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Predicting substance abuse treatment completion using a new scale based on the theory of planned behavior

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ABSTRACT

We examined whether a 9-item scale based on the theory of planned behavior (TPB) predicted substance abuse treatment completion. Data were collected at a public, outpatient program among clients initiating treatment (N = 200). Baseline surveys included measures of treatment-related attitudes, norms, perceived control, and intention; discharge status was collected from program records. As expected, TPB attitude and control components independently predicted intention (model R-squared = .56), and intention was positively associated with treatment completion even including clinical and demographic covariates (model R-squared = .24). TPB components were generally associated with the alternative readiness scales as expected, and the TPB remained predictive at higher levels of coercion. Meanwhile, none of the standard measures of readiness (e.g., the URICA and TREAT) or treatment coercion were positively associated with treatment participation. Results suggest promise for application of the TPB to treatment completion and support use of the intention component as a screener, though some refinements are suggested.

1. Introduction

1.1. Study aims

Treatment readiness is a decisive limiting factor in treatment initiation, and hence ultimately its effectiveness. Although research suggests that treatment for alcohol and drug problems is generally efficacious (Institute of Medicine, 1990; McLellan, Lewis, O'Brien, and Kleber, 2000; Miller, Walters, and Bennett, 2001; Project MATCH Research Group, 1997), as few as 14% of Americans showing symptoms of chemical abuse or dependence ever seek professional help (Substance Abuse and Mental Health Services Administration, 2004), and drop-out rates in public programs average about 40% (Substance Abuse and Mental Health Services Administration and Office of Applied Studies, 2008). A better understanding of the key factors that influence treatment participation, defined here as initiation of treatment and participation in treatment-related activities, is thus critical to improving outcomes among substance abusing populations. Accordingly, our team conducted a study to test whether the *theory of planned behavior* (TPB; Ajzen, 1985, 1991), which is a general, social-cognitive model of human behavior that has proven useful in modeling a wide range of public health behaviors, can be successfully applied to predicting and explaining treatment completion. As part of this aim, we sought to establish whether a new, 9-item scale based on the TPB may be useful as a screener for treatment drop-out. Below, we review the relevant literature and describe our study.

1.2. Current approaches to understanding readiness to change and treatment readiness specifically

Currently, the dominant theoretical approach to understanding readiness to change among substance-using populations is probably the transtheoretical model (TTM) (DiClemente and Prochaska, 1998; Prochaska and Norcross, 2001), which conceptualizes behavior change as the product of progressive changes across qualitatively distinct motivational stages (DiClemente, Schlundt, and Gemmell, 2004). This theory has informed numerous "stage of change" scales, such as the URICA (University of Rhode Island Change Assessment Scale; McConnaughy, DiClemente, Prochaska, and Velicer, 1989), SOCRATES (Stages of Change Readiness and Treatment Eagerness Scale; Miller and Tonigan, 1996), and Freyer's TREAT (Treatment Readiness Tool; Freyer et al., 2004), the former being a global measure of change readiness and the latter two aiming to capture treatment readiness specifically. Although the TTM and stage of change scales have spurred important research illuminating how motivational changes relate to behavioral changes, none of the stage of change scales have proven to be reliable predictors of substance abuse treatment participation per se. Indeed, independent reviewers have expressed serious concerns over both the findings and methodological problems associated with the stage of change scales and their

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theoretical underpinning as applied to treatment participation and effectiveness (Ashworth, 1997; Bandura, 1998; Davidson, 1998; Migneault, Adams, and Read, 2005; Sutton, 1996; Whitelaw, Baldwin, Bunton, and Flynn, 2000). In two separate studies, Miller's (1999) single-item Readiness Ruler predicted alcohol use and marijuana-related problems among adolescents entering treatment (Maisto et al., 2011a, 2011b) and drug use among Danish adults entering methadone maintenance treatment (Hesse, 2006). However, no known studies have reported associations between the Readiness Ruler and treatment participation among alcohol- and/or drug-dependent populations.

Besides the stage of change scales, there are a handful of diverse scales that have successfully predicted treatment retention, including the RAATE (Recovery Attitude and Treatment Evaluator; Rochat, Wietlisbach, Burnand, Landry, and Yersin, 2004; Smith, Hoffmann, and Nederhoed, 1995), the TMQ (Treatment Motivation Questionnaire; Ryan, Plant, and O'Malley, 1995), and Pettinati's TREAT (Treatment Research Experiences and Attitudes Task; Pettinati, Monterosso, Lipkin, and Volpicelli, 2003). However, published work on these alternatives remains scant, and evidence for their predictive power across subscales, studies, and outcomes is mixed. Better evidence has accumulated for the CMRS (Circumstances, Motivation, Readiness, and Suitability Scale; De Leon and Jainchill, 1986), which was designed for traditional therapeutic communities (TC's)[1] and has been a consistent and moderately strong predict of higher retention (De Leon and Jainchill, 1986; De Leon, Melnick, and Kressel, 1997; De Leon, Melnick, Kressel, and Jainchill, 1994; Melnick, De Leon, Hawke, Jainchill, and Kressel, 1997). Still, given that many CMRS items are specific to residential, TC treatment, it is unlikely that results for the CMRS would generalize to other treatment contexts. A further, critical, limitation is that the existing scales as a whole (with the exception of the CMRS) essentially measure only readiness per se; they do not assess the cognitive precursors to readiness. Consequently, it is not clear how to intervene with individuals or populations scoring low. In sum, the predictive validity and item content of these scales reveals some important limitations.

1.3. The theory of planned behavior as a model of treatment readiness

By contrast, existing evidence reveals a good case for use of the theory of planned behavior (TPB) in modeling treatment participation. The TPB is a general model of human behavior suggesting that the probability of engaging in a given behavior is proximally determined by the *intention* to engage in that behavior, itself a function of one's *attitude*, *subjective norm*, and *perceived control* regarding the behavior (with the relative importance of each dependent on the population and behavioral domain). One's attitude toward a behavior is defined as one's personal evaluation of that behavior, and is based on the positive and negative outcomes expected to be associated with it (*behavioral beliefs*). One's subjective norm represents the perceived social pressures to engage in or avoid a given behavior, and is based on the perceived normative expectations of important referents (*normative beliefs*). Perceived control refers to one's perceived ability to perform a given behavior, and is based on beliefs about factors that may facilitate or impede its performance (*control beliefs*). Because perceived control often reflects actual control, it is typically treated as a direct predictor of behavior as well as a predictor of intention. Later iterations of the TPB have also suggested that perceived control and intention may interact to affect behavior: That is, the impact of intention on behavior may be stronger when perceived control is high. The TPB stipulates that, consistent with the principle of compatibility (Ajzen and Fishbein, 1977; Fishbein and Ajzen, 1975), each of the four TPB constructs be measured at a level of specificity consistent with the behavior under examination. For example, if predicting treatment completion is the goal, then attitudes, subjective norms, perceived control, and intentions relevant to treatment completion should be assessed (and not, for example, change readiness)[2].

As of this writing, the TPB had been used in well over 1000 independent studies (see Ajzen, 2011, for a partial list of references), and overall, results have strongly supported the theory (for reviews and meta-analyses, see Ajzen, 2011; Armitage and Conner, 2001; Fishbein and Ajzen, 2010; Godin and Kok, 1996; Notani, 1998; Sheeran, 2002; Webb and Sheeran, 2006). Many studies have successfully modeled health-related behaviors specifically. Reviewing health studies on behaviors related to the addictions, eating, exercising, oral hygiene, HIV/AIDS, automobile use, and medical screening and treatment compliance, Godin and Kok (1996) found that on average the reviewed studies explained 41% of the variance in intentions and 34% of the variance in behavior generally, but 41% of the variance in addictive behaviors (i.e., use of alcohol, drugs, and cigarettes). In TPB-based studies on alcohol consumption, the model has predicted up to 76% of the variance in intentions and up to 50% of the variance in consumption (e.g., Armitage, Conner, Loach, and Willett, 1999; Conner, Warren, Close, and Sparks, 1999; Marcoux and Shope, 1997; Schlegel, D'Avernas, Zanna, DeCourville, and Manske, 1992; Wall, Hinson, and McKee, 1998).

Three known studies have used the TPB to examine treatment initiation or compliance. In one, Conner, Black, and Stratton (1998) used the TPB to predict adherence to a medication regimen among psychiatric patients, with supportive results. In a second, Zemore and Kaskutas, (2009) used the TPB to predict participation in Alcoholics Anonymous (AA) in a substance abuse treatment sample. Their 17-item scale (the Alcoholics Anonymous Intention Measure, or AAIM) predicted 41% of the variance in AA involvement at 12 months when administered 6 months post-baseline. Third, Stecker et al. (2012) used the TPB as a basis for a pilot telephone intervention among a community sample of hazardous drinkers, aiming to modify beliefs related to treatment-seeking and hence enhance treatment initiation. Results showed that participants receiving the intervention had a significantly higher sense of perceived control and greater intention to seek treatment (vs. control participants); they were also 3 times more likely to enter treatment. However, there are to our knowledge no validated TPB measures tailored specifically to substance abuse treatment completion.

1.4. Study overview and hypotheses

The above review suggests initial support for the TPB, but also a need for additional research on substance abuse treatment samples and a TPB-based screener for that population in particular. Accordingly, the present study tested application of the TPB to treatment completion among individuals initiating formal substance abuse treatment. Baseline surveys included the new TPB screener, alterna-

[1] "A TC [therapeutic community] is a drug-free environment in which people with addictive problems live together in an organized and structured way to promote change toward a drug-free life in the outside society" (Broekaert, Kooyman, and Ottenberg, 1998), p. 595). The TC is often likened to a microsociety because it models key elements of the macrosociety (e.g., social relationships, education, and an occupational structure) in an attempt to foster skills helpful for life post-treatment. Peers are considered to be critical elements in the change process (Borkman, Kaskutas, and Owen, 2007; De Leon, 2000).

[2] Perceived control shares similarities with the social learning construct of self-efficacy, as both constructs refer to perceived ability to execute a given behavior. However, researchers in the alcohol and drug field typically operationalize self-efficacy as perceived control over alcohol or drug use itself, whereas the TPB would demand a measure relevant to treatment completion when examining the same. Measures of perceived control may also include assessment of specific control beliefs, whereas assessments of self-efficacy typically do not address beliefs about barriers and facilitators of a behavior (Ajzen, 1985; Bandura, 1977).