Choi WS, McCool RM, et al. Smoking cessation services in U.S. methadone maintenance facilities. *Psychiatr Serv.* 2004; 55:1258–1264. [PubMed: 15534014]

- Rieckmann TR, Kavas AE, McFarland BH, et al. A multi-level analysis of counselor attitudes toward the use of buprenorphine in substance abuse treatment. *J Subst Abuse Treat.* 2011; 41:374–385. [PubMed: 21821379]
- Rohsindow DJ, Monti PM, Colby SM, et al. Naltrexone treatment for alcoholics: Effect on smoking cessation rates. *Nicotine Tob Res.* 2003; 5:231–236. [PubMed: 12745496]
- Roman PM, Abraham AJ, Rothrauff TC, et al. A longitudinal study of organizational formation, innovation adoption, and dissemination activities within the National Drug Abuse Treatment Clinical Trials Network. *J Subst Abuse Treat.* 2010; 38:S44–S52. [PubMed: 20307795]
- Rothrauff TC, Eby LT. Counselors' knowledge of the adoption of tobacco cessation medications in substance abuse treatment programs. *Am J Addict.* 2010; 20:56–62. [PubMed: 21175921]
- Schoenwald SK, Sheidow AJ, Chapman JE. Clinical supervision in treatment transport: effects on adherence and outcomes. *J Consult Clin Psychol.* 2009; 77:410–421. 2009. [PubMed: 19485583]
- U.S. Department of Health and Human Services [USDHHS]. The health consequences of smoking: A report of the Surgeon General. 2004. Available at http://www.cdc.gov/tobacco/data_statistics/sgr/2004/index.htm
- Weiner BJ, Lewis MA, Linnan LA. Using organization theory to understand the determinants of effective implementation of worksite health promotion programs. *Health Educ Res.* 2009; 24:292–305. 2009. [PubMed: 18469319]
- Ziedonis DM, Guydish J, Williams J, et al. Barriers and solutions to addressing tobacco dependence in addiction treatment. *Alcohol Res Health.* 2006; 29:228–235. [PubMed: 17373414]

Table 1

Tobacco Cessation Pharmacotherapy (TCP) Adoption

	f	%
TCP Adoption (<i>M, SD</i>)	.99	1.93
Number of Any TCP Adopted		
0 TCP	707	70.42
1 TCP	73	7.27
2 TCP	47	4.68
3 TCP	60	5.98
4 TCP	41	4.08
5 TCP	34	3.39
6 TCP	11	1.10
7 TCP	14	1.39
8 TCP	2	.20
9 TCP	15	1.49
Number of Individual TCP Adopted		
Nicotine Patch	243	24.23
Nicotine Gum	176	17.56
Bupropion	164	16.40
Varenicline	125	12.55
Nicotine Lozenge	105	10.55
Clonidine	67	6.77
Nortriptyline	50	5.11
Nicotine Inhaler	37	3.71
Nicotine Nasal Spray	29	2.92

Table 2

Description of and Correlations among Organizational Factors as Predictors of Tobacco Cessation Pharmacotherapy (TCP) Adoption (N = 1006)

Variable	<i>M</i>	<i>SD</i>	<i>Min-Max</i>	1.	2.	3.	4.	5.
1. TCP Adoption	.99	1.93	0 - 9	--	.08*	.38***	.22***	.00
2. Counseling Staff Clinical Skills	60.39	20.78	0 - 100		--	.09**	.28	-.19***
3. Absence of Treatment Program Obstacles ^a	0	1.56	-3.06 - 4.64			--	.24***	.01
4. Policy-Related Incentives ^a	0	1.46	-4.49 - 4.74				--	-.13***
5. % Patients Smoking	70.47	20.93	0 - 100					--

Note.

^aStandardized measures

*
 $p < .05$

**
 $p < .01$

 $p < .001$.

Table 3

Negative Binomial Regression Results: Organizational Factors as Predictors of Tobacco Cessation Pharmacotherapy (TCP) Adoption

	B	SE	(CL)	Wald χ^2
Counseling Staff Clinical Skills	.00	.00	(-.00, .01)	.44
Absence of Treatment Program Obstacles ^a	.42	.05	(.33, .52)	75.54 ***
Policy-Related Incentives ^a	.16	.05	(.06, .26)	10.33 **
% Patients Smoking (control variable)	.00	.00	(-.00, .01)	.81
Pearson χ^2	1064.35			
df	977			
N	982			

Note. CL = Wald 95% Confidence Limits.

^aStandardized measures.

**
 $p < .01$

 $p < .001$.