THE EFFICACY OF A FUNCTIONAL THERAPY PROGRAM FOR GAMBLING DISORDER: A PILOT STUDY

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ABSTRACT

Background: *Despite the great progress achieved by treatment approaches for Gambling Disorder (GD) the relevance of studying efficacious therapies still remains high. This pilot study aims at the evaluation of the efficacy of a standardized protocol based on Functional theory for GD. Functional Therapy (FT) is an integrated body-mind therapy.*

Methods: *Twenty-eight pathological gamblers completed the FT protocol consisted in 16 sessions, two times a week for a total duration of two months, in an individual setting. No one of the patients was taking any psychopharmacological therapy. Psychological assessment both at baseline (T0) and at the end of the treament (T1) includes the South Oaks Gambling Screen, the PG-Yale-Brown Obsessive-Compulsive Scale (PG-YBOCS), State-Trait Anxiety Inventory (STAI), the Beck Depression Inventory – II version (BDI-II), the Barrat Impulsiveness Scale 11th version (BIS-11) and the Measurement of Psychological Stress (MSP).*

Results: *a significant reduction of GD (gambling frequency, duration, money inserted, and expenditure) in pathological gamblers was revealed together with a significant reduction of depression, anxiety, impulsivity and perceived stress.*

Conclusions: *the structured FT program for GD highlights a strong improvement in gambling behavior, in reducing impulsivity, depression, anxiety and perceived stress, thus obtaining a good compliance and a few dropout.*

Keywords: *Gambling disorder treatment, Functional Therapy, body-oriented therapy, treatment outcome.*

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Introduction

Gambling Disorder (GD) is officially conceptualized as a behavioral addiction characterized by the loss of control over gambling, deception during the extent of one's involvement with gambling, family and job disruptions, the chase of losses, ultimately producing alterations in finances, relationships, psychological and medical health[1]. In Italy the prevalence of problem gamblers ranges from 1.3% to 3.8% of the general population while pathological gamblers (PGs) are estimated to be between 0.5% to 2.2% of the population[2]. Treatment options for GD include several options: pharmacological therapies that aim to restore the dysregulation in the neuronal circuits responsible of the endophenotypes typical of this disorder[3,4] and non-pharmacological approaches that work on different determinants of GD such as cognitive distortions, craving, comorbidities, social vulnerability and inhibitory dyscontrol[5,6]. The approximate overall success rates for psychological treatments have been estimated to be at 70% after a 6-months follow-up, at 50% after a 1-year follow-up, and at 30% after a 2-year follow-up[7]. The variability of the overall success is influenced by the fact that GD represents a heterogeneous category, with varying levels of severity and co-occurring comorbidities[8,9,10,11]. Despite the great progress achieved by pharmacologic and non-pharmacologic approaches, a large proportion of treated patients abandon treatment before completion[12,13,14].

This aspect highlights the importance of studying efficacious therapies for patients oriented towards GD by improving self-control, identifying ways for dealing with risky situations, providing an outlet to address guilt/shame, restoring a healthy capacity to feel and to search for pleasure and finally teaching ways to deal with gambling urges and cravings. Although often psychotherapy utilizes a verbal approach, the integration of specific body-oriented techniques could be useful for treating GD.

The Functional Therapy (FT) approach highlights the possibility of inducing real changes of the cognitive, emotional and psychological systems through direct body intervention[15]. FT represents an integrated body-mind therapy and hypothesizes that the psychobiological functional planes of a subject are deeply interconnected and congruent to each other, thus creating specific Basic Experiences of the Self (BES)[16]. These BES, if consolidated and reinforced repeatedly with positive outcomes by the caregivers, will become relevant resources for managing stress, searching wellness and for manteining a good mental health.

Specifically, clinical work conducted at the School of Functional Psychology in Naples (Italy), has identified specific BES associated to GD such as the lack of pleasant and rewarding "Sensations", the difficulty in feeling "Vitality" and "Joy" because these are connected only to gambling urges. Other alterations of the BES concern the frequent "Anger" and the difficulty of living in full and pleasant "Contact" with people. In addition, PGs experience "Assertivity" only in realtion with the need to win money for continuing gambling behavior and are lacking in "Positive Continuity", relating to the positive memories that help to manage lifetime stress[17]. The purpose of FT for GD is to reduce and stop gambling behavior through several body, cognitive and emotional techniques, by helping PGs to become more aware of the negative consequenses of betting, learning how to search pleasure from natural and healthy rewarding stimulus.

Furthermore, the treatment provides an overall framework to facilitate lifestyle changes reinforcing non-gambling behaviors. Given these premises, the present study evaluated the efficacy of a standardized protocol of FT, delivered in an individual setting, which is specifically based on the correction of the alterations of the BES, significantly impaired in PGs according to the theory of Functional Psychology.

The primary treatment outcome was the reduction or the abstinence from gambling behavior; the secondary goal the reduction of symptoms related to GD such as anxiety, depression, impulsivity and perceived stress.

Methods

Participants

Thirty-six consecutive treatment-seeking PGs were recruited, two of them failed to attend the initial assessment. Further six dropped out. The average number of treatment sessions for those participants who left treatment prematurely was 4.6 (SD = 2.16). The resulting samples comprised 28 PGs. The period of recruitment went from 2014 to 2016. PGs were recruited from a local addiction treatment center and from the Unit of Psychiatry of the Policlinico "P. Giaccone" in Palermo. This study was approved by the ethical review board of the Policlinico "P. Giaccone", Palermo, Italy (Prot. 14910A) and was part of a larger research project including MRI examination. All participants gave written informed consent and all measures were administered under respect of privacy.

The eligibility for participation was based on the following inclusion criteria: 18 years of age or older; seeking treatment for problem gambling; not involved in a concurrent gambling treatment program; gambled in the past month; without any treatment for problem gambling in the previous 12 months; without any practice of yoga or meditation; furthermore patients with a lifetime diagnosis of schizophrenia or other psychotic disorders, with a history of serious neurological disorders and with a past or present of drug abuse or drug addiction were excluded.

Assessment

All measures were administered at the baseline and at the end of the treatment (two months later). A clinical psychologist administered the psychological tests separately in the same treatment center were they received the FT protocol. A socio-demographic questionnaire was used to collect data including the age, sex, marital status, occupation and socio-economic status of the patients. The primary outcome of this study was evaluated through two different tests, the South Oaks Gambling Screen (SOGS)[18] and the PG-Yale-Brown Obsessive-Compulsive Scale (PG-YBOCS)[19]. The SOGS is a 20-item questionnaire that measures

gambling behavior. The SOGS score ranges from 0 to 20; a score of 5 or greater indicates a probable GD. The SOGS was found to have satisfactory reliability with coefficient alphas of .69 and .86 in the general population and gambling treatment samples, respectively[20]. The PG-YBOCS is a reliable and valid, 10-item, clinician-administered scale that rates gambling symptoms occurring within the last 7 days on a severity scale from 0 to 4 for each item (total scores range from 0 to 40, with higher scores reflecting greater illness severity). We used the State-Trait Anxiety Inventory to evaluate anxiety (STAI)[21].

The STAI comprises separate self-report scales for measuring state and trait anxiety, both of which consist of twenty statements. The authors provide substantial evidence to support the psychometric properties of the STAI in terms of internal consistency, test-retest reliability, concurrent validity, convergent validity, divergent reliability, and construct validity. The severity of depression was evaluated through the Beck Depression Inventory - II version (BDI-II)[22] The BDI-II is a 21-item self-report inventory for the assessment of the state depression severity, and provides classification of depression as minimal, mild, moderate, and severe. The psychometric properties of the BDI-II, in terms of internal consistency, test-retest reliability, content validity, construct validity, factorial validity, and discriminant validity, have been well established.

The Barrat Impulsiveness Scale 11th version (BIS-11) was used for assessing impulsiveness in PGs. BIS-11[23]. The BIS-11 is the most frequently used self-report measure of impulsivity and the total score indicates the level of impulsiveness. Finally the Measurement of Psychological Stress (MSP) scale was used to evaluate perceived stress[24]. The MSP is a questionnaire consisting of 49 items based on different aspects related to the perception that the subject has of his own condition (cognitive-affective, physiological, behavior).

Treatment

Following the assessment, PGs carried out the FT protocol over 16 individual sessions, which were scheduled twice a week for a total duration of two months. None of the patients were undergoing psychopharmacological treatment. The treatment program was specifically manualized for GD with the aim to increase abstinence, decrease gambling craving and reduce psychological symptoms related to this addiction. The psychological treatment, based on Functional theory was characterized by the use of specific body-oriented techniques pointing towards the restoration of the BES altered in GD[16]. Specifically the treatment program was oriented towards the reduction and elimination of gambling behavior through several bodily, cognitive and emotional techniques, such as deep breathing, guided imagery, techniques for improving assertiveness and for managing cravings. At the end of the treatment all patients were re-tested through the same assessment protocol (SOGS, PG-YBOCS, STAI, BDI-II, BIS-11 and MSP) to analyze the achievement of the expected outcomes.

Statistical analyses

In order to evaluate the pre-post treatment alterations, a repeated ANOVA measurement was used at baseline and at the end of treatment. All analyses assumed an alpha risk of 5%. All statistical analyses were conducted using SPSS for Windows 22.0.

Results

Demographics

The sample consisted of 28 subjects (83.3% males), ranging from 22-55 years old, with a mean age of 40 years old (SD = 8.97). The 29.4% was unmarried whereas the 58.8 % was married and the 11.8% was separated or divorced. The mean education level was 11.6 years (SD = 2.23) (Table 1).

Among the favorite gambling patterns found in this group, the most prevalent categories included slot machines (68%), sports betting (56%), scratch card (42%), card games (22%), and bingo (11%) (Table 2).

Factor	Pathological gamblers (n=34) Frequency (%)
Sex	
Male	29 (85.3)
	Pathological gamblers (n=34) Mean (St. Dev.)
Mean age (years)	40.00 (8.97)
Mean education (years)	11.68 (.82)

Table 1: Descriptive statistics of the sample by gender, age and years of education.

Socio-Demographic data	Pathological gamblers (%)
Relationship	
Married/in a partnership	58.8
Separated/divorced/single/widowed	41.2
Employment	
Employed	64
Unemployed	36
Gambling behaviors a	
Frequency	
Weekly or less	32
> weekly	68
Amount spent	
€1- €500	42
€501- €1000	36
> €1000	22
Gambling activities	
Played cards for money	20
Bet on horses, dogs, or other animals (at OTB, the track or with a bookie	4
Bet on sport (parlay cards, with bookie at Jai Alai)	64
Played dice games, including craps, over and under or other dice games	4
Went to casinos (legal or otherwise)	7
Played the numbers or bet on lotteries	58
Played bingo	22
Played the stock and/or commodities market	0
Played slot machines, poker machines, or other gambling machines	72
Bowled, shot pool, played golf, or some other game of skill for money	0
Borrowed money (only through a legal way)	62
Borrowed money (also through an illegal way)	44

Table 2: Socio-demographics and clinical characteristics of pathological gamblers at baseline.

Effectiveness

In this study therapeutic success was defined as a significant reduction of gambling behavior. Furthermore a secondary goal was the reduction of anxiety, depression, impulsivity and perceived stress. The reduction of gambling behavior was evaluated by SOGS and PG-YBOCS. Both SOGS scores $(F (1,27) = 215.003, p = 0.0000)$ and PG-YBOCS $(F (1,27) = 92.442, p = 0.0000)$ highlighted a significant decrease in time of gambling behavior.

Also secondary goals were achieved because all the dimensions investigated decreased at the end of the treatment. Specifically anxiety $(F (1,27) = 83.177, p = 0.0000)$, depression $(F (1,27) = 102.218, p = 0.0000)$ impulsivity $(F (1,27) = 63.089, p = 0.0000)$ and perceived stress $(F (1,27) = 111.464, p = 0.0000)$ showed a strong reduction at the end of the therapy (Table 3).

Factor	T0 (Pre-Treatment) (n=34) Mean (SD)	T1 (Post-Treatment) (n=34) Mean (SD)	Mean change (Pre-Post) (SD)	Test One-way repeated measures ANOVA F
SOGS	11.76 (2.84)	1.78 (2.78)	-9.98	215.003****
PG-YBOCS	21.64 (8.83)	6.17 (10.54)	-15.47	92.442****
STAI	62.32 (11.67)	46.28 (11.47)	-16.04	83.177****
BDI-II	18.38 (10.108)	8.85 (8.66)	-9.53	102.218****
BIS-11	70.50 (7.28)	57.25 (10.33)	-13.25	63.089****
MSP	117.32 (17.16)	71.85 (20.24)	-45.47	111.464****

Table 3: ANOVA with repeated measures of primary and secondary outcomes compared to baseline.
Note. NS Non significant; *p < .05; **p < .01; ***p < .005; ****p < .001.

Discussion

This study was aimed at evaluating the efficacy of a structured program, based on Functional theory, in the treatment of GD. The results indicate a significant reduction of GD (gambling frequency, duration, money inserted, and expenditure) in PGs together with a significant reduction of symptoms related to this addiction such as depression, anxiety, impulsivity and perceived stress.

The outcomes of this research program are consistent with other psychological approaches that showed effectiveness in the treatment of GD[25]. Overall, several therapies showed different levels of efficacy in the treatment of GD, including Self-Help interventions, Brief and Motivational Interventions[26,27], Cognitive Behavioral Therapies and Behavioral Therapies[28,29] and Psychodynamic Therapy[30]. Relative to controls, randomised participants to Cognitive-Behavioral Therapy demonstrated reduced gambling symptom severity, financial loss from gambling and less frequent gambling from 0 to 3 months post-treatment. Cognitive-Behavioral Therapy also demonstrated reduced rates of diagnoses of GD and symptoms of depression and anxiety[5,25].

As far as we know this was the first study aimed at evaluating an integrated body-mind therapy for treating GD. Working on GD through an

integrated approach such as FT, including bodily, cognitive and emotional techniques was effective in improving gambling behavior, reducing symptoms severity, financial loss and gambling frequency. Furthermore, patients submitted to this program showed good compliance and rarely dropped out. The hypothesis of Functional theory concerning the relevance of a consolidation of the BES for mantaining good health is confirmed by this pilot study. Indeed the structured program of FT included specific techniques oriented to the modification of the BES, which are altered in PGs. It is possible to interpret these findings as a proof of the relevance of working on GD both to improve inhibitory control and to learn how to search pleasure from natural and healthy rewarding stimulus.

Furthermore it is conceivable that the deep breathing techniques included in this program, reducing anxiety and perceived stress, can lead PGs to better recognize craving and cope with it adequately. In this regard, scientific literature reports remarkable positive outcomes induced by deep breathing techniques as an improvement in physiological parameters such as heart rate and blood pressure[31,32], cardiorespiratory function[33] as well as on mood states such as anxiety[34] and on perceived stress[35,36]. Perciavalle et al., showed an improvement in the condition of university students regarding physiological effects (heart rate and salivary cortisol levels), mood and perceived stress following the application of a FT program[37].

Despite the success of this treatment program, caution is required for accepting such conclusions, since their validity is influenced by some methodological limitations such as a small sample, the lack of a controlled condition, and the lack of a follow-up. The lack of a placebo-controlled group made it impossible to reach definitive conclusions regarding the efficacy of FT for the treatment of GD in this cohort. Nevertheless, this pilot study shows that FT may be effective for treating GD. Considering the similarities between GD and drug addiction[37,38,39,40] a next step would be a larger randomized controlled trial to compare FT to a controlled condition and verify if the improvements are maintained during a follow-up period. In conclusion, this was the first study reporting a positive outcome in PGs treated with a structured FT program that highlights a strong improvement in gambling behavior, in reducing impulsivity, depression, anxiety and perceived stress, thus obtaining good compliance and only a few abandonments from the therapy.

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