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High Novelty Seeking Predicts Premature Drop-out from Cognitive and Behavioral Therapy in Bipolar Disorders

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Abstract

Background and Objectives: We examined the role of personality dimensions in predicting drop-out from Cognitive and Behavioral Therapy (CBT) in a sample of bipolar I outpatients.

Methods: 75 bipolar I outpatients, admitted consecutively for CBT, participated in this cohort study. Baseline assessment included the Hamilton Depression Rating Scale, the Mania Rating Scale, the Beck Depression Inventory and the Temperament and Character Inventory.

Results: Sixteen bipolar I patients (21.3%) discontinued before the end of the therapy. These patients were initially characterized by higher level of manic symptoms, higher 'novelty seeking' and lower 'harm avoidance' scores. Controlling for clinical characteristics and baseline mood symptoms, novelty seeking dimension was the only significant predictor. In the present sample, a novelty seeking score of 29 had a sensitivity of 18.75% and a specificity of 100% to predict drop-out during a 20-week CBT program.

Limitations: This study has some limitations, such as the lack of control for recurrence rate during the 6 months CBT. Moreover, some results could partly be explained by the presence of personality disorders, rather than dimensions.

Conclusions: High novelty seeking score predicts drop-out from CBT among bipolar I patients, even when the level of manic symptoms is controlled for. Assessing temperaments may therefore be useful to define subgroups of patients with lower capacity to attend a full CBT program. Previous intervention(s) devoted to this difficulty should be developed.

Keywords: Bipolar Disorder; Cognitive and Behavioral Therapy; Drop Out; Personality

Abbreviations

ANOVA	:	Analysis of Variance
C	:	Cooperation
CBT	:	Cognitive and Behavioral Therapy
HA	:	Harm Avoidance
HDRS	:	Hamilton Depression Rating Scale
MINI Interview	:	Mini International Neuropsychiatric
NS	:	Novelty Seeking
P	:	Persistence
RD	:	Reward Dependence
ROC	:	Receiver Operating Characteristics
SUD	:	Substance Use Disorder
SD	:	Self-Determination

SD	:	Standard Deviation
ST	:	Self-Transcendence
TCI	:	Temperament and Character Inventory

Introduction

Since early 1970s treatment for the management of bipolar illness was predominantly pharmacotherapy. Although mood stabilizers have proven their effectiveness for a large proportion of patients [1], 75% relapse within 5 years and 37% continue to show disabling mood fluctuations during remission phases, leading to difficulties in carrying out daily activities, disrupting relationships and affecting self-esteem. The literature has largely documented the need for integrated treatment in bipolar disorders associating pharmacotherapy and psychotherapeutic interventions [2-5]. In the past ten years' psychosocial approaches emerged to contribute, with medication, to the management of bipolar disorders, such as psychoeducation [6], Cognitive and Behavioral Therapy [7-10], interpersonal therapy [11] and family therapy [12]. Major indications for Cognitive and Behavioral Therapies (CBT) include pharmacological non compliance or partial compliance, risk of relapse, and severe interpersonal problems. The majority of these treatments takes place in outpatients' settings and has been described in different guidelines [7-10]. Their common goals are to improve quality of life and social functioning, reduce the number and severity of episodes, and increase treatment adherence. The specific components of Lam et al. program [9] include psychoeducation, medication compliance, learning cognitive and behavioral techniques to manage prodromes, the establishment of routines and the identification of long term vulnerability factors. Only some of them were assessed in randomized trials [4,13-14].

CBT received much attention during the last two decades [15], and two recent meta-analyses interestingly showed that its impact is either of limited effect [15] or not significant regarding for example recurrence rate [16]. A significant proportion of patients drops out before treatment ends (between 8% and 15%). Premature drop-out from psychological intervention plus medication is a major but neglected topic of research within the context of bipolar disorder. Understanding the factors influencing attrition rate may help clinicians to identify patients at risk of poor outcome (because of premature drop-out) and to potentially adapt the therapy for this more vulnerable group of patients.

The role of personality dimensions in the drop-out rate from psychological intervention has been rarely investigated in mood disorders. Persons, Burns and Perloff [17] assessed predictors of drop-out and outcome in patients receiving cognitive therapy (CBT) for depression. Their results showed that drop-outs were associated with high initial Beck Depression Inventory score. By contrast, a study of Simons et al. [18] found no association between depression scores and attrition rate. Studying 135 depressive patients receiving CBT for depression, Oei and Kazmierczak [19] failed to found an effect of depressive symptoms on attrition rate.

Authors interested in the association between bipolar disorder and attrition rate focused on drug treatment and clinical severity.

By comparing 65 Bipolar I patients, 29 Bipolar II patients, and 37 Cyclothymic patients with or without Substance Use Disorder (SUD), Mazza et al. [20] found no difference between bipolar I patients with or without this comorbidity in drop-out rates from drug treatment. However, drop-outs were significantly associated with low treatment dose. In 1993, Strakowski et al. [21] assessed the impact of mood symptoms and personality at discharge on symptomatic recovery at 6 months in 27 bipolar patients treated for a first manic episode. They found that higher novelty seeking scores at discharge were associated with lower symptomatic recovery at 6 months.

Several studies have investigated personality dimensions as potential markers of bipolar disorder using clinical [22-25] and non-clinical [25-31] populations as control samples. The role of personality seems therefore to be a major topic of interest in the prediction of therapeutic adherence.

In the present study, we tested the role of residual symptoms (depressive and manic) and personality dimensions in predicting drop-out in a sample of bipolar I outpatients who had been consecutively admitted in a specialized unit of CBT for mood disorders. Our hypothesis was that personality dimensions might predict drop-out in an out-patient setting.

Method

Patients

Seventy-five outpatients (males, females), currently meeting criteria for bipolar I disorder according to DSM-IV classifications, participated in this study. All patients were consecutively admitted in a specialized unit of CBT for mood disorders in an outpatient setting. The study was approved by the local ethics committee and written informed consent was obtained from all participants (ClinicalTrials.gov ID: NCT02472483). Patients' inclusion criteria were being between 18 and 65 years old, and on regular prophylactic medication. Patients' exclusion criteria were currently in an acute bipolar episode and/or with a primary addictive problem according to the Mini International Neuropsychiatric Interview - MINI [32]. The final sample consisted of N=75 bipolar I outpatients.

CBT Program for Bipolar Disorder

This program, based on 20 weekly sessions within a 6-month period, includes the following steps:

- A psychoeducational phase with interventions specific to CBT (i.e., inductive and deductive questioning, reformulations), which can address interactive topics such as bipolar disorder, pharmacological treatments, personal and idiosyncratic symptoms of depression and mania. The history of bipolar disorder is reconstructed in a "life chart", which is completed throughout the duration of the therapy. All patients reconstruct their own history of bipolar illness, the benefits of drug compliance and psychological stress factors. The patient identifies that certain situations or cognitive stress promote a manic phase, while others can induce depressive relapse.

- A cognitive and behavioral phase, which allows the patient to identify his mood swings, to detect their origins (environment, personality...), to develop behaviors to address the symptoms of depression or mania, to identify prodromes and personal psychological vulnerabilities.

- A consolidation phase aimed at checking the understanding of tools which were supposed to be learned and addressing potential problems of patients.

Definition of Attrition

All patients were classified as drop-outs when they unilaterally decided to interrupt the therapy before the end of the 20 sessions, or when they participated to less than 10 sessions (<50% of sessions) altogether.

Measures

Demographic and clinical characteristics

For each patient we collected demographic information such as age and gender. A clinical interview according to the Mini International Neuropsychiatric Interview (MINI) specified the age of onset, the number of previous bipolar episodes (depressive and manic/hypomanic) and the number of hospitalizations or suicide attempts.

Mood symptoms

The Hamilton Depression Rating Scale - HDRS [33] and the Mania Rating Scale -MRS [34] were used to provide severity ratings of depressive and manic symptoms.

Personality dimensions

The Temperament and Character Inventory-TCI [35] was used to asses3r false, measuring four dimensions (Novelty Seeking - NS, Harm Avoidance -HA, Reward Dependence -RD, Persistence - P) and three trait dimensions (Self-Determination - SD, Cooperation – C, and Self-Transcendence -ST).

Statistical analyses

The study was exploratory, based on a sample of convenience and there was no a priori calculation of power and sample size. Parameters to be studied were: 1) the proportion of premature drop-out from CBT; 2) mean differences between completers and drop-outs on clinical characteristics, baseline mood symptoms and personality dimensions and 3) the validity of personality dimensions as predictive of premature drop-out from CBT.

Continuous variables were recorded as means and standard deviations and categorical variables as percentage. Differences between groups (completers vs. drop-outs) in continuous data were analyzed using Analysis of Variance (ANOVA) while differences between groups in categorical variables were analyzed using the chi-square test.

Covariance analyses were carried out to control for a potential effect of clinical characteristics (e.g. age of onset, number of previous manic and depressive episodes, number of previous hospitalizations, number of suicide attempts) and baseline mood symptoms (e.g. HDRS score for depressive symptoms, MRS score for manic symptoms) on personality dimensions. All results were considered to be significant at the 5% critical level (p<0.05).

The validity of personality dimensions as predictive of premature drop-out from CBT was investigated by computing the sensitivity, specificity, and predictive positive and negative values.

To determine the validity of personality dimensions as predictive of premature drop-out from CBT we also performed a Receiver Operating Characteristics (ROC) curve.

Results

Drop-Out Rate

On the 75 patients included at baseline, 59 (78.7%) completed therapy (completers), and 16 (21.3%) dropped out before the end of the therapy (drop-outs). All completers participated in at least 10 of the 20 weekly sessions. Drop-out patients interrupted their program at session 1 (N=1), session 3 (N=14) and session 4 (N=1). Therefore, all drop-outs occurred before the fifth session.

Completers vs. Drop-outs

Demographical and clinical characteristics

The proportion of women was high in the two groups (Table 1), however there was no significant difference ($\chi2=0.01$, df=1, p=0.91). The average age of patients did not differ between the two groups ($F_{(1,73)}=1.32$; p=.25).

The two groups of patients did not show significant differences in age of onset ($F_{(1,68)}= 0.10$; p=.75), number of previous depressive ($F_{(1,68)}= 2.47$; p=.12) or manic / hypomanic ($F_{(1,72)}= 2.96$; p=.09) episodes, and number of hospitalizations ($F_{(1,61)}=1.33$; p=.25) or suicide attempts ($F_{(1,62)}= 2.42$; p=.12).

Mood symptoms

Depressive and manic symptoms were low at baseline (Table 1). However, there was a significant group effect of manic symptoms that were higher for the drop-outs group (F(1,73)= 4.67; p=.03). Such difference was not observed for HDRS scores (F(1,73)= 0.30; p=.59).

	Completers (N = 59) Mean (s.d.)	Drop-outs (N = 16) Mean (s.d.)
Females (%)	61.00	62.50
Age	45.17 (11.90)	41.31 (11.82)
Age of onset	22.05 (8.41)	22.87 (9.19)
Previous depressive episodes	13.65 (17.47)	5.27 (3.74)
Previous manic episodes	8.29 (13.76)	2.31 (2.82)
Previous hospitalizations	3.06 (3.10)	4.13 (3.23)
Previous suicide attempts	0.69 (1.46)	1.73 (3.92)
HDRS	9.55 (4.55)	8.69 (3.36)
MRS	1.34 (1.27)	2.19 (1.80)*
NS	20.42 (5.44)	25.37 (6.78)**
HA	23.10 (6.95)	19.25 (6.18)*
RD	16.19 (3.97)	17.50 (3.54)
P	4.83 (1.88)	4.69 (1.74)
SD	23.13 (9.36)	24.37 (7.07)
C	30.24 (6.77)	30.62 (6.05)
ST	14.44 (7.12)	16.19 (8.82)

*p < .05 ; **p < .005 ; SD=Standard Deviation.

Table 1: Demographic and clinical characteristics of 75 Bipolar I patients referred to a CBT center, distinguishing completers and drop-outs.

Personality dimensions

Completers and drop-outs were compared on baseline measures of personality. Differences between groups were significant for Novelty Seeking, with higher values for drop-outs (F(1,73)=9.35; p<0.01) and Harm Avoidance (F(1,73)= 4.04; p=.05).

As clinical and psychological variables were previously found to influence these dimensions, covariance analyses were performed to control for the potential impact of (a) clinical characteristics (e.g. age of onset, number of previous depressive and manic episodes, number of previous hospitalizations, number of suicide attempts) and (b) baseline mood symptoms (HDRS, MRS) on these personality dimensions. After controlling for these clinical and psychological variables, a reduced but still significant effect of group on Novelty Seeking was found (F(1,49)=5.57; p=.02) as on Harm Avoidance (F(1,49)=4.58; p=.04).

Using Novelty Seeking scores to predict drop-outs from CBT among bipolar patients

A 100% sensitivity is reached for Novelty Seeking score ≤ 13 (the related specificity being 11.86%), while the 100% specificity value is obtained for a threshold of over 29 (the corresponding sensitivity being 18.75%). According to the ROC curve, the score of 29 gives the most appropriate threshold, with a specificity of 100.00%, a sensitivity of 18.75%, a positive predictive value of 100.00% of and a negative predictive value of 81.94%.

Discussion

Our main finding is that higher novelty seeking scores at baseline predicts drop-out from CBT among bipolar I patients. Previous studies found that high novelty seeking score was predictive of poor outcome in bipolar patients [21] but also that high novelty seeking was a potential marker of bipolar illness [22-24,28]. This dimension could therefore constitute a predictive factor of poor treatment adherence in bipolar disorders, whatever the type of treatment. Interestingly, difference between completers and drop-outs on novelty seeking remained significant after controlling for clinical variables, such as depressive, manic and anxious symptoms. We can therefore propose that some personality dimensions predict drop-out.

Our drop-out rate was higher than those of Lam et al. studies [4,13]. This higher drop-out rate could be partially attributed to the clinical characteristics of our sample. Bipolar I patients admitted to our department had a long history of illness (around 20 years), experienced numerous previous bipolar episodes, often have comorbidities, apart from the ones that are exclusion criteria for CBT, and experienced numerous psychotherapies.

The present results might have some clinical implications. Further understanding of the factors associated with the decision to interrupt treatment may help the clinicians to identify patients at risk, and to adapt their therapeutic strategies to engage the patients in the therapy. Novelty seeking may partially explain why bipolar patients discontinued their therapy before promoting changes. The temperamental characteristics associated with high novelty seeking, such as Impulsiveness may favor the impulsive decision to interrupt the therapy. Previous studies showed that high novelty seekers were more likely to drop-out before the end of the treatment than low novelty seekers [36], and that high score on impulsivity significantly differentiated patients who dropped out from CBT and completers [37]. Therapists may help patients with high novelty seeking dimension to promote the elaboration of different strategies to reduce their emotional and behavioral dysregulation.

This study has some limitations, such as the lack of control for recurrence rate during the 6 months CBT. There was no a priori calculation of power and sample size, this study being based on a sample of convenience. Moreover, some results could partly be explained by the presence of personality disorders, rather than dimensions. Future assessments, including categorical measure of personality disorders are therefore required.

Conclusions

To summary, we provide preliminary evidence that high Novelty Seeking (NS) score predicts premature drop-out from CBT for bipolar I outpatients. An appropriate focus in future research is to clarify whether other clinical or psychological characteristics such as severity of the illness or the presence of personality disorders could contribute to the attrition rate from CBT for these patients.

Declaration of Interest

The authors declare that there is no conflict of interest relevant to the content of the article.

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