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Publication Date

2020-04-01

DOI

10.1016/j.jsat.2020.01.002

Peer reviewed



Published in final edited form as:

J Subst Abuse Treat. 2020 April ; 111: 47–53. doi:10.1016/j.jsat.2020.01.002.

Validation of a Pragmatic Measure of Implementation Citizenship Behavior in Substance Use Disorder Treatment Agencies

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Abstract

The organizational context in which substance use disorder treatment (SUDT) evidence-based practices (EBPs) are implemented plays a critical role in successful implementation. Employee behaviors that go above and beyond typical job requirements to support EBP implementation have been suggested to facilitate the likelihood of overall implementation success. The current study explored the psychometric properties of the Implementation Citizenship Behavior Scale (ICBS) within SUDT settings. Utilizing a sample of 322 direct service providers and 60 of their respective supervisors from three SUDT agencies, results from a confirmatory factor analysis and construct validity analysis support the use of the ICBS in the SUDT context. Validation of the ICBS provides a useful, pragmatic tool for both researchers and practitioners to assess employee citizenship behavior to support EBP implementation. The ICBS can provide critical insights into how providers respond to organizational context that may facilitate EBP implementation.

Keywords

implementation citizenship; leadership; organizational climate; validation; substance use disorder treatment; confirmatory factor analysis

1. Introduction

In the 21st century, we have seen an increasing number of scientifically evaluated, efficacious treatments for alcohol and other substance abuse (e.g., Amass et al., 2004; Carroll et al., 2006). Subsequently, a growing body of research focused on the effective implementation of evidence-based practices (EBPs) in substance use disorder treatment

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Declaration of interests: None.

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(SUDT) settings has emerged, specifically exploring the factors related to the lack of widespread use of these treatments (Bauer et al., Damschroder & Hagedorn, 2011; Saunders & Kim, 2013). Termed implementation science, research in this burgeoning area has provided important insights regarding contextual, organizational, and individual level factors that facilitate the uptake of clinically effective treatments for alcohol abuse (Damschroder & Hagedorn, 2011; Lehman, Simpson, Knights, & Flynn, 2011; Proctor et al., 2009).

Nevertheless, the gap between research and practice has persisted in SUDT settings and implementation research on how to overcome this gap remains a critical topic for SUDT research (Garner, 2009; Garner, Hunter, Funk, Griffin, & Godley, 2016; Padwa & Kaplan, 2018; Stokes, 2019). Historically, treatments in SUDT services have developed independently from mental health care and other mainstream health care (Miller, Sorensen, Selzer, & Brigham, 2006), and providers in SUDT settings have typically been trained in and supported traditional treatment approaches. As a result, provider buy-in for implementation of EBPs in these settings is a common barrier to successful EBP utilization (Amodeo et al., 2011; Marinelli-Casey, Domier, & Rawson, 2002).

Recognizing the gap between EBPs and what practitioners actually do, researchers have examined implementation processes that aim to introduce, adapt, and sustain EBPs effectively in SUDT settings (Aarons, Hurlburt, & Horwitz, 2011; Damschroder & Hagedorn, 2011; Lundgren, Chassler, Amodeo, D'Ippolito, & Sullivan, 2012). The Exploration, Preparation, Implementation, Sustainment (EPIS) framework identifies processes and understanding of contextual implementation determinants that influence successful EBP implementation (Aarons, Hurlburt, et al., 2011; Becan et al., 2018). The EPIS multilevel framework describes the implementation processes as consisting of four phases and categorizing the implementation factors into inner (organizational) and outer (system) contexts that are often linked through “bridging factors” that describe bi-directional influences of organization and service systems in which they reside (Moullin, Dickson, Stadnick, Rabin, & Aarons, 2019).

Specifically with regard to the inner context, research has demonstrated that the organizational environment can have a significant influence on effective EBP implementation (Aarons, Hurlburt, et al., 2011; Glasner-Edwards & Rawson, 2010; Kelly, Hegarty, Barry, Dyer, & Horgan, 2017). Several inner context, organizational characteristics such as the climate and culture of the organization have been linked to a variety of implementation-related outcomes (Aarons, Hurlburt, et al., 2011; Aarons, Sommerfeld, & Willging, 2011; Beidas et al., 2015; Glisson, 2002; Glisson & James, 2002; Glisson et al., 2008; Guerrero, Aarons, & Palinkas, 2014; Proctor et al., 2011; Weiner, Amick, & Lee, 2008; Williams, Ehrhart, Aarons, Beidas, 2018). Moreover, leadership (Friedmann, Taxman & Henderson, 2007), counselors' attitudes toward EBPs (Smith, 2013; Friedmann, Wilson, et al., 2015), and perceptions of organizational readiness for change (Fuller, et al., 2007; Lehman, Greener, & Simpson, 2002; Lundgren, Amodeo, Chassler, Kurl & Sullivan, 2013) have been shown to influence successful EBP implementation. For example, a facet of an organization's readiness for change, the perceived need for improvement, is considered especially important during the early stages of implementation (Aarons, Hurlburt, et al., 2011; Fuller et al., 2007).

Drawing from organizational psychology and management literatures, employee behavior has been studied as a critical link between the organizational context and outcomes (Ehrhart & Raver, 2014; Neal & Griffin, 2006; Schneider, Ehrhart, Mayer, Saltz, & Niles-Jolly, 2005). One particularly relevant focus is on organizational citizenship behavior (OCB), defined as “individual behavior that is discretionary, not directly or explicitly recognized by the formal reward system, and in the aggregate promotes the efficient and effective functioning of the organization” (Organ, Podsakoff, & MacKenzie, 2006, p.3). In other words, OCB represents employee behaviors that go above and beyond what is required in order to benefit the organization or organizational goals. OCB is positively associated with productivity and health care outcomes, and is negatively associated with turnover (Chen, Wang, Chang, & Hu, 2008; Chien, Chou, & Hung, 2008; N. P. Podsakoff, Whiting, Podsakoff, & Blume, 2009; Walz & Niehoff, 2000).

One development in the research literature on OCB has been to focus on the specific types of behavior related to strategic imperatives. For example, past research has addressed how employees can go above and beyond in their support of safety initiatives (Griffin & Neal, 2000) or in providing high quality customer service (Schneider et al., 2005). In line with these developments, recent research has developed the construct of implementation citizenship behavior. Implementation citizenship behavior has been defined as “the discretionary behavior employees perform to support EBP implementation” (Ehrhart, Aarons, & Farahnak, 2015). The core distinction between more generic OCBs and ICBs is the strategic focus on implementation versus overall organizational effectiveness. For example, while general OCB would capture the extent to which employees are generally helpful, ICB would focus on the extent to which employees help each other specifically in their implementation activities. As such, implementation citizenship has been proposed as an indicator of employee engagement in the implementation process that results from the positive influence of implementation leadership and implementation climate during EBP implementation (Ehrhart et al., 2015). Examples of specific implementation citizenship behaviors include staff supporting the use of an EBP in clinical practice, supporting co-workers in the delivery of EBP, and staying informed about developments and changes to EBP procedures.

Implementation citizenship behaviors are applicable primarily during the implementation phase and may also apply to the sustainment phases of the EPIS framework (INSERT CITATION). This is because in order to engage in the discretionary behaviors to support EBP implementation, service providers must be actively implementing or utilizing EBPs. Additionally, during the sustainment phase of EBP implementation providers can continue to support their colleagues’ use of the EBP and keep their colleagues informed of new information or updates about the EBP they have been implementing. During the Exploration and Preparation phases, stakeholders and implementation facilitators decide which EBPs to implement, identify the barriers to implementation, and develop a plan to address those barriers by ensuring the necessary training and administrative supports are in place. During these phases EBPs are not being actively implemented by providers, and thus opportunities for providers to perform implementation citizenship behaviors will be limited.

There have been calls in implementation science for pragmatic (i.e., reliable, valid, high utility) measures that can be used efficiently for both research and implementation process support (Aarons, Ehrhart, & Farahnak, 2014; Glasgow, 2013; Lehman, Greener, & Simpson, 2002; Martinez, Lewis, & Weiner, 2014). The Implementation Citizenship Behavior Scale (ICBS) was developed as a brief and pragmatic measure of implementation citizenship behaviors of health and allied health care providers during the implementation process (Ehrhart et al., 2015). The original developmental work on the ICBS in mental health settings used exploratory and confirmatory factor analyses using separate samples to support a six-item multidimensional scale consisting of two dimensions: (1) Helping Others (i.e., citizenship behavior directed towards others) and (2) Keeping Informed (i.e., citizenship behavior directed towards the organization). The ICBS is completed by clinic managers or direct supervisors who rate the implementation behaviors of their direct reports.

The present study examines the psychometric characteristics of the ICBS in SUDT organizations. Although we expect the nature of these implementation-related behaviors to hold across settings, there are unique challenges of implementing EBPs in the SUDT context, such as the health problem (i.e., addiction), types of treatment models/approaches commonly used (e.g., 12-step, social model), education and training of the workforce, frequent closures of treatment programs, and high turnover at all organizational levels (Johnson & Roman, 2002; McLellan & Meyers, 2004). These complex issues differentiate SUDT from other contexts (e.g., primary care, mental health), and require validation of measures for organizations providing SUDT services.

The present study had the following two goals: (1) to assess the factor structure and reliability of the ICBS in a sample of SUDT providers, and (2) to evaluate measurement invariance of the ICBS across SUDT and mental health contexts. First, we hypothesized that the factor structure and strong reliability identified in other settings (Ehrhart et al., 2015) would be replicated in SUDT settings. In addition, we evaluated evidence for construct validity. We included two additional related measures to evaluate convergent validity. We hypothesized that associations with other related measures, including implementation success and attitudes towards EBP, would be significant and consistent with the original validation of the measure, providing construct-related validity evidence for the measure and its applicability in SUDT settings. Specifically, we expected that the ICBS would have a moderate positive relationship with provider-rated EBP implementation success, and a strong positive relationship when implementation success is rated by the provider's supervisor. We also expected that the relationship between provider attitudes toward EBP and the ICBS would be positive, and range from small-to-moderate strength. Finally, we conducted a measurement invariance analysis to evaluate whether the ICBS was invariant across mental health and SUDT settings.

2. Methods

2.1 Sample Characteristics

Participants were SUDT service providers and their respective supervisors who worked in three SUDT agencies located in California and New York. The three SUDT agencies were invited to participate in this study as the research team had established relationships with

members of the executive team at each agency. Prior to data collection, the research team confirmed that all agencies were actively implementing one or more EBPs and the decision as to which EBP was being implemented was at the discretion of each agency. Examples of the EBPs implemented included the following: cognitive-behavioral therapy (CBT) and motivational interviewing (MI), seeking safety, Matrix, A.R.T., TCU Mapping, and dialectical behavioral therapy (DBT). This sample was appropriate as providers had the opportunity to display implementation citizenship behaviors, and the provider's supervisor had the opportunity to observe their providers' citizenship behaviors. A total of 60 of the eligible 61 supervisors participated in the survey (response rate = 98.4%). Supervisors rated each of their provider's implementation citizenship behavior (322 providers; average of 6.26 providers per supervisor; range = 1–15). A total of 291 providers (90%) completed a provider survey that included measures to evaluate construct validity. Demographic descriptive statistics each sample can be found in Table 1.

2.2 Procedure

Recruitment was initiated by contacting SUDT agency executives. Upon indication of interest from the agency executives, the research team held in-person and phone meetings to provide an overview of the study. The data used in this study were a part of a larger data collection effort examining organizational context factors, demographics, and attitudes within EBP implementation settings; other research coming from this effort not focused on implementation citizenship can be found in Aarons et al. (2014) and Ehrhart et al. (2014). Participants completed one of two possible survey packets depending on their role (i.e., supervisor or service provider). Data were collected using two survey mediums: online or paper-and-pencil. To alleviate provider concern regarding confidentiality of their individual responses, supervisors completed their survey in a separate location from their providers. All appropriate institutional review boards approved of this study. Prior to completing the survey, participants were required to provide consent to participate, and informed that their participation was voluntary. Additionally, participants were told that they could leave the study at any time. Due to agencies implementing different EBPs, survey participants were instructed to consider the implementation of EBPs in general in their agency, rather than a specific EBP. Participants who completed their survey were provided and incentive in the form of a gift card to a large online retailer. Service providers received a \$15 incentive for completing the survey. Supervisors received a \$30 incentive as they provided ratings for all providers on their team and thus, their survey was longer in length.

2.3 Measures

Implementation Citizenship Behavior.—Implementation citizenship behavior was measured using the 6-item Implementation Citizenship Behavior Scale (ICBS) (Ehrhart et al., 2015). The measure consists of two dimensions with three items each: Helping Others ($\alpha=.94$) and Keeping Informed ($\alpha=.91$). The overall scale alpha was .92. Supervisors indicated how frequently their direct reports engaged in each of the implementation citizenship behavior items. The ICBS response scale was 0 to 4, with 0 indicating “not at all” to 4 “frequently, if not always.”

Supervisor-rated Implementation Success.—To measure supervisor-rated implementation success, four items used previously in similar empirical studies (e.g., Ehrhart et al., 2015; Farahnak et al., 2020) were used. Items pertained to provider’s knowledge of EBPs, competence in using EBPs, fidelity when implementing EBP, and overall success in implementing EBP. Supervisors rated their direct reports using a five-point response scale (0 “not at all” to 4 “to a very great extent”). This measure demonstrated strong internal consistency ($\alpha = .97$, 4 items), which is comparable to alpha reliabilities demonstrated in previous studies that used this measure of implementation success.

Provider-rated Implementation Success.—To measure provider’s self-rated performance, a single item was used. The item asked providers to rate the extent to which they use EBP with fidelity using a 0 to 4 response scale, with 0 indicating “not at all” and 4 indicating “to a very great extent”).

Evidence-based Practice Attitudes.—To assess attitudes towards EBP, the Evidence-Based Practice Attitude Scale (EBPAS-15) was utilized (Aarons, 2004). The EBPAS-15 assesses provider attitudes towards the adoption of EBP in allied healthcare settings. The EBPAS has been validated in multiple studies including a nationally representative sample of 100 mental health agencies and results support the reliability and validity of the measure (e.g., Aarons et al., 2010). Four dimensions compose the EBPAS-15: Requirements ($\alpha = .91$, 3 items), Appeal ($\alpha = .80$, 4 items), Openness ($\alpha = .84$, 4 items), and Divergence ($\alpha = .67$, 4 items) and a total scale score ($\alpha = .76$) (Aarons et al., 2010). Responses were provided using a five-point, 0 (“not at all”) to 4 (“to a very great extent”) scale.

2.4 Statistical Analyses

Psychometric properties of the ICBS were evaluated by conducting a confirmatory factor analysis (CFA) in Mplus (i.e., statistical software program; Muthén & Muthén, 1998–2017). To ensure our standard errors and chi-square values were adjusted appropriate, we estimated our model using maximum likelihood estimation with robust standard errors (MLR). In order to account for the nested data structure (multiple providers under the supervision of one supervisor) we specified the clusters within our syntax using the TYPE=COMPLEX command. Additionally, we allowed the two ICBS dimensions (Helping Others and Keeping Informed) correlations to be freely estimated. Full information maximum likelihood (FIML) estimation was utilized to account for missing data (note that missing data were minimal and varied from zero to one missing items per participant).

To assess the quality of our models, we used recommended heuristics offered by Hu and Bentler (1999) for four fit indices. As suggested, models with a comparative fit index (CFI) and Tucker-Lewis index (TLI) greater than 0.95, a root mean square error of approximation (RMSEA) less than 0.06, and a standardized root mean square residual (SRMR) less than 0.08 indicate acceptable model fit (Hu & Bentler, 1999). Internal consistency reliability and construct validity was assessed by calculating Cronbach’s alpha for the dimensions and scale, and computing Pearson correlation coefficient between the ICBS and the construct validity measures.

Our measurement invariance analysis sought to provide support for configural invariance which is the minimum level of invariance suggested to make meaningful interpretations across samples (Ployhart & Oswald, 2004; Vandenberg & Lance, 2000). Configural invariance is a test of a weak factorial invariance null hypothesis (Horn & McArdle, 1992; Meredith, 1993), in which the pattern of fixed and free factor loadings is constant across groups. We utilized a multi-group structural equation modeling approach, and compared two competing models using the Satorra-Bentler chi-square difference test. Model 1 did not impose constraints on the factor loadings (i.e., they were allowed to freely load) across groups. In Model 2, we imposed constraints such that the factor loadings were specified to be equal across mental health and SUDT samples. Because our main focus was to establish configural invariance, we did not estimate means or intercepts in these two models. Aligned with other psychometric researchers (i.e., Chen, 2007; Cheung & Rensvold, 2002; MacCallum, Browne, & Cai, 2005; Roesch, Norman, Merz, Sallis, & Patrick, 2013) we supplemented measurement invariance decisions with an evaluation of the changes in the other model fit indices. We used Chen's (2007) recommendations of CFI differences less than .005 and RMSEA values less than .010 to specify no meaningful difference between nested models as a guide for evaluating our two models.

3. Results

3.1 Confirmatory Factor Analysis

Confirmatory factor analysis of the six-item ICBS provided supported the two-factor implementation citizenship behavior model. The model fit statistics were strong ($\chi^2(8)=20.47$, $p<0.05$; CFI=0.99, TLI=0.97, RMSEA=0.07, 90% CI [.033,.108], SRMR=0.031), providing support for the structural validity of the ICBS in SUDT organizations. All standardized factor loadings were statistically significant (p 's < 0.001) and ranged from .79 to .95. Table 2 provides the standardized factor loadings for the six ICBS items.

3.2 Reliability and Construct Validity

The ICBS total scale and its dimensions also demonstrated excellent internal consistency reliability (α range .91-.94). Results for the construct validity analyses can be found in Table 3. We evaluated correlations for the ICBS overall and its two dimensions with provider ratings of EBPAS, and both provider and supervisor rated implementation success. Supervisor-rated implementation success had a strong positive correlation with ICBS total score ($r=0.79$, $p<0.01$) and the two ICBS subscales (Helping Others, $r=0.75$, $p<0.01$; Keeping Informed $r=0.66$, $p<0.01$). Provider-rated implementation success demonstrated small positive correlations with the total scale ($r=0.13$, $p<0.05$) and Helping Others ($r=0.13$, $p<0.05$). However, Keeping Informed was not significantly related to provider-rated implementation success ($r=0.09$, $p>0.05$), although the correlation was in the hypothesized direction. Significant correlations were found with the EBPAS total scale score and all subscales (r 's = 0.14–0.26, $p<0.01$) except for the Divergence subscale of the EBPAS. The ICBS Keeping Informed dimension was significantly related to the Requirements ($r=0.13$, $p<0.05$), Appeal ($r=0.27$, $p<0.01$), and Openness ($r=0.20$, $p<0.01$) subscales, but not Divergence. The ICBS Helping Others dimension was not

significantly correlated with Divergence or Openness, but did not have significant relationships with Requirements ($r = 0.12, p < 0.05$) and Appeal ($r = 0.21, p < 0.01$). Overall, these results provided a similar pattern of results to the original validation study and support the reliability and factorial and construct validity of the ICBS.

3.3 Measurement Invariance: Mental Health and SUDT Contexts

We utilized the mental health sample of supervisors from the original ICBS development paper by Ehrhart et al., 2015 ($n = 357$; see original study for sample details) to conduct the measurement invariance analysis. The results of this analysis are shown in Table 4. Examination of the model's fit indices suggested that the two models fit the data well (Model 1: $\chi^2(20) = 35.26$, CFI = .992; SRMR = .026; RMSEA = .047, 90% CI [.019-.073]; Model 2: $\chi^2(26) = 42.56$, CFI = .991; SRMR = .044; RMSEA = .043, 90% CI [.017-.066]). The Satorra-Bentler chi-square difference test resulted in a non-significant chi-square of $\chi^2(6) = 4.90, p = .56$. Thus, the results of the chi-square difference test suggest that the ICBS factor loadings did not differ between the mental health and SUDT samples. Both the change in CFIs for the two models (CFI = .001) and the change in RMSEA value (RMSEA = .004) were small and below the cutoffs from Chen (2007). Based on the overall evidence considering chi-square and the other fit indices, we concluded that Model 2 holds and supports configural invariance across mental health and SUDT contexts.

4. Discussion

This study demonstrated support for the overall factor structure of the ICBS in the SUDT context, and provides preliminary support for making comparisons across mental health and SUDT settings. Due to the nature of services provided within the SUDT context, there may be more staff resistance to employing EBP while providing treatment, although some issues with implementation may be common across behavioral health services and may be more related to structure or the service delivery context (Becker, Spirito, & Vanmali, 2016; Miller et al., 2006). The ICBS can be used to help identify those contexts in which peer support for implementation is strong, including possibly identifying those providers who can act as champions and facilitate the implementation of EBPs. These individuals who go above and beyond for implementation may positively impact the success of whether an EBP is successfully implemented. This can occur in a number of ways. For example, such individuals may act as champions for new practices, role-model supportive behavior, and be more likely to engage in problem solving to support the use of EBPs. Although we do not currently have additional data on the outcomes of ICBS in SUDT settings, citizenship behavior has consistently been associated with objective and subjective employee performance in a range of organizations and industries (Podsakoff, MacKenzie, Paine, & Bachrach, 2000).

Analyses supported the ICBS validity through patterns of correlations aligned with our hypotheses. The pattern of correlations of the ICBS with provider-rated implementation success and provider attitudes towards EBP had both similarities and some differences compared to what has been found in other service sectors. For implementation success, the correlations between the ICBS and supervisor-rated implementation success were similar to

what was found by Ehrhart et al. (2015), but were weaker for provider-rated implementation success (r 's in the range of .09 to .13 in this study versus .22 to .33 in the original paper). Thus, in SUDT settings relative to mental health settings, there appears to be more of a disconnect between supervisor perceptions of the provider going above and beyond to support implementation and provider perceptions of their actual use of EBP. Future research should explore differences in both inner organizational contexts, but also norms and expectations for treatment approaches across settings.

With regard to attitudes towards EBP, the correlations found in this study were stronger than what was found in past research in mental health settings. For instance, taking out the EBPAS Divergence dimension (which had weak, negative, and non-significant correlations with the ICBS in the SUDT context), the correlations in the original paper between the dimensions of the ICBS and the EBPAS ranged from .05 to .14 (indicating small effects), whereas in this study the correlations were in the .10 to .27 range (indicating small to medium effects). The correlations for the EBPAS Appeal dimension were particularly strong (r 's ranging from .21 to .27), suggesting that providers finding EBP more appealing could be a stronger facilitator in their engagement in the EBP implementation process in SUDT settings compared to mental health settings. This has implications for selection of EBPs to fit the perspectives and needs of providers and clients. As identified in the EPIS implementation framework, research should examine the degree to which EBPs show a values-innovation fit across levels at system, organization, provider, and client levels (Aarons, Hurlburt, et al., 2011).

Some limitations of the present study should be noted. Although the ICBS has been validated for use in mental health and now SUDT settings, additional studies should be conducted to determine whether the ICBS is reliable in other contexts where EBPs are implemented, such as nursing and child welfare. Additionally, the wording of the ICBS focused on EBP in general, but it is possible that the results may vary depending on the type or specific EBP being implemented. Therefore, additional research may examine how including a specific EBP referent such as Motivational Interviewing, Contingency Management, or Medication Assisted Treatment impacts the validity and reliability of the ICBS. As this study only examined construct validity, future studies should also examine other forms of psychometric evidence such as test-retest and interrater reliability, and discriminant and predictive validity. Thus, a next step could be to examine how the ICBS relates to organizational context constructs such as organizational readiness for change (Lehman et al., 2002; Simpson, Joe, & Rowan-Szal, 2007) that may impact implementation process and outcomes (Proctor et al., 2011). Additionally, although we believe the inclusion of the implementation success was useful for the intended purpose of this study and the diverse set of EBPs being implemented, future work should evaluate the relationship between other, more objective measures of implementation success outcomes and the ICBS (e.g., Garner et al., 2016). In keeping with advances in implementation science, it will also be important to examine the extent to which citizenship behavior acts as an explanatory mediating or moderating mechanism of the relationship between the organizational context and implementation success (Pinnock et al., 2017). Lastly, future studies can evaluate the ICBS's sensitivity in its ability to detect changes over the course of the implementation process, from exploration to sustainment (i.e., across the EPIS phases).

5. Conclusions

This study provides evidence for the sound factor structure and psychometric properties of the ICBS within SUDT settings, suggesting the appropriateness of its use to identify staff behaviors that go above and beyond support for EBP implementation. Assessing the organizational context in which EBPs are implemented is an important step in painting a clearer picture of the factors that can facilitate the effective translation of health innovations from research to practice.

Acknowledgements:

We would like to thank the substance use disorder treatment agencies and employees who participated in this research effort.

Funding: This work was supported by the National Institute of Mental Health (NIMH) [R21MH098124 and R01MH072961], and National Institute on Drug Abuse [R01DA038466].

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Highlights

- Implementation citizenship behaviors go above and beyond to support implementation
- ICBS can reliably measure implementation citizenship behaviors in SUDT settings
- Researchers & practitioners can use the ICBS for implementation context insights

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Table 1.

Demographics of SUDT Supervisors and Providers.

Supervisors	
Race	
Caucasian	41 (70.7%)
African-American	8 (13.8%)
Asian-American or Pacific Islander	1 (1.7%)
Native American	1 (1.7%)
“Other”	7 (12.1%)
Ethnicity	
Hispanic	14 (23.3%)
Non-Hispanic	46 (76.7%)
Education	
No college	3 (5%)
Some college	15 (25%)
College degree	19 (31.7%)
Master’s degree	19 (31.7%)
Ph.D. or M.D.	4 (6.7%)
Age	
Mean (SD)	50.54 (9.91)
Tenure with Agency in months	
Mean (SD)	115.10 (77.25)
Tenure in SUDT in months	
Mean (SD)	175.90 (91.71)
Gender	20 (33.9%)
Female	39 (66.1%)
Male	
Service Providers	
Race	
Caucasian	167 (59%)
African-American	53 (18.7%)
Asian-American or Pacific Islander	9 (3.2%)
Native American	4 (1.4%)
“Other”	50 (17.7%)
Ethnicity	
Hispanic	87 (29.9%)

Supervisors	
Non-Hispanic	204 (70.1%)
Education	
No college	28 (9.9%)
Some college	93 (32.7%)
College degree	79 (27.8%)
Master's degree	79 (27.8%)
Ph.D. or M.D.	5 (1.8%)
Age	
Mean (SD)	46.22 (11.57)
Tenure with Agency in months	
Mean (SD)	43.61 (43.60)
Tenure in SUDT in months	
Mean (SD)	85.52 (73.78)
Gender	
Female	181 (62%)
Male	110 (37%)

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Table 2.

ICBS item descriptive statistics and standardized factor loadings.

	Mean	SD	CFA Factor Loading
Helping others			
Responsibilities related to EBP implementation	2.01	1.19	.87
Make sure they implement EBP properly	1.98	1.18	.95
Helping teach EBP implementation procedures	1.98	1.21	.92
Keeping informed			
Agency communication related to EBP	2.19	1.17	.79
Latest news regarding EBP	1.95	1.12	.93
Changes in EBP policies and procedures	2.02	1.11	.94

Note: All factor loadings are statistically significant at the $p < .001$ level.

Table 3.

Scale descriptive statistics and correlations among all study variables.

	Mean	SD	1	2	3	4	5	6	7	8	9	10
1. ICBS overall scale	2.02	.99	(.92)									
2. ICBS: Helping others	1.99	1.12	.92**	(.94)								
3. ICBS: Keeping informed	2.05	1.05	.91**	.66**	(.91)							
4. EBPAS overall scale	2.88	.51	.23**	.16**	.25**	(.72)						
5. EBPAS: Requirements	3.04	.90	.14*	.12*	.13*	.72**	(.91)					
6. EBPAS: Appeal	2.94	.73	.26**	.21**	.27**	.78**	.45**	(.80)				
7. EBPAS: Openness	2.82	.69	.16**	.10	.20**	.61**	.11	.48**	(.79)			
8. EBPAS: Divergence	1.27	.71	-.06	-.01	-.10	-.55**	-.22**	-.17**	-.13*	(.64)		
9. Implementation success (provider-rated)	2.45	1.01	.13**	.13**	.09	.19**	.09	.15*	.13*	-.14*	-	
10. Implementation success (supervisor-rated)	2.50	.83	.79**	.75**	.66**	.14	.12	.14	.18*	.02	.04	(.97)

Note: N=160 for correlations with supervisor-rated implementation success. Due to missing data on some items/scales, sample size for employee-rated correlations range from 281–291.

**
 $p < 0.01$.*
 $p < 0.05$.

Table 4.

Measurement invariance model comparison results.

	Fit Statistics				Model Comparisons				
	CFI	RMSEA	χ^2	df	S-B	χ^2	df	CFI	RMSEA
Model 1: All parameters free	0.992	0.047	35.26	20	--	--	--	--	--
Model 2: All loadings constrained to equal	0.991	0.043	42.56	26	4.90	6	0.001	0.004	

Note: S-B = Yuan-Bentler Chi-Square Difference Test

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