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The Relationship between the Dimensions of Change Instrument and Retention in Therapeutic Community Treatment: the Moderating Influence of Time in Treatment

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Abstract

Objectives—The Dimensions of Change Instrument [1] assesses aspects of the therapeutic community treatment process. More positive scores on two of the eight dimensions of treatment process assessed at the beginning of treatment, Clarity and Safety, and Resident Support, Sharing and Enthusiasm predict retention in treatment at 30, 90, 180, and 270 days as well as overall length of stay. This study explored whether these process subscales assessed at different phases predicted retention at the next phase, and of treatment.

Methods—519 individuals, aged 18 to 62, undergoing therapeutic community treatment completed the DCI at baseline, one, three, six and nine months of the therapeutic community treatment.

Results—DCI scale scores at each stage of treatment predicted dropout in the subsequent period. In the early stages of treatment higher scores predicted a higher probability of retention in the subsequent stage of treatment. In later stages, lower DCI scores predicted a higher probability of retention.

Conclusions—We conclude that predictions about retention made using the DCI scale scores are treatment stage dependent – the DCI predicts retention at the next stage but the direction of the scale prediction varies as a function of client tenure in treatment. This suggests that treatment processes that influence clients to remain early in treatment may change their valence for clients more advanced in treatment.

Keywords

therapeutic community; dimensions of change; survival analysis; retention

1. Introduction

The therapeutic community (TC) approach was first put forward in the 1940s [2] and is an option for treating individuals with substance abuse problems; concurrently, a body of evidence that the holistic TC approach is an effective method of treating substance abuse disorders is building in the literature [3-6].

The Dimensions of Change Instrument (DCI) [1] was designed to assess aspects of the TC treatment process from the client's perspective. The instrument was developed to examine

whether client responses to process dimensions are able to predict outcomes, to gain a greater understanding of components of TC treatment, and thus to improve treatment quality.

The DCI has eight subscales: Community Responsibility; Clarity and Safety; Group Process; Resident Sharing, Support and Enthusiasm; Introspection and Self-Management; Positive Self-Attitude, Problem Recognition, and Social Network. The original presentation of the DCI included a confirmatory factor analysis, including a cross-validation in a second sample, finding satisfactory fit.[1] Further work on the DCI provided evidence of its validity and the sensitivity to change of the DCI [7,8].

Studies carried out using the DCI have found that demographic and drug history variables are predictive of DCI scores [9], that DCI scores taken early in treatment are predictive of retention at 3, 6, 9 and 12 months, as well as post-treatment outcomes [10] and that when the measures were taken at 30 days, two of the dimensions - *Clarity and Safety* (CS) and *Resident Support, Sharing and Enthusiasm* (RSSE) were predictive of retention..

Treatment for drug problems promotes personality change and occurs over substantial periods of time. It was therefore hypothesized that the relationship between DCI scores and retention might change during the course of treatment. The present study aims to examine the relationship between two of the DCI scales (CS and RSSE) and retention during the course of the TC treatment.

2. Materials and Methods

Sample

The sample and measurement procedures have been described in detail elsewhere [1]. The sample comprised 519 adults, aged from 18 to 62 (mean 32) resident in one of five participating therapeutic communities.

Measures

Participants completed the DCI on up to five occasions: within one week of admission to the program; at one month, three months; six months and nine months. Details of mean scores, standard deviations and coefficient alphas are presented in a previous paper [8].

Analysis Approach

For each of the five administration of the DCI we tested whether scores on RSSE and CS predicted retention in the subsequent time period. We then tested whether these predictions differed for each administration. To do this, we used a discrete time survival [11,12] DCI scores were treated as time varying covariates. We controlled for three covariates – male, white (non-Hispanic), and being involved in the criminal justice system, and included a dummy coded variable representing treatment site.).

We tested the whether the effects of the DCI on subsequent retention were equal over time in two ways. First, we treated time as a categorical variable and looked for any difference, second, we treated time as a continuous measure, and tested whether the linear change in the effects was significantly different from zero.

The maximum likelihood – robust (MLR) estimator, as implemented in Mplus 4.2 [13] was used for all analyses.

3. Results

519 patients entered therapy, at 1 month 449 (87%) remained, at 3 months 360 remained, 270 were still in therapy at 6 months, at 9 months 194 remained in therapy, and 121 stayed longer than 12 months.

Table 1 shows the parameter estimates from the discrete time survival models. For each of RSSE and CS, we present two models – the first in which the parameter estimates are freely estimated (the unconstrained model), and the second where the estimates are constrained to change in a linear fashion.

The effects of CS and RSSE on retention are expressed as odds ratios (OR) associated with departing therapy (as in logistic regression), a value less than 1 indicates lower scores are associated with a higher probability of departure from therapy, a value greater than 1 indicates that higher scores are associated with a higher probability of departure. The ORs for period 1 (baseline to one month) and period 2 (one to three months) for both CS and RSSE show that a lower score is associated with a higher likelihood of departing therapy, replicating the result found by Mandell et al. (in press). For both CS and RSSE, the parameter estimates get closer to 1.00 and become non-significant in periods 3 and 4. In the final period the OR is greater than 1.00, indicating that higher scores are associated with a higher likelihood of departure from therapy.

The statistical significance of the change in these estimates over time was estimated in two ways. First, we tested whether all parameters were equal across time. As shown in Table 1, for CS, this was significant ($p = .002$), for RSSE this marginally failed to achieve statistical significance ($p = .060$). However, a more powerful test of the hypothesis would be to treat the change as linear, and test the slope of the change in parameters over time (i.e. an interaction effect). First we carried out a test of linearity to determine that the effect did not depart from linearity, for CS this gave $p = 0.41$ and for RSSE, $p = 0.66$. Testing whether the effects were equal, with the linear constraint, gave a significant effect for both CS ($p < .001$) and RSSE ($p = .004$) indicating that the parameter estimates are changing over time..

Three time invariant covariates were also included in the analysis: being male, being white (non-Hispanic) and having been referred to treatment as a result of involvement in the criminal justice system. The likelihood of dropout is reduced for males, although this effect does not reach statistical significance. In addition being white and being referred to treatment via the criminal justice system have statistically significant positive effects on retention (controlling for other factors).

4. Discussion

The analysis presented in this paper demonstrates that the client responses to the DCI predict quitting therapy differentially during the course of therapy; there is an interaction effect (or moderator effect) of time in therapy on the effects of the DCI measured dimensions. We hypothesize that the mechanisms underlying the change in the effect of the DCI dimensions is related to the decreasing importance of understanding of the TC experience, and the feeling of safety and response to the social support available in the TC environment. Early on in treatment, clients who score low on the DCI may feel that they don't understand the process and are not fitting in to the peer enthusiasm and support, often experiencing it as peer pressure to conform to TC process and values. Such individuals are more likely to quit therapy than their peers. Between six and nine months of treatment, clients who understand the process, who feel safe and are comfortable with the peer driven TC experience and have been without drugs for that length of time may be more likely to feel that they have obtained what they needed (maximum benefit) from TC treatment. Thus more positive scores on these two dimensions later in

treatment identify clients who are more ready to leave relative to peers who are still struggling with TC therapeutic process.

The samples employed in this study were large and diverse with respect to age, sex, ethnicity and primary drug used; however the participants were not a random sample from the population of interest and may not be representative of all therapeutic communities. This study examines only two of the eight DCI dimensions, selected because their scores at the beginning of treatment predicted retention, which led to the hypothesis that these dimensions scores would predict retention at each stage of treatment.

It should be noted that the DCI scores reflect client perceptions of TC processes. The perceptions of counselors and peers may provide different information about TC clients' treatment process that could be fruitful in amassing a fuller picture of TC treatment processes. The development, refinement, and validation of the DCI have thus far been conducted exclusively within the Phoenix House Foundation with residential clients. Future research examining the utility of the DCI for outpatient clients and individuals undergoing treatment in other TCs will enhance the generalizability of findings using this instrument to describe treatment processes. If the DCI is found to be relevant for other treatment populations, it could provide a valuable basis for comparison of substance abuse treatment modalities.

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Table 1

Parameter estimates from discrete time survival model

		Clarity and Safety		Resident Sharing, Support and Environment	
		Free parameters	Linear Constraint	Free parameters	Linear Constraint
Period 1 (baseline to 1 month) DCI	Estimate (95% CIs)	0.65 (0.47, 0.90)	0.59 (0.45, 0.78)	0.55 (0.34, 0.87)	0.61 (0.43, 0.87)
Parameter					
Period 2 (1 month to 3 month) DCI	Estimate (95% CIs)	0.66 (0.45, 0.97)	0.74 (0.60, 0.90)	0.78 (0.52, 1.18)	0.76 (0.59, 0.99)
Parameter					
Period 3 (3 to 6 months) DCI	Estimate (95% CIs)	0.93 (0.64, 1.35)	0.92 (0.76, 1.11)	1.19 (0.78, 1.80)	0.96 (0.77, 1.19)
Parameter					
Time 4 (6 to 9 months) DCI	Estimate (95% CIs)	0.97 (0.64, 1.47)	1.15 (0.90, 1.47)	1.16 (0.68, 1.98)	1.20 (0.91, 1.58)
Parameter					
Period 5 (9 to 12 months) DCI	Estimate (95% CIs)	1.94 (1.20, 3.12)	1.44 (1.03, 2.02)	1.31 (0.80, 2.14)	1.50 (1.01, 2.22)
Parameter					
Test of linearity	χ^2 (df)	2.9 (3)	-	1.6 (3)	-
	P	0.41		0.66	
Test that all parameters are equal	χ^2 (df)	16.6 (4)	13.1 (1)	9.2 (4)	8.1 (1)
	P	0.002	<0.001	0.060	0.004
Male	Estimate (95% CIs)	0.79 (0.58, 1.08)	0.79 (0.59, 1.07)	0.80 (0.59, 1.08)	0.80 (0.59, 1.08)
White	Estimate (95% CIs)	0.71 (0.55, 0.93)	0.72 (0.55, 0.93)	0.74 (0.57, 0.96)	0.74 (0.57, 0.95)
Involvement in CJ system	Estimate (95% CIs)	0.60 (0.44, 0.81)	0.60 (0.44, 0.81)	0.60 (0.44, 0.81)	0.60 (0.44, 0.81)