Developmental Trajectories of Gambling Severity after Cognitive-Behavioral Therapy

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Abstract

Aims: To estimate trajectories of the gambling disorder (GD) severity during 12 months following a manualized cognitive-behavior-therapy (CBT) program, and to identify the main variables associated with each trajectory. **Methods:** Latent Class Growth Analysis examined the longitudinal changes of *n*=603 treatment-seeking patients with GD. **Results:** Five separate empirical trajectories were identified: T1 (*n*=383, 63.5%) was characterized by the most severe baseline gambling severity levels and positive progress to recovery during the follow-up period; T2 (*n*=154, 25.5%) featured participants with high baseline gambling severity and good progress to recovery; T3 (*n*=30, 5.0%) was made up of patients with high gambling baseline severity and slow progress to recovery; T4 (*n*=13, 2.2%) and T5 (*n*=23, 3.8%) contained participants with severe baseline gambling severity and moderate (T4) and poor (T5) progress in GD severity during the follow-up. Psychopathological state and personality traits discriminated between trajectories. Poor compliance with the therapy guidelines and the presence of relapses also differed between the trajectories. **Conclusions:** Our findings show that patients seeking treatment for GD are heterogeneous and that trends in progress following treatment can be made by considering sociodemographic features, psychopathological state and personality traits. These results could be useful in developing more efficient intervention programs for GD patients.

Keywords: Gambling Disorder; Developmental Trajectories; Treatment; Personality; Psychopathology; Severity.

1. INTRODUCTION

Gambling disorder (GD) is characterized by repeated compulsive problematic gambling behavior accompanied by unsuccessful and uncontrollable urges to keep gambling, which lead to considerable distress and (1). Several different types of interventions exist to treat GD (2–4), with cognitive behavior therapy (CBT) being one of the most widely used approaches.

Multiple studies have assessed which factors are the most related to the effectiveness of CBT in GD patients, particularly when considering patient state directly after the end of the treatment and during the first months following the intervention. Short-term effectiveness appears to be particularly related to psychopathological state at the beginning of the therapy (particularly lower depression and anxiety levels), followed by male gender, older age, lower baseline gambling severity levels, lower comorbidity, and more functional personality profile (5–7). Long-term effectiveness has not been so widely studied, but it seems to be most associated with lower levels of psychopathology, sensation seeking and GD severity at the start of treatment (8,9).

Despite the evidence supporting the usefulness of CBT in the treatment of gambling problems, some systematic reviews have underscored the paucity of evidence of effective treatment programs, and controversy has emerged in the interpretation of the results (10,11). For example, few long-term studies on gambling relapse have been conducted, the durability of the therapeutic gains is unknown and the evidences about the effects of benefits from integrative therapies has been obtained from few studies with limited sample sizes. Moreover, although controlled studies have shown positive results in the treatment of GD, indicating the effectiveness of some techniques and interventions, many of these studies had multiple limitations (3). There is progress still yet to be made as approximately 50% of individuals affected by this disorder will continue to have symptoms throughout life (8).

Potential different results could be related to the diverse forms of the CBT programs (for example the specific variants/techniques used or the frequency and duration of the interventions) (12,13). On the other hand, the capacity of CBT to treat GD has been analyzed through variable-level techniques (such as the classical correlation models, regression techniques, analysis of variance or path analysis), which are focused on examining the relationships between the potential variables (in this case, predictors and therapy outcomes) by considering the individuals as a group. In this sense, variable-level analyses tend to isolate clinical significant features in which individuals differ, since they are centered on the analysis of the potential correlational structure of the variables, their stability over time, and their predictive capacity for predetermined criteria. Therefore, variable-level approaches do not provide information on person-specific, intra-individual clinical states nor on person-specific intra-individual dynamics.

The alternative to the variable-level approaches are the person-centered approaches (such as mixed growth modeling or developmental trajectories). These techniques focus attention on the intra-individual structure of variables with the aim to identify groups of individuals who share particular attributes or relations among attributes, with the consequent advantage of conceiving the individuals as a whole and not as the sum of isolated features. Although person-centered techniques have been used for exploring group differences in patterns of development, to our knowledge few studies have focused the study of GD based on developmental trajectories analyses, and the published researches based on these techniques have examined the natural history of untreated problem gambling, mainly at young ages (14–16).

The objective of this study was to estimate developmental trajectories of GD severity course during the 12 months following a manualized CBT program, and to identify the main variables associated with each trajectory. This work uses and integrate both statistical

procedures, person-centered and variable-level approaches: a) in the first stage, Latent Class Growth Analysis has been used as a case of person-centered procedure which aim is to investigate how a single outcome variable (the GD severity measured at multiple time points) combine across individuals and allow to define a latent class model in which latent classes correspond to different growth curve shapes for the outcome variable; and b) in the second stage, the exploration of what sociodemographic and clinical variables are related with the previous empirical developmental trajectories is based on analysis of variables procedures, as a case of variable-level approach. Based on the existing scientific evidence, we hypothesized that distinguishable GD trajectories would be latent in our sample, and that poor progress in gambling recovery would be related to poorer pre-treatment psychological state and more maladaptive personality profiles. The identification of variables associated with the classification obtained in the latent class analysis allow for the development of more effective intervention programs for treatment-seeking patients.

2. MATERIAL AND METHODS

2.1. Participants

The sample included consecutively admitted patients who met DSM-5 criteria for GD. Patients voluntarily sought outpatient treatment at a specialized Gambling Disorder Unit at Bellvitge University Hospital in Barcelona, Spain, and completed manualized a CBT intervention program between January-2007 and October-2017. Since the number of women was very low (n=14) and the high asymmetry in the distribution of the sex could bias results, only men were included in our analyses. Therefore, the final sample included *n*=603 treatment-seeking male patients, with ages between 19 and 75 years-old.

Table 1 includes a description of the sample at the beginning of the study (pre-treatment, baseline state).

--- Insert Table 1 ---

2.2. Psychological Assessment

The assessment included specific measures of GD, global psychopathology and personality traits. Table 1 includes the Cronbach's alpha (α) coefficients estimated in the study sample for the psychometrical scales.

2.2.1. Diagnostic questionnaire for Pathological Gambling according to DSM criteria (17)

This 19-item questionnaire assesses the DSM-IV (18) diagnostic criteria for pathological gambling. Then, all patient diagnoses were reassessed and recodified post hoc through an computerized system and, in our analysis, only patients who met DSM-5 criteria for GD were included. Convergent validity with the external gambling scores in the original version was very good (r=.77 for representative samples and r=.75 for gambling treatment groups; (17)). Internal consistency in the Spanish adaptation used in this study was α=.81 for the general population and α=.77 for gambling treatment samples (19). In this study, the total number of DSM-5 criteria for GD was analyzed (α=.76 in the sample).

2.2.2. *South Oaks Gambling Screen* (SOGS) (20)

This questionnaire is commonly used to evaluate gambling severity in research and clinical settings. It includes 20 items to assess cogitations and behaviors related to problem gambling. The validated Spanish version of the SOGS has shown high internal consistency (Cronbach's alpha α=.94) and good test–retest reliability (*r=0.98*) (21). The internal consistency in the study sample was adequate (α=.78).

2.2.3. *Symptom Checklist-90 Items-Revised* (SCL-90-R; (22)

This is a 90-item self-report tool used to assess global psychopathology through nine primary symptom dimensions (obsessive-compulsive, depression, anxiety, hostility, interpersonal sensitivity, phobic anxiety, somatization, paranoid ideation and psychoticism) and three derived global indices [global severity index (GSI), positive symptom total (PST), and positive symptom distress index (PSDI)]. Good psychometrical properties were found in Spanish samples (23). Internal consistency ranged between α=.77 for phobic anxiety to α=.98 for the global composite indexes in the study sample.

2.2.4. *Temperament and Character Inventory–Revised* (TCI-R) (24)

This is a 240-item tool used to measure four temperament dimensions (harm avoidance, novelty seeking, reward dependence and persistence) and three character scales (self-directedness, cooperativeness and self-transcendence) of personality. The adaptation of Spanish version of the questionnaire obtained good psychometrical properties (25). Internal consistency ranged between α=.76 for novelty seeking and α=.86 for persistence in the study sample.

2.2.5. *Other sociodemographic and clinical variables*

Additional sociodemographic data were taken using a semi-structured, face-to-face clinical interview described elsewhere (26). Some of the addiction-related variables collected included the age of GD onset, the duration of the addiction, and the social status measured via Hollingshead index (27).

2.3. Procedure

The present study was approved by the Ethics Committee of Bellvitge University Hospital and all patients provided signed informed consent. Psychological measures were obtained by experienced clinical psychologists at the Department of Psychiatry of Bellvitge University Hospital.

Data analyzed in this study correspond to data taken at the start of the CBT program, immediately following CBT, and measures obtained during the 12 months following the end of the program (data was obtained 1, 3, 6 and 12 months after the completion of the CBT program).

2.4. Cognitive-behavioral therapy (CBT) treatment

The CBT intervention utilized in this study was carried out in a group format (averaging approximately 10 patients-per-group). It consisted of 16 weekly outpatient sessions lasting about 45 minutes each. The aim of the intervention was to train patients to implement CBT strategies in order to attain full recovery (defined as the absence of gambling episodes). The general topics addressed in the program included psychoeducation regarding GD (its onset and course, vulnerability factors, diagnostic criteria, bio-psychosocial models, etc.), stimulus control (such as money management and the avoidance of potential triggers), response prevention strategies (alternative and compensatory behaviors), the acquisition of new, healthy behaviors to replace GD, cognitive restructuring focused on illustrating and rectifying false beliefs of control over gambling, reinforcement and self-reinforcement, skills training and relapse prevention techniques.

A full description of this CBT program has been previous published (28) and its short- and long-term effectiveness has been described elsewhere (9,29,30).

2.5. Statistical analyses

Statistical analyses were carried out with MPlus8 for Windows. The trajectories were estimated using the SOGS-total scores obtained during the first year after completion of the CBT, which was defined as a measure of gambling problem severity. Due to the strong association between the decreases in severity and the initial (baseline) gambling severity, estimation was carried out including baseline SOGS-total scores as a covariate. Latent Class Growth Analysis (LCGA) was used, defining the robust maximum likelihood (MLR) estimator in the *Analysis* command (full information on this method is presented in: (31,32) and using Lo-Mendell-Rubin (33) as a measure to determine the number of classes. LCGA constitute a special type of Growth Mixture Modeling, with the peculiar consideration that individuals within a class are homogenous and therefore variance and covariance estimates for the growth factors within each class are fixed to zero. TYPE=MIXTURE in MPlus syntax was defined and the MODEL command fixed at 0, 1, 2, 3 and 4 the time scores for the slope growth factor to define a linear growth model with equidistant time points (at post-therapy and at months 3-6-9-12 of the follow-up). In the estimation procedure, solutions with quadratic and cubic components were tested, but they were rejected because these potential solutions did not provide substantively better statistical adjustment and/or models with better clinical interpretation, and therefore simpler solutions (with linear component) were selected attending to the principle of parsimony. The selection of the number of trajectories was based on (34): a) the lowest Akaike (AIC) and Bayesian information criterion (BIC) indexes for the model (compared with other solutions); b) entropy (measure of the model's discriminative capacity, that is, its ability to identify individuals following the different trajectories) above .80; c) high on-diagonal average values (around .80) in the matrix containing the probabilities of membership (that is, high average latent class probabilities for most likely latent class membership by latent class); d) enough sample size in a class/trajectory to allow for statistical comparisons; and e) adequate clinical interpretability.

The distribution of the characteristics of participants (sociodemographic, personality and psychopathological levels) across the identified trajectories was examined with chi-square tests for categorical variables and analysis of variance (ANOVA) for quantitative variables. The list of features examined included the sociodemographic variables measured at the beginning of the study, gambling related variables at baseline, psychopathology and personality at baseline, psychopathology at the end of the therapy program, adherence to the therapy program and the presence of relapses during the therapy and during the follow-up (relapses were defined as the presence of gambling episodes with bets). Cohen's-*d* coefficient measured effect size for pairwise comparisons ($|d|>0.20$ was considered low effect size, $|d|>0.50$ moderate effect size and $|d|>0.80$ good effect size; (35)). Increase in Type-I error due to multiple statistical comparisons was controlled with Simes' correction method, a familywise error rate stepwise procedure which offers more powerful test than the classical Bonferroni correction (36).

Finally, a multinomial logistic regression was performed to model the predictive contribution of the measures at the beginning of the study (defined as independent variables) on membership in the 5 groups obtained in the LCGA (defined as the dependent variable). The multinomial regression is a generalization of logistic regression to multiclass problems (i.e. categorical criteria with more than two levels), and therefore it allows to predict the probabilities of the different levels of a categorically distributed dependent variable considering a set of independent variables. In this study, due the large set of independent variables, three separate models were obtained: a) for the sociodemographic variables (civil status, education level, social position index, employment status and origin of the sample); b) for gambling related variables and global psychopathological state (patients' age, duration of the gambling problems, DSM-5 total criteria for GD, debts due to gambling and SCL-90R

GSI); and c) for personality traits (TCI-R scores). The final models presented in this study retained only those independent variables with significant contribution on the criterion.

3. RESULTS

3.1. GD course trajectories

Table 2, contains the goodness-of-fit and the mean estimates for the candidate models obtained in the LCGA, with a number of trajectories ranging from 2 to 5 groups. Solution models for more than 5 trajectories were not considered due to small group size to allow for subsequent statistical comparisons (for example, the 6-classes model included a group with only 3 participants). The final model selected was the 5-trajectory solution (Figure 1 includes the shapes for the SOGS evolution from baseline to the year following treatment). This model yielded the lowest AIC-BIC indexes (AIC=12633.1, BIC=12791.5 and adjusted sample-size BIC=12677.2), excellent entropy (.877), very high on-diagonal values in the matrix with the average latent class probabilities (between .868 and .917), and good clinical interpretability.

--- Insert Table 2 ---

--- Insert Figure 1 ---

3.2. Comparison between trajectories at baseline

Tables 3 and 4 include the comparison between trajectories in terms of sociodemographic and clinical variables taken at the start of the CBT program (at the beginning of the study, and previously to the therapy).

--- Insert Table 3 ---

--- Insert Table 4 ---

Trajectory T1 (*n*=383, 63.5%) represented patients with very high GD severity at baseline (mean SOGS=11.5) and good progress to recovery (mean SOGS=2.5 at post-treatment and 2.2 at the end of the follow-up period). This group was characterized by the high scores in psychopathology (as determined by the SCL-90-R) and high scores in novelty seeking at baseline.

Trajectory T2 (*n*=154, 25.5%) represented patients with high GD severity at baseline (mean SOGS=8.8) and good progress to recovery (mean SOGS=2.2 at the end of the treatment and 2.0 at the end of the follow-up period). This class is characterized by the lowest scores in psychopathology state at baseline, low scores in novelty seeking and harm avoidance and high scores in reward dependence, persistence, self-directedness and cooperativeness. Trajectory T2 also included the highest proportion of patients that were married or living with a stable partner, but the lower proportion of patients with debts due to the gambling behavior.

Trajectory T3 (*n*=30, 5.0%) represented patients with high levels of GD severity at baseline (mean SOGS=11.3) and slow progress to recovery (mean SOGS=6.85 at post-therapy and 1.7 at the end of the follow-up period). This trajectory included patients with moderate levels of psychopathology and high scores in novelty seeking and reward dependence at baseline.

Trajectory T4 (*n*=13, 2.2%) represented patients with very high GD severity at baseline (mean SOGS=11.5) and moderate progress in obtaining recovery (mean SOGS=3.0 at post-CBT and 4.1 at the 12-month follow-up). This trajectory grouped patients with worse psychopathological state at baseline, high scores in harm avoidance and low scores in persistence. Trajectory T4 also included the highest proportion patients that were single, as well as the highest percentage of patients with debts due to the gambling behavior.

Trajectory T5 (*n*=13, 2.2%) represented patients with very high GD severity at baseline (mean SOGS=10.9) and poor progress at the end of the follow-up period (mean

SOGS=4.4 at post-treatment and 8.0 at the 12-month follow-up). This class agglomerated patients with moderate psychopathological impairment and low scores in reward dependence and persistence.

Figure 2 contains a radar-chart to graphically illustrate the main differences between trajectories for the psychological variables registered at baseline (z-standardized means have been plotted to allow for easier interpretation due to the different scale ranges).

--- Insert Figure 2 ---

3.3. Comparison between trajectories considering therapy outcomes

The top of Table 5 includes comparisons between trajectories considering compliance with the therapy guidelines and the presence of gambling episodes (relapses) during CBT. Trajectories T1 and T2 did not differ in these two outcomes, and they were characterized by a high proportion of participants with good compliance and a low presence of relapses. Contrarily, trajectories T3-T4-T5 featured a high proportion of participants with moderate to bad compliance with therapy guidelines and a higher proportion of relapses.

--- Insert Table 5 ---

The middle of Table 5 includes comparisons between trajectories in psychopathology at the end of the CBT program. T2 obtained the lowest means compared with all the other trajectories on many SCL-90-R scales, followed by trajectories T1 and T5. The highest levels of psychopathology were found in T3 and T4.

Finally, the bottom of Table 5 contains the presence of relapses during the 12-month follow-up period. T2 registered the lower proportion of patients who reported the presence of gambling episodes during this period (5.2%), closely followed by trajectory T2 (9.7%). The presence of relapse for trajectory T3 (20.0%) was statistically higher than the relapses registered for T1 and T2, and statistically lower than the presence of relapses obtained for T4 (46.2%) and T5 (47.8%).

3.4 Predictive model

Table 6 includes the results of the final multinomial logistic regressions. The final model for the sociodemographic variables retained only as a significant predictor of the membership in the developmental trajectories classification the civil status. Results indicate that being single (versus being married or separated/divorced) increases the odds of being classified in trajectories 1, 4 or 5 versus being classified in trajectory 2. Regarding model 2 (which initially included patients' age, gambling related variables and psychopathological state), significant predictors retained in the final model were the number of DSM-5 criteria for GD and SCL-90R GSI. This model indicates that higher gambling severity at baseline (higher number of DSM-5 criteria) decreases the odds of being classified in trajectory 1 or in trajectory 2 compared with being in the other trajectories, and that worse psychopathological state (higher GSI score) decreases the odds of being classified in trajectory 2 compared with being in any other trajectory. Finally, model 3 (which initially included all the TCI-R scores), retained as significant predictors novelty seeking (higher levels predict lower odds of being in trajectory 2 compared to trajectories 1 and 3), harm avoidance (higher levels predict lower odds of being in trajectory 2 compared to being in trajectories 1, 3 and 4) and self-directedness (higher levels predict higher odds of being in trajectory 2 compared to being in trajectories 1 and 5).

--- Insert Table 6 ---

4. DISCUSSION

This study used LCGA to obtain an empirical classification for a sample of patients who met clinical criteria for GD, based on the gambling problem severity during the 12 months following a CBT program. The SOGS total score has been selected in the work as a measure of change for the GD severity, instead of other indicators such as the number of DSM-5 criteria, because it has a wider range and this attribute statistically facilitated the identification of the developmental trajectories with better fitting. T1 and T2 included the largest number of participants (in total *n*=537, 89% of the sample), and were defined by high to severe gambling severity at baseline and good progress to recovery during the follow-up. Trajectory T3 (*n*=30, 5.0%) included also participants with initial severe affectation and slow evolution to recovery. T4 and T5 included the least number of participants (in total *n*=36, 6%), characterized by severe baseline gambling severity and poor progress during the follow-up period.

The trajectories obtained discriminative capacity in terms of psychopathology levels, personality traits at baseline, the degree of compliance with the therapy guidelines during the CBT program, and the presence of relapses during CBT and during the 12-month follow-up. T3 included patients with a severe baseline psychopathology, but with good progress during recovery (although these clinical improvements were slowly obtained). These patients may have benefited from a more intense treatment plan in order to attain complete gambling abstinence more quickly (for example, treatment plans with a greater number of sessions). Trajectories T4 and T5 had the lowest duration of the gambling problem, high psychopathology at baseline and low scores in reward dependence and persistence. They also obtained the highest proportion of participants with bad compliance during treatment and relapses was the highest for these groups. As a whole, these results seem consistent with a recent systematic review highlighting the pre-treatment predictors of short- and long-term GD treatment outcomes. This review found shows that less psychopathology at intake (mainly depression and anxiety levels) were the most consistent predictors of success after treatment across multiple time points, followed by older age, lower gambling severity at intake, education levels, and personality traits (5).

Another important aspect to consider is the course of the disorder. The results of the present study suggest that shorter GD duration is associated with poorer treatment outcomes, as described in previous studies (10,37). A possible explanatory hypothesis to these findings would be related to the awareness of disorder and motivation to deal with the gambling problem (38). It could be that the patients with the worse therapeutic evolution had undergone less negative consequences for their gambling behavior and, therefore, had less intrinsic motivation to change. It is possible that the goal of our program to obtain complete abstinence from all types of gambling may be too ambitious for patients with shorter GD duration (39,40). In this vein, some studies have explored the effectiveness of programs oriented to controlled gambling (39–44). Actually, it seems that in the community, most individuals who have had gambling problems end up recovering without having totally abstained from gambling behavior, during the process (16). Many patients in specialized treatment units express their desire to continue some type of gambling activity that they have never lost control over (for example, with charity lotteries). However, they have much more difficulty accepting that they must also give up all forms of gambling. Many claim that they have always spent limited amounts of money on certain activities and that they have, for example. bought the same lottery numbers for years, which have a special meaning for them.

However, focusing on T4 and T5, it is necessary to bear in mind that other explanatory factors may be personality traits such as lower reward dependence and low persistence. These traits could be defined as the presence of less interest in pleasing others, social withdrawal, detachment and distance in interpersonal interactions (5–7). Likewise, they may show a

tendency to easily abandon their goals at the slightest setback and or sign of frustration. Taking all these results together, we could consider that, perhaps, these patients could benefit from motivational interventions that would help them to improve their awareness of their disease, to make their therapeutic guidelines more flexible, and to set aims other than definitive abstinence. They may even benefit from carrying out all these therapeutic strategies in individual treatment programs instead of in group format. They may feel more comfortable in a treatment more tailored to their needs and without having to establish social relationships with the rest of the patients participating in the same group treatment program.

This work should be evaluated within the context of several limitations. First, only the 12 months of follow-up after the therapy was covered, and therefore there is no way of knowing the extent to which the developmental trajectories may persist over time. Second, the presence of dropout during the complete study was 34.2%. It must be outlined, however, that the developmental trajectories have been estimated with a full information method, which do not replace or imputed missing data but which handle with uncomplete information within the analysis using all the available information into the data set. This procedure has demonstrated good reliability/validity to produce unbiased parameter estimates for missing data in models since LCGA (which usually treat longitudinal data with a relatively high percentage of missing values) or structural equations procedures. On the other hand, this study has obtained empirical latent classes based on the GD severity (such as many longitudinal studies, which generate the developmental trajectories based on the evolution of a concrete measure), but it would be very appropriate that future researches extent the generation of the groups incorporating time-invariant and time-variant features (measuring the sociodemographic and clinical profile).

4.1. Implications

These results put forward future lines of research on gambling after clinical interventions and provides insights on the variables related to poor developmental courses. Moreover, our results contribute to the knowledge about the existence of strategies that could potentially enhance results in these patients. For example, strategies to handle with middle-to-long term goals and specific personality traits, such as techniques for addressing global psychopathological state, or enhancing extreme scores in the personality traits before CBT or applying treatments in a specific format (for example, individual versus group) or even extending the length of active treatment.

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Table 1. Sample description at baseline (n=603)

Sociodemographic		*n*	%
Civil status	*Single*	188	31.2
	Married-partner	354	58.7
	Separated-divorced	61	10.1
Studies level	*Primary*	330	54.7
	Secondary	242	40.1
	University	31	5.1
Social status	*High+mean-high*	37	6.1
	Mean	76	12.6
	Mean-low	216	35.8
	Low	274	45.4
Employment	*Unemployed*	229	38.0
	Employed	374	62.0
Origin	*Spain*	586	97.2
	Immigrant	17	2.8

Gambling variables	α	*Mean*	*SD*
Age (years-old)		44.67	13.54
Age of GD onset (years-old)		30.10	11.67
Duration of GD (years)		14.89	8.03
DSM-5 total criteria	.763	6.87	1.79
SOGS-total score	.781	10.74	2.80
Personality (TCI-R)			
Novelty seeking	.757	107.80	14.32
Harm avoidance	.811	100.07	16.70
Reward dependence	.772	98.94	14.81
Persistence	.864	108.53	19.73
Self-directedness	.837	128.86	20.25
Cooperativeness	.789	132.49	15.59
Self-Transcendence	.822	63.46	14.79

Psychopathology (SCL-90R)	α	*Mean*	*SD*
Somatization	.889	0.84	0.73
Obsessive/comp.	.885	1.02	0.74
Interpersonal sensitivity	.839	0.89	0.73
Depressive	.897	1.39	0.84
Anxiety	.873	0.89	0.71
Hostility	.814	0.81	0.72
Phobic anxiety	.773	0.37	0.55
Paranoid Ideation	.754	0.78	0.70
Psychotic	.832	0.83	0.69
GSI score	.975	0.95	0.62
PST score	.975	43.98	20.22
PSDI score	.975	1.82	0.54

Note. SD: standard deviation. α: Cronbach's alpha in the study sample.

Table 2. Goodness-of-fit indexes for LCGA candidate solutions

Model	Akaike	Bayesian	[1]Adjusted	[2]LMR-	[3]Boost.	Entro-		Count-size		On-diagonal	Estimated means (SOGS-total score)					
[4]#trajec.	AIC	BIC	BIC	LRT	BLRT	phy		n	- %	posterior prob.	Pre	Post	3-month	6-month	9-month	12-month
1-tr	13324.5	13395.0	13344.2	---	---	1.00	T1	603	100%	1.00	10.74	2.76	2.71	2.63	2.55	2.47
2-tr	13031.2	13123.6	13056.9	294.18	-6646.3	.860	T1	551	91.4%	.996	10.71	2.44	2.44	2.44	2.44	2.45
				(.040)	(<.001)		T2	52	8.6%	.824	11.05	6.25	5.60	4.64	3.67	2.70
3-tr	12853.7	12968.2	12885.6	181.75	-6494.6	.812	T1	393	65.2%	.924	11.55	2.47	2.48	2.49	2.50	2.52
				(<.001)	(<.001)		T2	51	8.5%	.927	11.01	6.27	5.62	4.65	3.69	2.72
							T3	159	26.4%	.879	8.80	2.38	2.36	2.33	2.30	2.27
4-tr	12743.5	12880.0	12781.6	116.54	-6400.9	.814	T1	24	4.0%	.847	11.18	3.92	4.63	5.71	6.79	7.87
				(.728)	(<.001)		T2	388	64.3%	.901	11.53	2.50	2.42	2.40	2.33	2.28
							T3	37	6.1%	.938	11.04	6.66	5.85	4.63	3.40	2.18
							T4	154	25.5%	.874	8.83	2.20	2.22	2.16	2.20	2.15
5-tr	12633.1	12791.5	12677.2	161.66	-6363.9	.877	T1	383	63.5%	.868	11.50	2.47	2.42	2.33	2.25	2.16
				(.183)	(<.001)		T2	154	25.5%	.870	8.84	2.20	2.10	2.00	2.00	2.00
							T3	30	5.0%	.917	11.32	6.85	5.91	4.50	3.09	1.69
							T4	13	2.2%	.862	11.54	2.95	3.30	3.60	3.90	4.10
							T5	23	3.8%	.869	10.92	4.38	5.02	5.97	6.93	8.00
6-tr	12625.5	12805.9	12675.8	38.80	-6291.7	.859	T1	15	2.5%	.803	11.32	5.65	6.10	6.79	7.48	8.16
				(.969)	(<.001)		T2	19	3.2%	.931	11.19	7.06	5.96	4.33	2.69	1.05
							T3	147	24.4%	.817	8.78	2.29	2.28	2.25	2.23	2.21
							T4	3	0.5%	.999	11.68	10.65	9.03	6.60	4.17	1.74
							T5	65	10.8%	.866	11.13	4.26	3.94	3.46	2.98	2.50
							T6	354	58.7%	.914	11.49	2.26	2.28	2.32	2.36	2.40

Note. [1]Sample-size adjusted BIC.

[2]Lo-Mendell-Rubin Adjusted Likelihood Ratio Test: value (significance).

[3]Boostrapped Likelihood Ratio Test (BLRT): loglikelihood ivalue (significance).

[4]Number of trajectories.

Table 3. Comparison between trajectories in sociodemographic variables measured at the beginning of the study

		T1		T2		T3		T4		T5		Pairwise comparisons																	
		n=383		*n=154*		*n=30*		*n=13*		*n=23*		T1vsT2		T1vsT3		T1vsT4		T1vsT5		T2vsT3		T2vsT4		T2vsT5		T3vsT4		T3vsT5		T4vsT5	
		n	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|
Civil status	*Single*	126	32.9	37	24.0	9	30.0	6	46.2	10	43.5	.058	0.20	.899	0.06	.603	0.27	.431	0.22	.482	0.13	.210	**0.53†**	.136	0.20	.573	0.34	.402	0.06	.887	0.27
	Married-partner	215	56.1	104	67.5	17	56.7	6	46.2	12	52.2		0.24		0.01		0.20		0.08		0.23		**0.51†**		0.24		0.21		0.01		0.20
	Separated-divorce	42	11.0	13	8.4	4	13.3	1	7.7	1	4.3		0.09		0.07		0.11		0.25		0.16		0.03		0.09		0.18		0.07		0.11
Education level	*Primary*	199	52.0	89	57.8	20	66.7	6	46.2	16	69.6	.442	0.12	.293	0.30	.528	0.12	.187	0.37	.662	0.18	.431	0.23	.407	0.12	.294	0.42	.676	0.30	.166	0.12
	Secondary	161	42.0	58	37.7	9	30.0	7	53.8	7	30.4		0.09		0.25		0.24		0.24		0.16		0.33		0.09		**0.50†**		0.25		0.24
	University	23	6.0	7	4.5	1	3.3	0	0.0	0	0.0		0.07		0.13		0.36		0.36		0.06		0.31		0.07		0.26		0.13		0.36
Social stat.	*Mean-high+high*	27	7.0	8	5.2	1	3.3	0	0.0	1	4.3	.453	0.08	.597	0.17	.591	0.39	.496	0.12	.635	0.09	.510	0.33	.288	0.08	.438	0.26	.640	0.17	.646	0.39
	Mean	50	13.1	18	11.7	2	6.7	3	23.1	3	13.0		0.04		0.22		0.26		0.00		0.17		0.30		0.04		**0.52†**		0.22		0.26
	Mean-low	132	34.5	64	41.6	11	36.7	4	30.8	5	21.7		0.15		0.05		0.08		0.29		0.10		0.23		0.15		0.12		0.05		0.08
	Low	174	45.4	64	41.6	16	53.3	6	46.2	14	60.9		0.08		0.16		0.01		0.31		0.24		0.09		0.08		0.14		0.16		0.01
Employment	*Unemployed*	139	36.3	63	40.9	12	40.0	5	38.5	10	43.5	.318	0.09	.685	0.08	.873	0.04	.487	0.15	.926	0.02	.863	0.05	.815	0.09	.925	0.03	.799	0.08	.769	0.04
Origin	*Immigrant*	9	2.3	6	3.9	0	0.0	0	0.0	2	8.7	.325	0.09	.396	0.22	.576	0.22	.069	0.28	.272	0.28	.469	0.28	.301	0.09	---	---	.100	0.22	.274	0.22

Note. *Bold: significant comparison (.05 level). †Bold: effect size in the moderate (|*d*|>0.50) to good range (|*d*|>0.80).

Table 4. Comparison between trajectories in psychological state (gambling variables, psychopathology and personality) at baseline

	T1		T2		T3		T4		T5		Pairwise comparisons													
	n=383		*n=154*		*n=30*		*n=13*		*n=23*		T1vsT2		T1vsT3		T1vsT4		T1vsT5		T2vsT3		T2vsT4		T2vsT5	
Gambling variables	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|
Age (years-old)	44.4	13.4	45.9	14.1	44.4	12.2	43.2	8.9	42.2	15.8	.262	0.11	.986	0.00	.757	0.10	.442	0.15	.580	0.11	.502	0.22	.224	0.25
Age of onset (years-old)	29.4	11.4	31.5	12.3	29.8	10.9	31.0	9.0	31.8	13.7	.067	0.28	.872	0.03	.629	0.16	.360	0.19	.465	0.15	.881	0.05	.910	0.02
Duration (years)	15.4	8.1	14.3	8.1	15.2	7.0	12.9	8.9	10.5	6.5	.165	0.13	.868	0.03	.267	0.29	**.006***	**0.68†**	.610	0.11	.539	0.17	**.038***	**0.53†**
DSM-5 total criteria	7.74	1.08	4.62	1.23	7.20	1.61	7.08	1.50	7.00	1.71	**.001***	**2.70†**	**.016***	0.40	**.048***	**0.51†**	**.004***	**0.52†**	**.001***	**1.81†**	**.001***	**1.80†**	**.001***	**1.60†**
SOGS-total score	11.6	2.5	8.5	2.3	11.4	3.4	11.3	3.1	10.7	2.1	**.001***	**1.29†**	.707	0.06	.700	0.10	.083	0.41	**.001***	**1.00†**	**.001***	**1.01†**	**.001***	**0.98†**
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|
Debts due to gambling (yes)	185	48.3	53	34.4	17	56.7	10	76.9	10	43.5	**.003***	0.28	.377	0.17	**.042***	**0.62†**	.653	0.10	**.022***	**0.52†**	**.002***	**0.95†**	.397	0.19
Gambling Non-strategic	302	78.9	134	87.0	24	80.0	11	84.6	17	73.9	.080	0.22	.818	0.03	.837	0.15	.673	0.12	.354	0.19	.800	0.07	.134	0.34
Strategic	51	13.3	14	9.1	3	10.0	1	7.7	3	13.0		0.13		0.10		0.18		0.01		0.03		0.05		0.13
Both	30	7.8	6	3.9	3	10.0	1	7.7	3	13.0		0.17		0.08		0.01		0.17		0.24		0.16		0.33
Psychopath. (SCL-90R)	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|
Somatization	1.01	0.76	0.40	0.41	0.82	0.73	0.92	0.58	0.86	0.70	**.001***	**1.00†**	.156	0.25	.651	0.14	.287	0.21	**.003***	**0.71†**	**.015**	**1.03†**	**.003***	**0.80†**
Obsessive/comp.	1.22	0.71	0.49	0.47	0.99	0.73	1.33	0.70	1.14	0.91	**.001***	**1.22†**	.085	0.31	.591	0.16	.583	0.10	**.001***	**0.82†**	**.001***	**1.41†**	**.001***	**0.90†**
Interpersonal sensitivity	1.10	0.73	0.34	0.37	0.90	0.75	1.21	0.66	0.86	0.69	**.001***	**1.33†**	.112	0.28	.588	0.16	**.076***	0.35	**.001***	**0.96†**	**.001***	**1.63†**	**.001***	**0.93†**
Depressive	1.67	0.81	0.70	0.48	1.49	0.71	1.64	0.92	1.15	0.73	**.001***	**1.46†**	.203	0.24	.882	0.04	**.001***	**0.67†**	**.001***	**1.29†**	**.001***	**1.28†**	**.006***	**0.74†**
Anxiety	1.09	0.71	0.37	0.33	0.99	0.81	1.24	0.69	0.79	0.73	**.001***	**1.28†**	.440	0.13	.445	0.21	**.033***	0.41	**.001***	**1.00†**	**.001***	**1.59†**	**.004***	**0.73†**
Hostility	0.96	0.75	0.38	0.40	0.93	0.88	1.11	0.72	0.71	0.75	**.001***	**0.97†**	.794	0.04	.493	0.19	.084	0.34	**.001***	**0.80†**	**.001**	**1.24†**	**.033***	**0.54†**
Phobic anxiety	0.45	0.57	0.12	0.27	0.44	0.69	0.71	0.78	0.47	0.80	**.001***	**0.74†**	.958	0.01	.105	0.39	.886	0.02	**.003**	**0.62†**	**.001***	**1.02†**	**.004***	**0.58†**
Paranoid ideation	0.94	0.73	0.37	0.40	0.85	0.78	1.02	0.79	0.57	0.56	**.001***	**0.99†**	.468	0.12	.726	0.09	**.007***	**0.58†**	**.001***	**0.78†**	**.002**	**1.03†**	.177	0.41
Psychotic	1.03	0.70	0.33	0.33	0.86	0.69	0.95	0.71	0.80	0.68	**.001***	**1.28†**	.179	0.24	.662	0.12	.083	0.34	**.001***	**0.99†**	**.002**	**1.11†**	**.001***	**0.87†**
GSI score	1.14	0.60	0.44	0.29	0.99	0.63	1.20	0.61	0.88	0.61	**.001***	**1.50†**	.157	0.24	.737	0.09	**.023***	0.44	**.001***	**1.13†**	**.001***	**1.61†**	**.001***	**0.93†**
PST score	51.3	17.6	25.0	13.7	46.3	18.3	55.5	19.4	39.2	17.0	**.001***	**1.67†**	.113	0.28	.383	0.22	**.001***	**0.70†**	**.001***	**1.32†**	**.001***	**1.82†**	**.001***	**0.92†**
PSDI score	1.92	0.53	1.55	0.42	1.88	0.51	1.85	0.61	1.85	0.74	**.001***	**0.78†**	.666	0.08	.666	0.12	.541	0.11	**.002***	**0.70†**	**.049***	**0.58†**	**.009***	**0.51†**
Personality (TCI-R)	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|
Novelty seeking	110.1	14.0	102.0	14.1	110.8	12.7	106.7	10.7	104.8	14.5	**.001***	**0.58†**	.806	0.05	.401	0.28	.082	0.37	**.002***	**0.66†**	.260	0.38	.377	0.20
Harm avoidance	102.3	16.5	92.5	15.5	104.2	16.4	107.4	15.8	103.9	13.6	**.001***	**0.61†**	.527	0.12	.278	0.32	.644	0.11	**.001***	**0.73†**	**.002***	**0.95†**	**.002***	**0.78†**
Reward dependence	97.5	14.8	103.2	14.1	100.4	13.8	97.0	17.0	94.5	14.9	**.001***	0.40	.301	0.20	.915	0.03	.364	0.20	.340	0.20	.157	0.40	**.010***	**0.60†**
Persistence	108.8	19.9	110.1	19.2	106.5	19.3	99.4	22.8	101.3	18.3	.491	0.07	.550	0.12	.105	0.44	.082	0.39	.369	0.19	**.071***	**0.51†**	**.048***	**0.47†**
Self-directedness	123.8	18.7	142.9	17.5	125.9	19.1	128.2	13.7	125.3	23.9	**.001***	**1.06†**	.550	0.11	.418	0.27	.701	0.07	**.001***	**0.93†**	**.009***	**0.94†**	**.001***	**0.84†**
Cooperativeness	130.2	15.7	139.0	13.3	129.1	16.0	133.5	16.7	130.8	16.0	**.001***	**0.60†**	.708	0.07	.463	0.20	.872	0.03	**.001***	**0.67†**	.228	0.36	**.018***	**0.56†**
Self-Transcendence	64.5	14.8	61.6	14.3	62.9	13.8	64.3	17.0	59.6	16.8	.058	0.20	.594	0.11	.963	0.01	.134	0.31	.657	0.10	.550	0.17	.552	0.13

	Pairwise comparisons																							
	T2vsT3		T2vsT4		T2vsT5		T3vsT4		T3vsT5		T4vsT5	
Gambling variables	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|
Age (years-old)	.580	0.11	.502	0.22	.224	0.25	.801	0.11	.560	0.16	.822	0.08
Age of onset (years-old)	.465	0.15	.881	0.05	.910	0.02	.752	0.12	.542	0.16	.844	0.07
Duration (years)	.610	0.11	.539	0.17	**.038***	**0.53†**	.399	0.28	**.041***	**0.70†**	.386	0.31
DSM-5 total criteria	**.001***	**1.81†**	**.001***	**1.80†**	**.001***	**1.60†**	.755	0.08	.544	0.12	.852	0.05
SOGS-total score	**.001***	**1.00†**	**.001***	**1.01†**	**.001***	**0.98†**	.911	0.03	.277	0.27	.446	0.25
	p	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|
Debts due to gambling (yes)	**.022***	**0.52†**	**.002***	**0.95†**	.397	0.19	.207	0.44	.341	0.27	**.048***	**0.73†**
Gambling Non-strategic	.354	0.19	.800	0.07	.134	0.34	.938	0.12	.871	0.14	.759	0.27
Strategic		0.03		0.05		0.13		0.08		0.10		0.18
Both		0.24		0.16		0.33		0.08		0.10		0.18
Psychopath. (SCL-90R)	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|
Somatization	**.003***	**0.71†**	**.015**	**1.03†**	**.003***	**0.80†**	.694	0.14	.861	0.05	.805	0.10
Obsessive/comp.	**.001***	**0.82†**	**.001***	**1.41†**	**.001***	**0.90†**	.159	**0.53†**	.436	0.18	.442	0.23
Interpersonal sensitivity	**.001***	**0.96†**	**.001***	**1.63†**	**.001***	**0.93†**	.180	0.44	.803	0.06	.135	**0.53†**
Depressive	**.001***	**1.29†**	**.001***	**1.28†**	**.006***	**0.74†**	.566	0.18	.109	0.46	**.047***	**0.58†**
Anxiety	**.001***	**1.00†**	**.001***	**1.59†**	**.004***	**0.73†**	.280	0.33	.273	0.26	**.049***	**0.63†**
Hostility	**.001***	**0.80†**	**.001**	**1.24†**	**.033***	**0.54†**	.464	0.22	.254	0.27	.113	**0.54†**
Phobic anxiety	**.003**	**0.62†**	**.001***	**1.02†**	**.004***	**0.58†**	.155	0.37	.884	0.03	.205	0.31
Paranoid ideation	**.002**	**1.03†**	.177	0.41	.483	0.21	.123	0.42	**.042***	**0.65†**		
Psychotic	**.002**	**1.11†**	**.001***	**0.87†**	.716	0.12	.697	0.10	.514	0.21		
GSI score	**.001***	**1.13†**	**.001***	**1.61†**	**.001***	**0.93†**	.285	0.33	.448	0.19	.106	**0.53†**
PST score	**.001***	**1.32†**	**.001***	**1.82†**	**.001***	**0.92†**	.100	**0.50†**	.125	0.40	**.005***	**0.89†**
PSDI score	**.002***	**0.70†**	**.049***	**0.58†**	**.009***	**0.51†**	.893	0.04	.868	0.04	.998	0.00
Personality (TCI-R)	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|
Novelty seeking	**.002***	**0.66†**	.260	0.38	.377	0.20	.392	0.35	.129	0.44	.705	0.15
Harm avoidance	**.001***	**0.73†**	**.002***	**0.95†**	**.002***	**0.78†**	.567	0.20	.942	0.02	.545	0.24
Reward dependence	.340	0.20	.157	0.40	**.010***	**0.60†**	.501	0.22	.159	0.41	.640	0.15
Persistence	.369	0.19	**.071***	**0.51†**	**.048***	**0.47†**	.294	0.34	.346	0.28	.793	0.09
Self-directedness	**.001***	**0.93†**	**.009***	**0.94†**	**.001***	**0.84†**	.722	0.14	.912	0.03	.669	0.15
Cooperativeness	**.001***	**0.67†**	.228	0.36	**.018***	**0.56†**	.402	0.27	.703	0.10	.616	0.17
Self-Transcendence	.657	0.10	.550	0.17	.552	0.13	.795	0.09	.424	0.22	.380	0.28

Note. M: mean. SD: standard deviation. *Significant comparison (.05 level). †Bold: effect size in the moderate (|*d*|>0.50) to good range (|*d*|>0.80).

Table 5. Comparison between trajectories for therapy outcomes

	T1		T2		T3		T4		T5		Pairwise comparisons																	
	n=383		*n=154*		*n=30*		*n=13*		*n=23*		T1vsT2		T1vsT3		T1vsT4		T1vsT5		T2vsT3		T2vsT4		T2vsT5		T3vsT4		T3vsT5		T4vsT5	
During therapy	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|
[1]Compliance *Good*	296	77.3	125	81.2	13	43.3	8	61.5	14	60.9	.606	0.10	**.001***	**0.74†**	**.039***	0.35	.119	0.36	**.001***	**0.85†**	**.041***	0.44	**.048***	**0.51†**	.504	0.37	.418	0.36	.780	0.01
Moderate	76	19.8	25	16.2	12	40.0	3	23.1	7	30.4		0.09		**0.52†**		0.08		0.25		**0.55†**		0.17		0.34		0.37		0.20		0.17
Bad	11	2.9	4	2.6	5	16.7	2	15.4	2	8.7		0.02		**0.53†**		**0.52†**		0.25		**0.49†**		**0.51†**		0.27		0.03		0.24		0.21
[2]Relapses	53	13.8	18	11.7	16	53.3	6	46.2	8	34.8	.506	0.06	**.001***	**0.92†**	**.001***	**0.75†**	**.006***	**0.50†**	**.001***	**0.99†**	**.001***	**0.82†**	**.004***	**0.57†**	.665	0.14	.179	0.38	.501	0.23
Post-therapy	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|
SCL-90R Somatization	0.46	0.54	0.24	0.33	0.59	0.54	0.76	0.76	0.51	0.52	**.001***	**0.51†**	.151	0.25	**.035***	**0.54†**	.653	0.09	**.001***	**0.79†**	**.001***	**0.88†**	**.019***	**0.62†**	.330	0.25	.536	0.16	.155	0.38
SCL-90R Obsessive/comp.	0.54	0.59	0.25	0.34	0.77	0.80	0.83	0.63	0.65	0.58	**.001***	**0.62†**	**.029***	0.32	**.046***	**0.56†**	.363	0.19	**.001***	**0.85†**	**.001***	**1.16†**	**.001***	**0.86†**	.753	0.08	.442	0.17	.360	0.29
SCL-90R Interp. sensitivity	0.46	0.57	0.21	0.29	0.61	0.75	0.66	0.58	0.53	0.44	**.001***	**0.55†**	.125	0.23	.185	0.34	.587	0.12	**.001***	**0.70†**	**.003***	**0.96†**	**.009***	**0.84†**	.802	0.06	.540	0.15	.466	0.26
SCL-90R Depressive	0.61	0.64	0.31	0.37	0.99	0.81	0.86	0.70	0.74	0.62	**.001***	**0.58†**	**.001***	**0.52†**	.135	0.37	.325	0.20	**.001***	**1.08†**	**.001***	**1.00†**	**.001***	**0.85†**	.525	0.17	.138	0.34	.556	0.19
SCL-90R Anxiety	0.37	0.49	0.17	0.26	0.56	0.65	0.67	0.58	0.51	0.47	**.001***	**0.52†**	**.027***	0.33	**.021***	**0.55†**	.171	0.29	**.001***	**0.80†**	**.001***	**1.12†**	**.001***	**0.90†**	.486	0.17	.673	0.10	.317	0.31
SCL-90R Hostility	0.37	0.53	0.17	0.30	0.66	0.90	0.73	0.74	0.36	0.41	**.001***	**0.46†**	**.003***	0.40	**.013***	**0.56†**	.958	0.01	**.001***	**0.73†**	**.001***	**0.99†**	**.049***	**0.53†**	.682	0.08	**.039***	**0.53†**	**.041***	**0.61†**
SCL-90R Phobic anxiety	0.19	0.42	0.10	0.25	0.29	0.58	0.43	0.48	0.25	0.41	**.012***	0.28	.209	0.19	**.033***	**0.53†**	.478	0.15	**.016***	**0.60†**	**.004***	**0.88†**	**.048***	**0.56†**	.273	0.27	.768	0.06	.202	0.39
SCL-90R Paranoid ideation	0.46	0.55	0.21	0.31	0.69	1.01	0.55	0.60	0.36	0.44	**.001***	**0.57†**	**.027***	0.28	.563	0.15	.355	0.22	**.001***	**0.64†**	**.027***	**0.71†**	.226	0.38	.437	0.16	**.026***	**0.51†**	.296	0.37
SCL-90R Psychotic	0.35	0.51	0.13	0.22	0.55	0.63	0.58	0.57	0.47	0.48	**.001***	**0.57†**	**.026***	0.35	**.046***	0.43	.255	0.23	**.001***	**0.89†**	**.001***	**1.06†**	**.001***	**0.91†**	.831	0.05	.523	0.15	.472	0.22
SCL-90R GSI score	0.46	0.48	0.22	0.24	0.68	0.66	0.74	0.55	0.53	0.42	**.001***	**0.64†**	**.007***	0.39	**.023***	**0.55†**	.470	0.16	**.001***	**0.95†**	**.001***	**1.23†**	**.002***	**0.91†**	.697	0.09	.208	0.28	.168	**0.63†**
SCL-90R PST score	25.79	19.77	14.23	15.64	34.20	22.98	40.15	23.64	29.14	18.83	**.001***	**0.65†**	**.020***	0.39	**.008***	**0.66†**	.424	0.17	**.001***	**1.02†**	**.001***	**1.29†**	**.001***	**0.86†**	.347	0.26	.344	0.24	**.049***	**0.52†**
SCL-90R PSDI score	1.43	0.48	1.37	0.45	1.64	0.53	1.53	0.46	1.49	0.40	.250	0.12	**.019***	0.41	.459	0.21	.539	0.14	**.005***	**0.54†**	.265	0.34	.277	0.28	.474	0.22	.267	0.31	.833	0.08
During follow-up	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|
[2]Relapses	37	9.7	8	5.2	6	20.0	6	46.2	11	47.8	.140	0.17	**.001***	**0.29†**	**.001***	**0.89†**	**.005***	**0.93†**	**.001***	**0.54†**	**.001***	**1.06†**	**.001***	**1.10†**	**.049***	**0.58†**	**.031***	**0.61†**	.923	0.03

Note. [1]Compliance with therapy guideliness. [2]Presence of gambling episodes. M: mean. SD: standard deviation.

*Bold: significant comparison (.05 level). †Bold: effect size in the moderate (|*d*|>0.50) to good range (|*d*|>0.80).

Table 6. Predictive models of the trajectory based on the measures at the beginning of the study: final multinomial regressions

	T2vsT1			T3vsT1			T4vsT1			T5vsT1			T3vsT2			T4vsT2			T5vsT2			T4vsT3			T5vsT3			T5vsT4		
	B	*p*	*OR*	*B*	*p*	*OR*	*B*	*p*	*OR*	*B*	*p*	*OR*	*B*	*p*	*OR*	*B*	*p*	*OR*	*B*	*p*	*OR*	*B*	*p*	*OR*	*B*	*p*	*OR*	*B*	*p*	*OR*
Model 1																														
Civil status (single/other)	-0.44	**.044***	0.65	-0.13	.745	0.87	0.56	.324	1.75	0.45	.300	1.57	0.30	.490	1.36	1.00	**.048***	2.71	0.89	**.048***	2.43	0.69	.311	2.00	0.58	.313	1.79	-0.11	.877	0.90
Model 2																														
DSM-5 total criteria	-2.38	**.001***	0.09	-0.36	**.024***	0.70	-0.47	**.036***	0.62	-0.48	**.009***	0.62	2.02	**.001***	7.56	1.91	**.001***	6.76	1.90	**.001***	6.71	-0.11	.672	0.89	-0.12	.606	0.89	-0.01	.982	0.99
SCL-90R GSI	-4.87	**.001***	0.01	-0.34	.354	0.72	0.22	.633	1.25	-0.76	.099	0.47	4.53	**.001***	9.28	5.09	**.001***	16.24	4.11	**.001***	6.72	0.56	.333	1.75	-0.42	.454	0.65	-0.98	.126	0.37
Model 3																														
Novelty seeking	-0.04	**.001***	0.97	0.01	.418	1.01	0.00	.848	1.00	-0.03	.109	0.97	0.05	**.006***	1.05	0.03	.207	1.03	0.01	.704	1.01	-0.02	.529	0.98	-0.04	.074	0.96	-0.02	.410	0.98
Harm avoidance	-0.03	**.001***	0.97	0.02	.261	1.02	0.03	.200	1.03	0.00	.979	1.00	0.04	**.005***	1.04	0.05	**.014***	1.05	0.03	.108	1.03	0.01	.646	1.01	-0.01	.461	0.99	-0.03	.307	0.97
Self-directedness	0.04	**.001***	1.04	0.01	.271	1.01	0.02	.262	1.02	0.00	.966	1.00	-0.02	.066	0.98	-0.02	.362	0.98	-0.04	**.008***	0.96	0.01	.741	1.01	-0.01	.428	0.99	-0.02	.344	0.98

Note. *Bold: significant parameter (.05 level).

Figure 1. Course trajectories: from pre-treatment to 12-months following the CBT program (n=603)

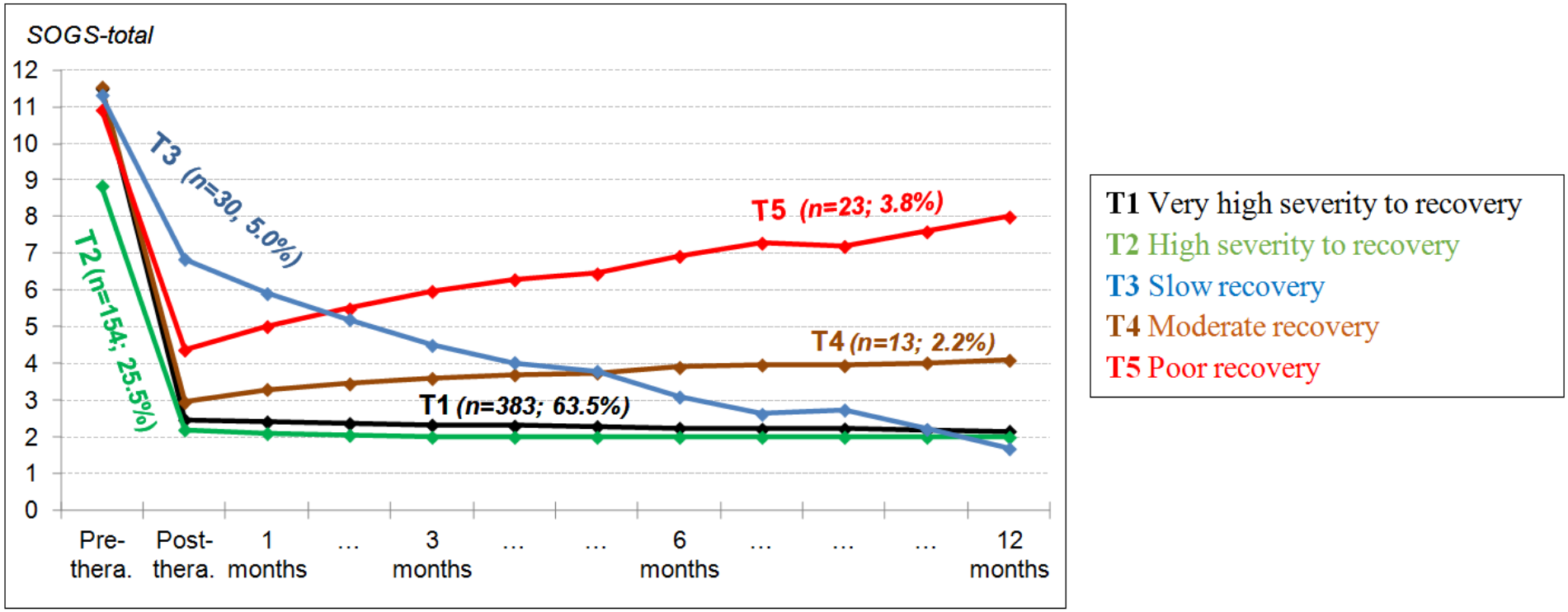
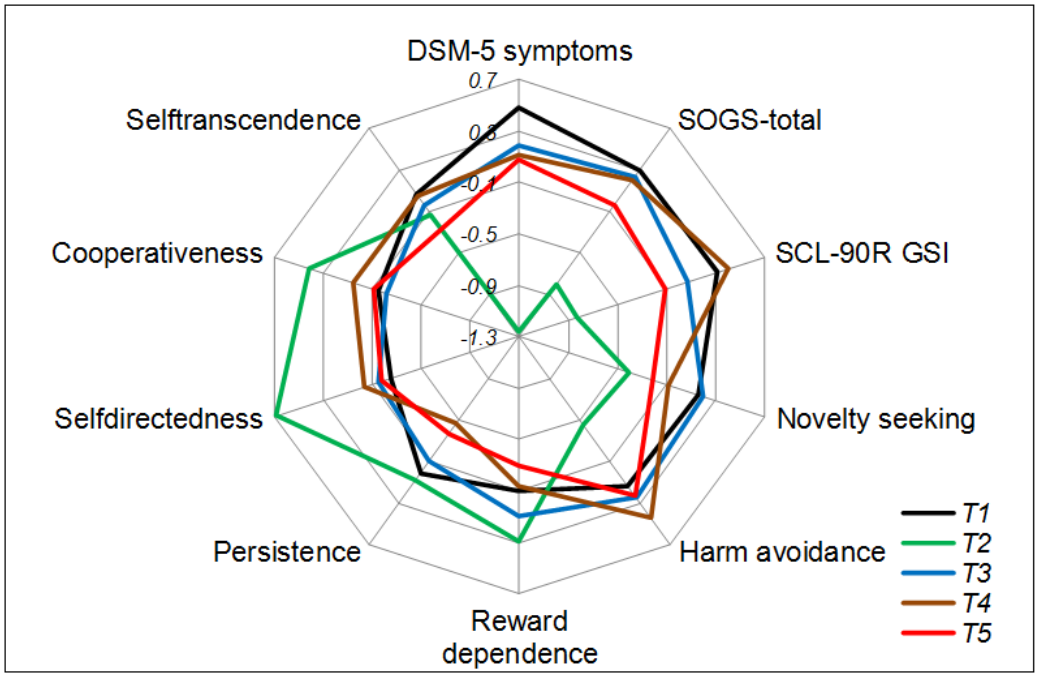


Figure 2. Radar chart with the main psychological variables differing between the trajectories (at baseline) (n=603)



T1 Very high severity to recovery
T2 High severity to recovery
T3 Slow recovery
T4 Moderate recovery
T5 Poor recovery