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Motivation for Treatment and Motivation for Change in Substance-Dependent Patients with Co-Occurring Psychiatric Disorders

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Abstract—The aims of this study were to examine the relationship between motivation for treatment and for change, and to explore their role in the prediction of treatment completion. The sample was composed of 560 predominantly polydrug-using inpatients with co-occurring psychiatric disorders. Motivation for treatment was assessed with the Motivation for Treatment Scales, and motivation for change was measured with the Readiness to Change Questionnaire. Patients indicated strong motivation to change illegal drug and alcohol use. In initial factor analysis, motivation for treatment and for change did not load on the same factors, confirming that these are distinct domains. Four categories were discerned with respect to readiness for treatment and for change, with low agreement between the two. In performing survival analysis, we found that being in readiness category 4 (RT↑RC↑) was associated with a greater chance of remaining in treatment for a period of 105 days without premature attrition (Log Rank chi-sq = 5.000; p = 0.02). To a limited extent, intake measures of motivation can be used to predict attrition from treatment. Clinicians can use motivation assessment both for clinical purposes and in the prediction of those who need extra monitoring due to increased risk of premature attrition.

Keywords—motivation for change, motivation for treatment, substance dependence, treatment adherence

The concept of motivation is central to understanding the process of change for a substance-dependent patient attempting to reduce or quit use (Prochaska and DiClemente 1992). When substance abuse treatment is involved in or interacting with the larger process of change, there are two related types of motivation to consider: motivation for change and motivation for treatment (DiClemente 1999). These two types of motivation seem to be related, but are different expressions of a patient's appraisal that something has to change. According to

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DiClemente (1999), treatment is a time-limited event that interacts with the larger process of change. For many patients, the process of change is more extensive in time than any single treatment of the individual's formal treatment history (DiClemente, Schlundt, and Gemmell 2004; DiClemente, Kofeldt, and Gemmell 2011).

Motivation for change has been related to treatment seeking, treatment attendance, treatment retention, and treatment participation (DiClemente and Prochaska 1998; DiClemente 1999; Longshore and Teruya 2006; DiClemente, Kofeldt, and Gemmell 2011). It was also found to be the most significant predictor of long-term successful modification of alcohol consumption for outpatient participants (DiClemente and Hughes 1990; DiClemente 1999; Demmel et al. 2004). On the other hand, several studies found that the contribution of motivation for change is low in the prediction of treatment outcome in patients with drug and alcohol dependence (Burke and Gregoire 2007; Field et al. 2009; Nosyk et al. 2010).

Motivation for treatment at intake seems to be related to retention in treatment and early therapeutic engagement in outpatient methadone, long-term residential, and outpatient drug-free treatments. Treatment readiness was found to be more important than socio-demographics, drug use, and other background variables in the prediction of retention in treatment (Simpson, Joe, and Rowan-Szal 1997; Hiller et al. 2009; Broome, Joe, and Simpson 2001; Hiller et al. 2002; Kelly et al. 2011). Patient treatment motivation at intake in patients with drug dependence was also associated with the formation of better therapeutic relationships, more favorable perceptions of counselor competence, support from peers, and increases in session attendance (Simpson, Joe, and Rowan-Szal 1997; Simpson et al. 1997; Broome, Simpson, and Joe 1999; Meier et al. 2005). However, other studies found no association between pretreatment motivation and treatment engagement, subjective reasons for drop-out, or with treatment outcomes in patients in methadone maintenance programs (Gryczynski et al. 2009a, 2009b).

The few previous studies concerning the interrelation between motivation for change and some related concepts of motivation for treatment, such as motivation for help or receptivity for treatment, have been carried out only with alcohol-dependent patients. In a study that compared readiness to change with receptivity for treatment in alcohol-dependent outpatients, DiClemente and Hughes (1990) found that participant's readiness to change was more important as a predictor of post-treatment drinking than was readiness for treatment. However, the participants who expressed readiness for treatment as well as for change had the best outcomes. Lau et al. (2010) studied motivation for change and motivation for seeking help in general hospital inpatients with drinking problems during 12 months of treatment. They concluded that while motivation to change drinking behavior remained stable within the 12 months of hospitalization, motivation to seek help decreased. In other words, motivation for change and motivation to seek help progressed differently during treatment.

Freyer-Adam et al. (2005) studied both readiness for treatment and readiness for changing alcohol-drinking behavior in non-treatment-seeking, alcohol-dependent, general hospital inpatients. They found agreement between readiness for treatment and for change in 58% of patients. Low scores on both motivation measures were associated with lower alcohol problem severity and high scores with higher alcohol problem severity. Furthermore, higher change readiness was associated with being older and having a partner. This resulted in the recommendation that readiness to change and readiness to seek help should be assessed separately among treatment seekers for alcohol detoxification.

The picture that arises from these studies is that both domains of motivation—treatment motivation and change motivation—have not been studied extensively together, and only in alcohol-dependent patients. Among the studies mentioned, only DiClemente and Hughes (1990) was conducted in a substance-dependence treatment setting. The studies of Lau et al. (2010) and of Freyer-Adam et al. (2005) were conducted among general hospital patients. Furthermore, it seems that motivation in some studies is narrowed to readiness (either for treatment or for change) without further specification.

In the present study, motivation reflects the whole process as described in the Transtheoretical Model (TTM) (Prochaska and DiClemente 1992). This counts for both motivation for treatment and for change. Readiness—either for treatment or for change—refers to the last stage of the TTM, and is a direct predecessor of action. So, when in the article we speak of "motivation," we mean the whole concept of motivation, with all its stages. When speaking of readiness, we aim at the predecessor of action.

In the present study, motivation for treatment and motivation for change are studied in inpatient treatment programs for patients with polydrug use and co-occurring disorders (COD) in the Netherlands. As far as we know, this is the first time that both domains of motivation have been studied in this type of population. The aims of the study are to evaluate the association between motivation for treatment and motivation for change and, secondly, to explore the role of readiness for treatment and for change in the prediction of treatment adherence.

METHODS

Sample and Setting

The study is based on data that were gathered during a routine outcome monitoring project during 2009–2011. Patients who were admitted during that period to one of 10 inpatient treatment facilities for COD patients in the Netherlands were included in the study. Treatment

consisted of an inpatient program of around three months (for the purpose of this study maximized to 105 days). These programs were common in the Netherlands, at the time of the study, for the treatment of patients with co-occurring disorders. Dual diagnosis facilities were established in the second half of the 1990s in the Netherlands. They are focused on patients with both substance dependence and psychiatric disorders, in which there is often a situation of multiple problems. The 10 dual diagnosis clinics participating in this study offer a wide range of interventions, such as integrated diagnosis, detoxification, pharmacotherapy, cognitive behavioral therapy, group and individual treatment, providing structure, day care, rehabilitative work, debt restructuring, and vocational and lifestyle training.

A total of 560 patients participated in the study. These patients all completed a Motivation for Treatment questionnaire (MfT) during their first week of treatment, and at least one Readiness to Change Questionnaire (RCQ-D) (that is, for at least one substance).

Instruments

Motivation for Treatment (Mft)

The MfT version for alcohol and drug abusers adapted in the Netherlands was used in this study (Simpson and Joe 1993; De Weert-Van Oene et al. 2002). This scale is based on the Stages of Change Model (Prochaska and DiClemente 1992). The scale assesses motivation for treatment by 24 items that are distributed over four scales: General Problem Recognition (PRGEN; e.g., *does your substance use mean more trouble than it's worth)*, and Specific Problem Recognition (PRSPEC; e.g., *does your substance use mean the risk of losing contact with your children*), both reflecting the transition from precontemplation to contemplation; Desire for Help (DH; e.g., *I am sick and tired of all problems caused by my drug use*), which refers to the transition from contemplation to action; and Treatment Readiness (TR; e.g., *this treatment program may be my last chance to solve my drug problem*), referring to the actual engagement into treatment. The responses are scored on a five-point Likert scale ranging from strongly disagree to strongly agree. Higher scores reflect greater motivation. The scale has shown adequate factorial validity (exploratory and confirmatory), construct validity, and internal consistency in drug abusers and alcohol-dependent patients. Reliability of the scales in the Dutch validation were: Cronbach's α for PRGEN = 0.55, PRSPEC = 0.76, DH = 0.56, TR = 0.70. The MfT is now widely used in the Netherlands as part of the routine assessment procedure (Measurement of the Addictions for Triage and Evaluation, MATE; Schippers, Broekman, and Buchholz 2011).

Readiness to Change Questionnaire

The Dutch version of the Readiness to Change Questionnaire (RCQ-D) was used in this study (Heather, Gold, and Rollnick 1991; Rollnick et al. 1992; DeFuentes Merillas, De Jong, and Schippers 2002). Three stages were assessed: Precontemplation (PREC; e.g., *I don't think I drink too much*), Contemplation (CON; e.g., *I enjoy my drinking, but sometimes I drink too much*), and Action (ACT; e.g., *I am actually changing my drinking habits right now*), referring to the Stages of Change Model. All items are rated along a five-point scale ranging from *Strongly Disagree* to *Strongly Agree*, and assigned a score ranging from 0 to 4. The factor structure of the RCQ-D for an alcohol-dependent population was consistent with the three-factor structure established for the original RCQ. The reliability of each scale was found to be satisfactory (Cronbach's α for PREC = 0.68, CON = 0.70, ACT = 0.81 in the RCQ-D). In our study, we adapted the RCQ-D, which was originally developed for use in alcohol-dependent patients, to a population of polydrug users (Raes et al. 2010). Patients filled out a RCQ-D for each substance separately, resulting in substance-specific motivation to change.

Treatment Completion

Clinicians were asked to complete a form for each patient leaving the treatment program, regardless of whether he/she completed the 105 days of treatment. This timeframe is congruent with the program's intended duration of around three months; we added half a month's time for delays. In the form, the clinician indicated whether the patient was a treatment completer or non-completer. Patients who were considered non-completers all terminated treatment against medical advice. Patients who left treatment earlier than originally intended, but in agreement with their therapist—for instance, because both agreed that the patient benefitted from treatment sufficiently—were considered completers.

Procedure

Data were collected by the therapist during the first week of admission. All scales were completed in a web-based application, called BergOp (www.bergop.info). Patients signed a written informed consent for the use of their data for scientific purposes. The study was approved by the institutional review boards (IRBs) of all participating facilities.

Data Analyses

The SPSS 20.0 program was used for data analyses. All patients completed the MfT; therefore, mean scale scores were calculated for this scale for the whole population. For the calculation of RCQ-D scores for each substance separately—either alcohol, cocaine, opiates, or cannabis—only those patients who were diagnosed at treatment entry as alcohol-, cocaine-, opiate-, and/or cannabis-dependent, respectively, were included. A patient who used, for example, both alcohol and heroin filled out the RCQ-D for alcohol and the RCQ-D for heroin, but not

for the other substances. Since most patients used nicotine, the total population was considered for the calculation of RCQ-D-nicotine scores.

To explore the associations between motivation for treatment and motivation for change, we performed exploratory factor analysis (EFA) with oblique rotation over the subscales of both questionnaires for each subpopulation of users separately. New factors could thus emerge consisting of sub-scales of both questionnaires.

Further analyses concern a specific stage of motivation: readiness, either for treatment or for change. In order to allocate patients to the different stages of motivation for change, the standard procedure recommended for RCQ-D was followed (DeFuentes Merillas, De Jong, and Schippers 2002). Patients were considered to be ready for change (RC) when they were in the action stage for changing either alcohol, cannabis, cocaine, or heroin use. In addition, patients who had scores $\geq$ 3.8 (the scale's mean value, as well as the median value) on the MfT–Treatment Readiness scale were considered ready for treatment (RT), while patients who had scores $<$ 3.8 were considered not ready for treatment. Agreement and disagreement between the two domains of readiness were computed. Patients were allocated to one of four groups thus formed, following Freyer-Adam et al. (2005): (1) not ready for treatment nor for change (RT↓RC↓); (2) ready for change but not for treatment (RT↓RC↑); (3) ready for treatment but not for change (RT↑RC↓); and (4) ready for both treatment and change (RT↑RC↑). Cohen's kappa (p) was computed to determine the level of agreement between the two measures of readiness. Differences between groups were assessed for patient baseline characteristics. Finally, a Kaplan Meyer survival analysis was performed for premature attrition during 105 days of treatment.

RESULTS

Patients were predominantly male (79.8%) and of Dutch ethnic origin (80.1%). Mean age was 37.2 (sd = 9.1), and most (72.1%) reported using substances for more than 10 years. Of the patients, 42.3% were diagnosed with alcohol dependence, 37.7% with cocaine dependence, 31.9% with opioid dependence, 31.1% with cannabis dependence, and 30.2% with dependence on other substances. Patients were predominantly polydrug users; the mean of dependence and misuse diagnoses was 2.19 (sd = 1.3), varying between 1 and 10 (nicotine not included). Over one-third (35.3%; n = 190) had one diagnosis of dependence or misuse, in 31.1% of cases relating to alcohol dependence. Among 64.7% who had more than one diagnosis of dependence or misuse, the most frequently observed combinations were dependence of cocaine and opioids (30.2%), alcohol and cannabis (24.1%), alcohol and cocaine (22.4%), and cocaine and cannabis (21.3%).

Most patients (80%) had a co-occurring Axis I disorder (20.9% anxiety disorder, 17.2% mood disorder, 23.4% psychotic disorder, 18.7% developmental disorder), and 40.6% had a personality disorder. On Axis IV of DSM-IV, 62% had problems with primary support group, 62.0% with occupation, 54.8% in relation to housing, 51.7% financial, 41.0% with social environment, and 37.3% with legal system/crime. Mean Global Assessment of Functioning (GAF) score at intake was 44.9 (SD 7.4), which indicates the existence of serious symptoms or serious impairments in social or occupational functioning (APA 2000). Only 1.4% of patients were involuntarily admitted. Total treatment drop-out before three months was 55%.

Mean scores on all scales of the MfT and RCQ-D are presented in Table 1. The results show that patients expressed a strong treatment motivation at treatment entry. Mean motivation for change scores for illegal substances (cocaine, heroin) were higher than those for legal substances such as alcohol and nicotine, especially with respect to the CON and ACT scores. Motivation scores for changing cannabis use were comparable to those for alcohol use. For all substances, with respect to motivation for change, ACT scores were the highest, with the exception of

TABLE 1
Mean Scores (sd) on Scales of Motivation for Treatment (MfT) List and Readiness for Change (RCQ) for Total Population and Discerned Substance Categories

	MfT				RCQ		
	PRGEN	PRSPEC	DH	TR	PREC	CON	ACT
Total population (N = 560)	3.88 (0.9)	3.40 (0.9)	3.81 (0.6)	3.82 (0.6)			
Nicotine (N = 560)	3.88 (0.9)	3.40 (0.9)	3.81 (0.6)	3.82 (0.6)	12.6 (3.8)	12.7 (3.3)	10.2 (4.1)
Alcohol (N = 321)	3.97 (0.8)	3.46 (0.9)	3.85 (0.6)	3.84 (0.6)	13.1 (4.8)	15.0 (3.6)	15.8 (3.6)
Cannabis (N = 181)	3.87 (0.9)	3.43 (0.9)	3.86 (0.6)	3.83 (0.6)	12.8 (4.4)	14.2 (3.8)	15.7 (3.5)
Cocaine (N = 189)	3.99 (0.9)	3.52 (0.9)	3.88 (0.6)	3.93 (0.6)	13.5 (5.1)	16.0 (2.9)	17.0 (3.1)
Opioids (N = 120)	4.07 (0.8)	3.69 (0.9)	3.95 (0.6)	3.96 (0.6)	13.2 (5.2)	15.6 (3.1)	16.9 (3.2)

Legend: PRGEN = Problem Recognition, general; PRSPEC = Problem Recognition, specific; DH = Desire for Help; TR = Treatment Readiness. RCQ = Readiness to Change Questionnaire. PREC = Precontemplation; CON = Contemplation; ACT = Action.

TABLE 2
Readiness Groups Based upon the Stages of Motivation for Change and Motivation for Treatment (Ntotal = 560); Percentages (N) are Presented

Readiness for treatment	Readiness to change alcohol use		Readiness to change cannabis use		Readiness to change cocaine use		Readiness to change opioid use	
	Not ready	Ready	Not ready	Ready	Not ready	Ready	Not ready	Ready
Not ready	23.3 (72) *agr*	32.4 (100) *disagr*	18.3 (48) *agr*	37.3 (98) *disagr*	13.3 (37) *agr*	36.9 (103) *disagr*	12.7 (20) *agr*	34.2 (54) *disagr*
Ready	16.9 (52) *disagr*	27.5 (85) *agr*	16.7 (44) *disagr*	27.8 (73) *agr*	11.8 (33) *disagr*	38.0 (106) *agr*	12.0 (19) *disagr*	41.1 (65) *agr*
kappa	0.038 (0.487)		−0.045 (0.424)		0.027 (0.625)		0.045 (0.521)	

Not ready: patients in precontemplation or contemplation (RCQ) or score < 4.0 on Treatment Readiness scale (MfT). Ready: patients in Action (RCQ) or score ≥ 3.8 on Treatment Readiness scale (MfT). Agr: Agreement between motivation for change and motivation for treatment.

nicotine, where PREC and CON scores were equally high, and both higher than ACT scores.

To further explore the association between motivation for change and for treatment, an exploratory factor analysis was performed. Including the scales of both MfT and RCQ-D into the EFA resulted in a 2-, 3-, or 4-factor solution, depending on the substance (data not shown). In cocaine users, a 2-factor solution seemed to be the best fit, explaining 58% of variance. In opioid users, a 4-factor solution was the best fit for the data, explaining 87% of variance. For alcohol, nicotine, and cannabis users, a 3-factor solution was found, explaining between 71% and 75% of variance. In none of the five discerned substances were scales of the RCQ-D and of the MfT loaded on the same factor.

In the following step, patients were divided into subgroups, based on their individual scores on both Treatment Readiness and Readiness for Change (Table 2). Twenty-eight percent of alcohol-dependent and of cannabis-dependent patients showed high RT as well as high RC. This percentage was higher in cocaine- and in opioid-dependent patients: 38% and 41%, respectively. Kappa's for all substances were low and non-significant, indicating no agreement between the two measures of readiness. In assessing differences in patient baseline characteristics or outcome parameters between the four groups (Table 3), we found no associations between readiness-group allocation and gender, age, and years of substance use. Patients of non-Dutch ethnicity were almost absent in the RT↑RC↓ category. A diagnosis of anxiety disorder was associated with RT↑RC↓, and diagnosis of psychotic disorder with RT↓RC↓. Financial problems on Axis IV were associated with RT↑RC↑, while problems with the social environment were associated with RT↓RC↓. Lower GAF score at intake was related to RT↓RC↓.

Mean length of stay in the RT↓RC↓ category was 52.89 (sd 29.4) days, in the RT↓RC↑ category: 54.88 (sd 27.8), in the RT↑RC↓ category: 53.22 (sd 30.1), and in the RT↑RC↑ category: 59.92 (sd 28.8) days. In performing survival analysis, we found that being in readiness category 4 (RT↑RC↑) was associated with a greater chance of remaining in treatment for a period of 105 days without premature attrition (Log Rank chi-sq = 5.000; p = 0.02; see Figure 1).

DISCUSSION

This study investigated motivation for change and motivation for treatment in patients with drug addiction and co-occurring disorders in the Netherlands. These patients form a diverse population from naturalistic inpatient settings. The first aim of this study was to evaluate the association between the two types of motivation.

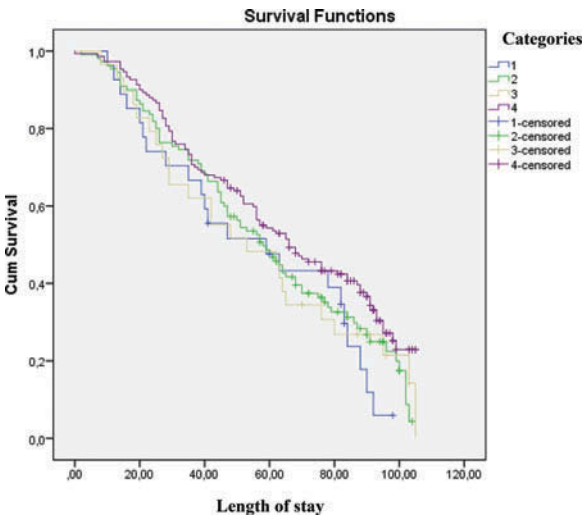
With respect to motivation for change, we found patients to have the highest mean scores on the action scale for all substances, with the exception of nicotine. For nicotine, contemplation and precontemplation scores were equally high. This shows that patients indicated rather strong motivation to change their illegal drug use and, to a somewhat lesser extent, their alcohol use, but they were far less motivated to change smoking behavior. These findings were in support of discriminating between substances when assessing motivation for change (Raes et al. 2010). These results partly contradicted, however, previous findings by Abellanas and McLellan (1993), who found almost identical profiles for motivation for change among a sample of patients in methadone maintenance treatment for opioid, cocaine, and nicotine use. A possible explanation for our different outcomes may be found in the greater number, as well as in the larger diversity, of our sample. The majority of patients in the present study reported being in the action stage with respect to motivation for change.

We found that both aspects of motivation are independent domains. This finding was confirmed by the EFA and by the differential scores on treatment motivation for

TABLE 3
Baseline Characteristics of the Four Readiness Categories

	RT↓ RC↓ N = 41	RT↓RC↑ N = 147	RT↑RC↓ N = 49	RT↑RC↑ N = 226	F/chi-sq (p)
Sociodemographics					
– Gender (male) %	80.5	81.6	85.7	77.4	2.17 (0.537)
– Age (M, sd)	39.12 (10.1)	36.00 (9.5)	37.38 (9.3)	37.50 (8.7)	1.54 (0.204)
– Ethnicity (non-Dutch) %	20	26.2	4.2	18.6	*11.43 (0.01)*
Use of substances >10 yrs %	76.3	71.7	77.1	71.4	4.87 (0.846)
Axis I/II disorders %					
– Anxiety disorder	14.6	7.5	22.4	11.5	*8.38 (0.04)*
– Mood disorder	19.5	8.8	12.2	8	5.76 (0.124)
– Psychotic disorder	31.7	16.3	2	8	*25.59 (<0.001)*
– Axis II disorder	38.5	28.7	31.9	34.4	8.81 (0.184)
Axis IV disorder %					
– Primary support group	64.1	63.8	51	65	3.47 (0.324)
– housing	48.7	55.3	49	58.3	2.28 (0.517)
– financial	38.5	50.4	42.9	57.8	*7.71 (0.05)*
– legal system	33.3	36.9	38.8	36.3	0.29 (0.963)
– social environment	53.8	34.8	30.6	45.7	*9.14 (0.03)*
– education	7.7	10.6	2	7.6	3.76 (0.289)
– occupational	69.2	62.4	49	65.5	5.39 (0.145)
– access to services	5.1	2.8	2	4.9	1.63 (0.653)
– other	15.4	17.7	8.2	13.9	2.84 (0.417)
GAF score at intake (M, sd)	42.08 (8.1)	45.78 (6.7)	46.94 (9.4)	45.03 (6.9)	*3.51 (0.015)*

FIGURE 1
Survival Analysis of Retention in Treatment for 105 Days for Four Motivational Categories. Category 1: RT↓RC↓; category 2: RT↓RC↑; category 3: RT↑RC↓; category 4: RT↑RC↑.



patients who are in one of three motivation for change stages. In only 50% of patients was agreement found for motivation for treatment and for change. These results are in line with DiClemente (1999), who pointed out that motivation for change and motivation for treatment are different processes that do not always co-occur. However, our findings contradict Simpson and Joe (1993), who hypothesized particular relations between these two concepts. It seems more appropriate to conclude that they are two independent measures of motivation which are, contrary to expectations, not related. Furthermore, we found that motivation for changing substance use differs for the various substances. In line with previous research (Raes et al. 2010), we conclude that it is important to assess motivation for change for each substance separately.

The second aim of this study was to see whether readiness for change or for treatment was associated with retention in treatment. We found that patients who expressed both readiness for change and for treatment were more likely to remain in treatment for a period of 105 days, and leave treatment in agreement with the therapist. This timeframe is congruent with the program's intended duration of around three months, with time added for delays. So, patients with high initial treatment readiness and readiness for change were more likely to complete the program as

planned. There were no differences between the three other categories. By that, we conclude that lower readiness for both change and treatment predicts, to a limited extent, a stronger likelihood of premature attrition from treatment.

We note, however, that the difference in mean length of stay in treatment between those in the RT↓RC↓ and those in the RT↑RC↑ groups is only one week. Therefore, although patients in the latter category have a greater chance of completing treatment as planned, the prediction of treatment adherence by initial measures of treatment readiness remains limited.

One study limitation is that findings are based on a three-month inpatient treatment with polydrug-using patients. Replication of the study in other types of treatment and types of addictions—for instance, in more homogeneous patient populations—is recommended. Second, as a measure of treatment outcome, we chose total treatment completion, and we found motivational variables to be related to treatment completion. However, this association may be complicated by other covariates, such as therapeutic relation, perception of peer support, and session attendance. Future studies should look into those possibly mediating associations. Third, our study aimed at a population of dual diagnosis patients, as 80% of the patients had a co-occurring Axis I disorder and 40% had a co-occurring Axis II disorder. Multiple problems were the rule rather than the exception. This is a reflection of the total population that suffers from severe SUD with co-occurring psychiatric disorders, according to Minkoff's (1989) fourth quadrant. Whether or not the results are applicable to other SUD populations remains a subject of further study.

Fourth, we conducted exploratory factor analysis in the various substance categories, which resulted in a somewhat mixed pattern. In particular, the factors we found for the RCQ-D were not equal among substance groups. In cocaine-dependent patients, all three factors of the RCQ-D loaded on the same factor, whereas in the other categories a 2-factor solution was found. Previously, Raes et al. (2010) found similar results, with the factor structure in cocaine-dependent patients being of a different nature than that for other substance categories.

Finally, both measures used in this study are based on the Transtheoretical Model (TTM) of Prochaska and DiClemente (1992). This model has been under debate in the past decennium, and we refer for details concerning the discussion about the model to previous authors (e.g., West 2005; Littell and Girvin 2002).

In conclusion, this was a first study to explore the relations between motivation for change and motivation for treatment in a large inpatient consecutive sample of polydrug-dependent patients with co-occurring psychiatric disorders. Findings show that motivation for treatment and motivation for change are independent concepts that merit independent assessment and monitoring throughout treatment. If clinicians do not consider both concepts, they might overestimate or underestimate patients' motivation (Freyer-Adam et al. 2005). Furthermore, we found support for the separate assessment of motivation for change for different substances in the case of polydrug use. Strong initial readiness, both for treatment and for change, predicted treatment adherence to a limited extent. This is relevant for clinicians, who can use motivation assessment both for clinical purposes and in the prediction of those who need extra monitoring due to increased risk of premature attrition. Last, the association between readiness for change and for treatment and treatment adherence should be explored further. For example, why is the strength of the association weak, and in what way do both readiness domains change during treatment? Could it be that the movement from one motivational stage to another is more important in the prediction of treatment result than the more static initial treatment motivation? An interesting clinical approach may be to assess motivation for treatment and motivation for change at the start of treatment, monitor both through the course of treatment, and make the observed changes in motivation a regular subject for discussion with the patient. Whether or not this results in a better treatment adherence should be the subject of future research.

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REFERENCES

Abellanas, L., and A. T. McLellan. 1993. "Stage of change" by drug problem in concurrent opioid, cocaine, and cigarette-users. *Journal of Psychoactive Drugs* 25 (4):307–13. doi:10.1080/02791072.1993.10472288.

American Psychiatric Association (APA). 2000. *DSM-IV-TR diagnostic and statistical manual of mental disorders*. Washington, DC: American Psychiatric Association.

Broome, K. M., G. W. Joe, and D. D. Simpson. 2001. Engagement models for adolescents in DATOS-A. *Journal of Adolescent Research* 16 (6):608–23. doi:10.1177/0743558401166005.

Broome, K. M., D. D. Simpson, and G. W. Joe. 1999. Patient and program attributes related to treatment process indicators in DATOS. *Drug and Alcohol Dependence* 57 (2):127–35. doi:10.1016/S0376-8716(99)00080-0.

Burke, A. C., and T. K. Gregoire. 2007. Substance abuse treatment outcomes for coerced and noncoerced clients. *Health & Social Work* 32 (1):7–15. doi:10.1093/hsw/32.1.7.

De Weert-Van Oene, G. H., G. M. Schippers, C. A. J. De Jong, and A. J. P. Schrijvers. 2002. Motivation for treatment in substance-dependence patients: Psychometric evaluation of the TCU

motivation for treatment scales. *European Addiction Research* 8:2–9. doi:10.1159/000049482.

DeFuentes Merillas, L., C. A. J. De Jong, and G. M. Schippers. 2002. Reliability and validity of the Dutch version of the readiness to change questionnaire. *Alcohol and Alcoholism* 37 (1):93–99. doi:10.1093/alcalc/37.1.93.

Demmel, R., B. Beck, D. Richter, and T. Reker. 2004. Readiness to change in a clinical sample of problem drinkers: Relation to alcohol use, self-efficacy, and treatment outcome. *European Addiction Research* 10 (3):133–38. doi:10.1159/000077702.

DiClemente, C. C. 1999. Motivation for change: Implications for substance abuse treatment. *Psychological Science* 10 (3):209–13. doi:10.1111/1467-9280.00137.

DiClemente, C. C., and S. O. Hughes. 1990. Stages of change profiles in outpatient alcoholism treatment. *Journal of Substance Abuse* 2:217–35. doi:10.1016/S0899-3289(05)80057-4.

DiClemente, C. C., M. G. Kofeldt, and L. Gemmell. 2011. Motivational enhancement. In *Psychotherapy for the treatment of substance abuse*, ed. M. Galanter and H. D. Kleber, 125–152. Arlington, VA: American Psychiatric Publishing, Inc.

DiClemente, C. C., and J. O. Prochaska. 1998. Toward a comprehensive, transtheoretical model of change: Stages of change and addictive behaviors. In *Treating addictive behaviors*, ed. W. R. Miller and N. Heather, 2nd ed, 3–24. New York, NY: Plenum Press.

DiClemente, C. C., D. Schlundt, and L. Gemmell. 2004. Readiness and stages of change in addiction treatment. *American Journal on Addictions* 13 (2):103–19. doi:10.1080/10550490490435777.

Field, C. A., B. Adinoff, T. R. Harris, S. A. Ball, and K. M. Carroll. 2009. Construct, concurrent and predictive validity of the URICA: Data from two multi-site clinical trials. *Drug and Alcohol Dependence* 101 (1–2):115–23. doi:10.1016/j.drugalcdep.2008.12.003.

Freyer-Adam, J., J. S. Tonigan, S. Keller, H. J. Rumpf, U. John, and U. Hapke. 2005. Readiness for change and readiness for help-seeking: A composite assessment of client motivation. *Alcohol and Alcoholism* 40 (6):540–44. doi:10.1093/alcalc/agh195.

Gryczynski, J., R. Schwartz, K. O'Grady, and J. Jaffe. 2009a. Drop-out from interim methadone and subsequent comprehensive methadone maintenance. *The American Journal of Drug and Alcohol Abuse* 35 (6):394–98. doi:10.3109/00952990903322865.

Gryczynski, J., R. Schwartz, K. O'Grady, and J. Jaffe. 2009b. Treatment entry among individuals on a waiting list for methadone maintenance. *The American Journal of Drug and Alcohol Abuse* 35 (5):290–94. doi:10.1080/00952990902968577.

Heather, N., R. Gold, and S. Rollnick. 1991. *Readiness to change questionnaire: User's manual*. National Drug and Alcohol Research Centre, University of New South Wales, Sidney, Australia.

Hiller, M. L., K. Knight, C. Leukefeld, and D. D. Simpson. 2002. Motivation as a predictor of therapeutic engagement in mandated residential substance abuse treatment. *Criminal Justice and Behavior* 29 (1):56–75. doi:10.1177/0093854802029001004.

Hiller, M. L., E. Narevic, J. M. Webster, P. Rosen, M. Staton, C. Leukefeld, T. F. Garrity, and R. Kayo. 2009. Problem severity and motivation for treatment in incarcerated substance abusers. *Substance Use & Misuse* 44 (1):28–41. doi:10.1080/10826080802523301.

Kelly, S. M., K. E. O'Grady, S. G. Mitchell, B. S. Brown, and R. P. Schwartz. 2011. Predictors of methadone treatment retention from a multi-site study: A survival analysis. *Drug and Alcohol Dependence* 117 (2–3):170–75. doi:10.1016/j.drugalcdep.2011.01.008.

Lau, K., J. Freyer-Adam, B. Gaertner, H.-J. Rumpf, U. John, and U. Hapke. 2010. Motivation to change risky drinking and motivation to seek help for alcohol risk drinking among general hospital inpatients with problem drinking and alcohol-related diseases. *General Hospital Psychiatry* 32 (1):86–93. doi:10.1016/j.genhosppsych.2009.10.002.

Littell, J. H., and H. Girvin. 2002. Stages of change: A critique. *Behavior Modification* 26:223–73. doi:10.1177/0145445502026002006.

Longshore, D., and C. Teruya. 2006. Treatment motivation in drug users: A theory-based analysis. *Drug and Alcohol Dependence* 81 (2):179–88. doi:10.1016/j.drugalcdep.2005.06.011.

Meier, P. S., M. C. Donmall, C. Barrowclough, P. McElduff, and R. F. Heller. 2005. Predicting the early therapeutic alliance in the treatment of drug misuse. *Addiction* 100 (4):500–11. doi:10.1111/add.2005.100.issue-4.

Minkoff, K. 1989. An integrated treatment model for dual diagnosis of psychosis and addiction. *Hospital and Community Psychiatry* 40:1031–36.

Nosyk, B., J. Geller, D. P. Guh, E. Oviedo-Joekes, S. Brissette, D. C. Marsh, M. T. Schechter, and A. H. Anis. 2010. The effect of motivational status on treatment outcome in the North American Opiate Medication Initiative (NAOMI) study. *Drug and Alcohol Dependence* 111 (1–2):161–65. doi:10.1016/j.drugalcdep.2010.03.019.

Prochaska, J. O., and C. C. DiClemente. 1992. The transtheoretical approach. In *Handbook of psychotherapy integration*, ed. J. C. Norcross and M. R. Goldfried, 300–334. New York, NY: Basic Book.

Raes, V., G. A. De Weert-Van Oene, M. M. Velasquez, J. De Maeseneer, and C. A. J. De Jong. 2010. The use of the RCQ-D in patients with poly drug abuse. *Addiction Research & Theory* 18 (4):409–20. doi:10.3109/16066350903291066.

Rollnick, S., N. Heather, R. Gold, and W. Hall. 1992. Development of a short "readiness to change" questionnaire for use in brief, opportunistic interventions among excessive drinkers. *British Journal of the Addictions* 87:743–54. doi:10.1111/add.1992.87.issue-5.

Schippers, G. M., T. G. Broekman, and A. Buchholz. 2011. *MATE 2.1. manual and protocol*. English edition: W. M. Cox. Nijmegen, Netherlands: Bêta Boeken.

Simpson, D. D., and G. W. Joe. 1993. Motivation as a predictor of early drop-out from drug abuse treatment. *Psychotherapy: Theory, Research, Practice, Training* 30 (2):357–68. doi:10.1037/0033-3204.30.2.357.

Simpson, D. D., G. W. Joe, and G. A. Rowan-Szal. 1997. Drug abuse treatment retention and process effects on follow-up outcomes. *Drug and Alcohol Dependence* 47 (3):227–35. doi:10.1016/S0376-8716(97)00099-9.

Simpson, D. D., G. W. Joe, G. A. Rowan Szal, and J. M. Greene. 1997. Drug abuse treatment process components that improve retention. *Journal of Substance Abuse Treatment* 14 (6):565–72. doi:10.1016/S0740-5472(97)00181-5.

West, R. 2005. Time for a change: Putting the transtheoretical (stages of change) model to rest. *Addiction* 100 (8):1036–39. doi:10.1111/j.1360-0443.2005.01139.x.