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Factors associated with an evidence-based measure of implementation for the Adolescent Community Reinforcement Approach



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ABSTRACT

Background: An evidence-based measure of implementation (EBMI) is an implementation outcome measure shown to have predictive validity with one or more future-measured constructs of importance. The current study sought to identify correlates and predictors of an EBMI called procedure exposure. Garner et al. (2016) found procedure exposure to be an EBMI for the Adolescent Community Reinforcement Approach (A-CRA).

Methods: The dataset included 76 community-based substance use treatment organizations located across the United States. Organizational-level regression analyses, which were framed within the context of Chaudoir et al. (2013) framework for predicting implementation outcomes, were used to examine predictors of A-CRA procedure exposure

Results: The Washington Circle's treatment initiation performance measure ($B = 5.05$ [$SE = 1.60$], $p = 0.002$), as well as session exposure ($B = 0.18$ [$SE = 0.06$], $p = 0.003$), were significant predictors of A-CRA procedure exposure in the backward stepwise regression analysis (Adjusted R-square = 0.55). The Washington Circle's treatment engagement performance measure ($B = 7.93$ [$SE = 0.77$], $p < 0.001$), as well as time-to-proficiency ($B = -0.04$ [$SE = 0.02$], $p = 0.02$), each had significant bivariate relationships with A-CRA procedure exposure but were not retained in the final model.

Conclusions: Organizations implementing A-CRA are encouraged to make the following high priorities: (a) scheduling and completing a subsequent treatment session within 14 days of their index session (treatment initiation) and (b) providing a targeted number of treatment sessions to each client (session exposure). To the extent organizations do this, they may be more likely to achieve higher levels of A-CRA procedure exposure.

1. Introduction

An evidence-based measure of implementation (EBMI) is an implementation outcome measure (e.g., acceptability, appropriateness, fidelity, penetration) shown to have predictive validity with one or more future-measured constructs of importance (e.g., key client outcome; Garner et al., 2016). Based on Lewis et al. (2015) systematic review, the majority of instruments measuring implementation outcomes have no information regarding their predictive validity. Given that implementation outcomes are critical to the advancement of implementation research (Proctor et al., 2011, 2009), the need to increase identification and use of EBMI is critical.

Toward addressing the need for greater identification and use of EBMI, Garner et al. (2016) sought to identify one or more EBMI for

the Adolescent Community Reinforcement Approach (A-CRA; Godley et al., 2011). A-CRA is an evidence-based treatment for adolescent substance use that has been widely disseminated in the United States (Dennis et al., 2004; Garner et al., 2007, 2009; Godley et al., 2007). Using data collected as part of a large-scale federally funded initiative focused on the dissemination and implementation of A-CRA, Garner et al. (2016) identified A-CRA procedure exposure (a key dimension of fidelity; Dane and Schneider, 1998) as an organizational-level EBMI. As operationalized by Garner et al. (2016) A-CRA procedure exposure is an organizational-level measure representing an organization's average number of A-CRA sessions delivered to its respective adolescent clients. Garner et al. (2016) found A-CRA procedure exposure to have a significant relationship with adolescents' alcohol or other drug use at the 6-month follow-up, with treatment organizations having higher A-CRA

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procedure exposure also having greater decreases in adolescents' alcohol and other drug use.

Building upon this research and in alignment with recommendations by Proctor et al. (2011) that “once researchers have advanced consistent, valid, and efficient measures for implementation outcomes, the field will be equipped to conduct important research treating these constructs as dependent variables, in order to identify correlates or predictors of their attainment,” the current study's primary objective was to identify correlates and predictors of A-CRA procedure exposure. By doing so, the current study also addresses what Nilsen (2015) identified as one of the three key overarching aims of implementation research: “understanding and/or explaining what influences implementation outcomes.” Thus, study results will inform the key factors (beyond procedure exposure) to be targeted as part of future A-CRA implementation efforts, which continues to be an evidence-based treatment widely supported by government funding (Hunter et al., 2015). Additionally, study results will advance generalizable knowledge regarding the systematic uptake of evidence-based innovations into routine practice (i.e., implementation research) by advancing understanding of what organizational-level factors may or may not successfully influence EBMI's.

1.1. Guiding framework

Chaudoir et al. (2013) developed a multilevel framework for predicting implementation outcomes. Using this five-level framework, which includes structural, organizational, provider, patient, and innovation levels, Chaudoir et al. (2013) conducted a systematic literature review focused on (a) identifying available measures for assessing these levels and (b) assessing the psychometric properties of these measures (e.g., criterion validity, predictive validity). Based on this systematic review, a total of 62 measures were identified, with the majority (37 measures; 60%) assessing the organizational level. Their review concluded that “a vast majority of measures” lacked strong psychometric properties (i.e., were either not examined/reported or not supported) and that there is “the need for continued development and refinement of psychometrically sound measures for use in implementation science settings.” This need for measurement improvement has been supported by other reviews of the literature (Emmons et al., 2012).

To help address this need for measurement improvements, the primary aim of this study was to examine the relationship between A-CRA procedure exposure and key constructs (e.g., absorptive capacity, penetration, fidelity) posited to be important to the complex process of implementing evidence-based innovations within contemporary practice settings (Damschroder et al., 2009; Greenhalgh et al., 2004). Despite the fact that many (though not all) measures can be conceptualized, measured, and analyzed at a number of different levels and that the specific level(s) that is most appropriate is debatable (Garner et al., 2016), the current work focuses on the organizational level. The focus on the organizational level is consistent with the work of Klein and Sorra (1996), who viewed implementation as a collective group behavior (i.e., the pooled or aggregate level for a targeted group of individuals). Additionally, the focus on the organizational level is consistent with Chaudoir et al. (2013), who found the organizational level to be the level most commonly assessed (60%).

1.2. Hypothesized organizational-level influences

As noted above, our key dependent measure of interest was A-CRA procedure exposure, which Garner et al. (2016) found to be predictive of client outcomes (i.e., treatment organizations with higher levels of A-CRA procedure exposure had greater decreases in adolescent alcohol or other drug use at 6-month follow-up). Below, we operationally define the three key constructs (absorptive capacity, penetration, fidelity) examined as correlates or predictors of A-CRA procedure exposure, as

well as the specific measures used to represent each construct. Additionally, the explicit hypotheses and support for each hypothesis is described below.

1.2.1. Absorptive capacity

Absorptive capacity is a multidimensional construct that represents an organization's ability to acquire, assimilate, transform, and exploit knowledge (Zahra and George, 2002). A key component of the assimilation dimension of absorptive capacity is speed of learning, with greater speed representing greater levels of assimilation/absorptive capacity (Cohen and Levinthal, 1990; Zahra and George, 2002). Consistent with research that has posited absorptive capacity to influence implementation (Damschroder et al., 2009; Greenhalgh et al., 2004; Knudsen and Roman, 2004) we hypothesized there would be a significant positive relationship between absorptive capacity, measured via an organizations average staff time-to-proficiency and average staff ratings-to-proficiency (see Section 2.4 for descriptions), and A-CRA procedure exposure.

1.2.2. Penetration

Similar to the concept of reach (Glasgow et al., 1999), penetration has been defined as the integration of a practice within a service setting and its subsystems and can refer to either clients served or staff trained (Proctor et al., 2011). Consistent with research highlighting the importance of cumulative team experience (Elbardissi et al., 2013), organizations with greater staff penetration (i.e., the total number days that each organization employed staff that were certified to deliver A-CRA) were hypothesized to also exhibit higher levels of A-CRA procedure exposure. Additionally, organizations with greater client penetration (i.e., the organization's unduplicated number of adolescent clients receiving the A-CRA intervention) were hypothesized to exhibit higher levels of A-CRA procedure exposure, which is consistent with research finding absolute volume of patients to be associated with better outcomes (Mesman et al., 2015), and likely explained by the greater number of opportunities to become familiar with the delivery of different A-CRA procedures.

1.2.3. Fidelity

As detailed by Dane and Schneider (1998) fidelity is a multidimensional construct that is integral to the evaluation of any intervention and is operationalized as the degree to which specified procedures are implemented as planned. Participant responsiveness is an important dimension of fidelity and captures level of participation by participants. As part of the current study, participant responsiveness was represented using two organizational-level performance measures (treatment initiation, treatment engagement) developed by the Washington Circle Group (Garnick et al., 2002, 2009; McCorry et al., 2000). Treatment initiation is operationalized as the percentage of clients receiving a second treatment service within 14 days following their initial treatment service. Treatment engagement is operationalized as receiving two additional services within 30 days of treatment initiation. Using data from 73 Veterans Affairs facilities, Harris et al. (2007) found higher treatment initiation to be associated with greater decreases in client's drug use. Thus, we hypothesized that organizations with higher Washington Circle treatment initiation rates would have greater levels of A-CRA procedure exposure. Consistent with prior research that found patient-level measures of this treatment engagement measure to be predictive of client outcomes (Garnick et al., 2012), we hypothesized organizations with higher Washington Circle treatment engagement rates would also have a greater level of A-CRA procedure exposure.

Another key dimension of fidelity highlighted by Dane and Schneider (1998) was exposure, which in addition to being measured via procedures implemented (i.e., A-CRA procedure exposure) can be measured via sessions implemented. Consistent with our prior research (Garner et al., 2016), we hypothesized there would be a positive

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