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***COMPULSIVE SEXUAL BEHAVIOR OFFLINE VS ONLINE:*** ***COMPARISON OF SOCIODEMOGRAPHICAL ASPECTS, PERSONALITY CHARACTERISTICS***

***AND PSYCHOPATHOLOGY***

Resumen

Compulsive Sexual Behavior (CSB) it is defined as difficulties in controlling fantasies or inappropriate sexual behaviors or excessive that cause subjective distress or deterioration in important areas of daily functioning. Internet ha favorecido otras formas de practicar sexo, estas pueden llegar a convertirse en compulsivas de una manera similar a las conductas sexuales presenciales. There is an urgent need to define the symptomatic, psychosocial and personality characterization of these patients and the interaction between different sexual behaviors (presential or online). Este estudio tuvo como objetivos (1) comparar personas con diagnóstico de CSB (del inglés “*Compulsive Sexual Behavior”*) presencial y CSB online con controles sanos y (2) comparar personas con CBS presencial con CSB online, en cuanto a las características psicopatológicas, de personalidad y sociodemográficas. Para ello se contó con una muestra de 44 hombres diagnosticados de CSB, sin el uso de internet, 36 hombres diagnosticados de CSB haciendo uso de Internet y 25 controles sanos. Las diferencias que se han encontrado en este estudio entre CSB presencial y CSB online son….

Palabras clave: adicciones comportamentales; adicción al sexo (CSB) offline; adicción al sexo online; personalidad; psicopatología

INTRODUCCIÓN

El comportamiento sexual compulsivo (CSB), viene determinado por un patrón repetitivo, reincidente y constante de intenso malestar relacionado con fantasías sexuales e impulsos y comportamientos sexuales que son preocupantes para la persona pudiéndole llegar a provocar un grave perjuicio psicosocial (Fong, Reid y Parhami, 2012), ocupacional y/u otras consecuencias adversas mantenidas en el tiempo (Gola y Potenza, 2018; Kafka, 2010). Según la SASH (Society for the Advancement of Sexual Health, 2012), la CSB se sitúa entre el 3% y el 6% de la población general en EEUU. Aun así, la diversidad en la conceptualización del problema hace difícil establecer claramente el número de personas afectadas y la sintomatología y etiología del problema. Diferentes autores han utilizado diversas expresiones para designar el CSB: Conducta sexual compulsiva (Coleman, 1991, 1995), Adicción al sexo (Carnes, 1983), Hiperfilia (Money, 1986), Hipersexualidad (Kafka, 2010, 2014; Kaplan and Krueger, 2010), Conducta sexual impulsiva-compulsiva (Hollander, 2010).

Internet ha establecido nuevas formas de practicar sexo englobadas bajo el concepto cibersexo que incluyen el visionado de pornografía e interacción virtual con otras personas con el objetivo de conseguir gratificación sexual (Cooper & Griffin-Shelley, 2002; Wery & Billieux, 2015). Algunos autores sostienen que estos comportamientos pueden llegar a pasar de un uso esporádico y controlado a un abuso o adicción (Ballester, Gil, Ruiz y Giménez, 2011; Finkelhor, Mitchell y Wolak, 2000; Gómez et al., 2010) definida esta como el “uso excesivo e incontrolado de cibersexo que desemboca en problemas laborales, sociales y personales” (Cooper et al. 2002). Sumado a esto, parece ser que las redes neuronales implicadas en los estímulos sexuales en Internet son similares a las que se activan en las adicciones químicas (Love T, Laier C, Brand M, Hatch L, Hajela R., 2015).

Hay cierto debate entre la comunidad científica sobre la definición y entidad diagnóstica del CSB (Kraus, SW., and col. 2016); se argumenta que no existe suficiente evidencia científica y este aspecto podría derivar en psiquiatrizar comportamientos no patológicos, que a su vez también podrían originar un mal uso de este diagnóstico como atenuante ante situaciones delictivas (Kafka, 2014).

Sin embargo en el último CIE-11 (Clasificación Internacional de Enfermedades, onceava edición, WHO, 2018), aunque no se ha contemplado este trastorno en la categoría de trastornos adictivos, sí que se ha considerado el CSB en la categoría de Trastorno de Control de los Impulsos distinguido por un patrón persistente de una duración mínima de 6 meses: 1) Incapacidad para controlar la conducta sexual, 2) Impulsos sexuales constantes y repetitivos 3) Repetidas conductas sexuales que se convierten en el pensamiento principal de la vida de la persona, llegando esta a descuidar su salud y el cuidado de otros intereses o responsabilidades 4) Realizar numerosos esfuerzos infructuosos para controlar o reducir significativamente su conducta sexual y 5) Continuar realizando la conducta sexual a pesar de las consecuencias adversas y de no obtener placer de ella (Kraus et al. 2018).

Respecto a la inclusión del CSB en el DSM-5, el Grupo de Trabajo en Trastornos Sexuales y de Identidad de Género del DSM-5 (APA, 2013) presentó una propuesta de incorporación del diagnóstico de Hipersexualidad en dicho manual. Pese a que un ensayo de campo mostró evidencia sobre la validez y fiabilidad de los criterios diagnósticos propuestos para el trastorno de hipersexualidad (Reid RC, Carpenter BN, Hook JN, Garos S, Manning JC, Gilliland R, et al, 2012), el comité de garantías éticas de la Asociación Americana de Psiquiatría (APA) rechazó incluirlo debido a la falta de evidencia neuropsicológica y neurofisiológica (Piquet-Pessôa M, Ferreira GM, Melca IA, Fontenelle LF. , 2014), evidencia sobre el diagnóstico, el curso clínico y el tratamiento (Petry, 2016), y la dificultad para establecer diagnósticos a causa de la carencia de diferencias claras entre el rango normal y los niveles patológicos de las conductas y deseos sexuales (Moser C., 2013; Winters J., 2010).

Although several studies have explored online and presential CSB las publicaciones científicas que hacen referencia al estudio de la personalidad y la psicopatología asociadas al trastorno CSB son escasas (Turner et al., 2014), moreover the relation among both behaviors, personality and psychopathology has rarely been investigated directly. The diving line between online and presential sex is vague in the current literature, both behaviors can complement each other, or can serve as a sustitute (Griffiths 2012). There is not research comparing samples where the subjects only showed one of the two compulsive behaviors.

The few studies analysing personalidad, han encontrado correlaciones positivas entre CSB presencial e Impulsividad y Búsqueda de sensaciones, y correlaciones negativas con Dependencia a la Recompensa, Persistencia, Autodirección y Cooperación (Chiclana, C y col. 2015, Farré et al, 2013). También se ha encontrado que las conductas sexuales compulsivas tanto presenciales como en Internet correlacionan con puntuaciones elevadas en Neuroticism y Agreeadableness (Pinto 2013, Egan 2013).

Respecto a la psicopatología, se ha asociado CSB con trastornos psiquiátricos como depresión mayor, ansiedad, TOC (Kaplan y Krueger, 2010), TDHA, abuso de alcohol y drogas (Coleman, Miner, Ross y Center,2005, Echeburúa, 2012) con trastornos parafílicos (Raymond et al., 2003). En una revisión del año 2015 (Kafka, 2015) the authors found similar results, the non-paraphilic hypersexual behaviors has been consistently associated with depression, anxiety, psychoactive substance-abuse and ADHD. Moreover, although in some male samples the bipolar spectrum disorders have been significantly prevalent, the assesment only included consintently bipolar I and II, and a broader spectrum for bipolarity was not included.

Dada la limitación de la literatura respecto a las características de personalidad y psicopatología comórbida y a la falta de estudios comparando ambas opciones sexuales realizados con muestras clínicas que solo presenten uno de los dos comportamientos de forma compulsiva, los objetivos del presente estudio fueron: (1) comparar factores sociodemográficos, psicopatología y rasgos de personalidad de una muestra de pacientes diagnósticados de CSB presencial y online, con controles sanos, (2) comparar pacientes con CSB presencial y CSB online y CSB across a broad range of socio-demographic factors, gambling behaviour, gambling problem severity, psychopathology and personality measures.

MÉTODO

Participants

The study was conducted between January 2017 and August 2019. The initial sample included 96 male patients consulting for compulisve sexual behavior, who were consecutive referrals for assessment and outpatient treatment at at the Behavioral Addiction Unit in the mental health center AIS-PRO JUVENTUD (Care and Research in Behavioral Addiction) (AIS), located at Barcelona, Spain.

From the initial sample, 16 participants were excluded (they were both online and presential compulsive sexual consumers). The final sample was 80 male patients, 44 with presential compulsive sexual behaviors (i.e. prostitution, cruising, dates with other people) and 36 online compusive sexual behavior (i.e. pornography, virtual sex with other people trough chats or online streaming).

The control group comprised 25 healthy male of the same area and similar age. The socio-demographic of both groups are represented in Table 1 in the Results section.

Calculation of the required sample size was based on the standard deviations of questionnaire SCL-90-R. Thus, by setting an alpha risk of 0.05 and a beta risk of 0.20 in a two-sided test with a 10% estimated dropout rate, we required a sample size of 11 individuals in each group in order to detect a minimum expected difference between two groups of 0.2 units. We therefore decided to recruit 15 patients per group.

Los individuos en el grupo experimental fueron excluidos si: (1) tenían un trastorno primario psiquiátrico o neurológico que pudiese afectar a la función cognitiva (evaluada a través de la entrevista clínica semi estructurada, cara a cara), (2) haber tenido una lesión en la cabeza con pérdida de conciencia por más de 2 minutos o un trastorno de aprendizaje, (3) uso de psicoestimulantes o drogas que pudiesen interferir en el tratamiento, (4) ser mayor de 18 años. (5) presentar uso compulsivo de sexo presencial u online al mismo tiempo, that means, referían descontrol de la conducta sexual tanto a nivel presencial como a través de Internet.

Para el grupo control de personas sanas, además de los anteriores, los criterios de exclusión fueron: (1) presentar algún tipo de conducta sexual compulsiva (2) tener un trastorno del Eje I (DSM-5).

*Measures*

Se aplicó una entrevista semi-estructurada y se administró una batería de pruebas psicométricas para evaluar las variables sociodemográficas, socio-familiares y clínicas (psicopatología y personalidad).

La batería de pruebas que se aplicó:

* ***Temperament and Character Inventory-Revised* (TCI-R) (REF)** Cuestionario de 240 ítems con formato Lickert (1 a 5) basado en el cuestionario TCI (Cloninger, 1993). Mide 7 dimensiones de personalidad: temperamentales (Evitación del Daño, Dependencia a la Recompensa, Búsqueda de la Novedad, Persistencia) y caracteriales (Autodirección, Cooperación y Autotrascendencia). Su validación y adaptación española ha demostrado buenas propiedades psicométricas con coeficientes alpha de Cronbach entre 0.77 y 0.84 (REF).
* ***Symptom CheckList-90 items-Revised* (SCL-90-R) (REF).** Instrumento que consta de 90 ítems. Incluye la detección de somatizaciones, obsesiones y compulsiones, sensitividad interpersonal, depresión, ansiedad, hostilidad, ansiedad fóbica, ideación paranoide y psicotismo, así como el índice global de afectación. En España ha sido validada con buenas propiedades psicométricas con alpha de Cronbach entre 0,69 y 0,97 (REF)**.**
* ***State-Trait Anxiety Inventory* (STAI) (REF).** Evalúa la ansiedad como estado y como rasgo. Se obtiene un valor final entre 0 y 60 donde, a mayor puntuación, mayor ansiedad. En España ha sido validada con buenas propiedades psicométricas con alpha de Cronbach de 0.90 y 0,94 en la ansiedad como estado y como rasgo respectivamente (REF).
* **Escala de Compulsividad Sexual (SCS) (REF).** Cuestionario de 10 ítems que evalúa la compulsividad sexual. Esta escala está validada en España, con buenas propiedades psicométricas, la fiabilidad y estabilidad temporal de esta versión fue de 0.83 y 0.72 (REF).

*Procedure*

Durante una primera visita, un psicólogo experimentado, con más de 10 años de práctica en la evaluación y tratamiento de este trastorno, realizó a cada participante del grupo experimental una entrevista semi-estructurada cara a cara, junto con un análisis funcional de la conducta problemática. En la misma entrevista también se recogieron datos sociodemográficos. En una segunda sesión, se evaluó a cada uno participante sobre su conducta problemática relacionada con el sexo, psicopatología y rasgos de personalidad. Los sujetos del grupo control fueron evaluados con la misma batería de cuestionarios (excepto la entrevista semiestructurada).

*Analysis Methods*

Differences between both experimental groups and between the whole experimental group and the control group were studied for each of the measures.

Chi-square test was computed to assess the differences of each one of the categorical variables. When the number of expected observations was less than 5, an equivalent exact Fisher test was performed.

Exploratory data analysis (probability and quantile-quantile plots) was performed in numerical variables. Welch's t-test was computed to assess differences between the two groups. When the normality assumption was not accomplished according to the Shapiro-Wilk test, an equivalent non-parametric test, Mann-Whitney U test, was performed to test differences between groups. Levene’s test was used to assess the equality of variances. A two-sided p-value < .05 was considered statistically significant. A cumulative version of a proportional odds logistic model for both experimental groups and a multinomial logistic regression model for the two experimental groups together versus the control group were carried out to assess variable importance over the personality and/or psychopathology profiles. Model selection to determine the optimal model was performed according to Akaike Information Criterion (AIC), where the lowest values indicate a better fit. Finally, all analyses were carried out using R Version 3.5.3 (añadir la referencia 1 indicada abajo).

1. Team RC. R: A Language and Environment for Statistical Computing. (For RF, Computing S, eds.). Viena, Austria; 2019.

*Ethics*

The study procedures were carried out in accordance with the Declaration of Helsinki. The Ethics Committee of CEIC Fundació Unió Catalana d'Hospitals (CEIC14/71) approved the study, and informed consent (signed document) was obtained from all participants.

[Table 1]

*Sociodemographic: CSB in live vs CSB online.*

The study was conducted for N=44 physical CSB patients with a mean age of 43.5 years old (± 11.9) and with N=36 online CSB patients with a mean age of 42.2 years old (± 10.0).

No statistically significant differences can be observed in most of the variables analyzed of sociodemographic characteristics (Tables 1 and 2 for qualitative and quantitative sociodemographic characteristics, respectively) apart from patient sexual orientation. It seems that physical CSB tends to have a higher percentage of homosexual (29.5%) and bisexual orientation (4.5%) than online CSB, which are mostly represented by heterosexual orientation (91.7%).

Table 1. Qualitative variables in sociodemographic characteristics for comparison between Physical CSB and Online CSB.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Physical CSB  N = 44 | Online CSB  N = 36 | p-value |
| Sex |  |  |  |  |
|  | Male | 44 | 36 |  |
| Sex orientation |  |  |  | 0.007\* |
|  | Heterosexual | 29(65.8%) | 33(91,7%) |  |
|  | Homosexual | 13(29.5%) | 2(5.5%) |  |
|  | Bisexual | 2(4.5%) | 1(2.8%) |  |
| Marital status |  |  |  | 0.197 |
|  | Single | 12(27.3%) | 4(11.1%) |  |
|  | Married | 25(56.8%) | 27(61.4%) |  |
|  | Separated | 6(13.6%) | 5(11.36%) |  |
|  | Widow | 1(0.02%) | 0(0%) |  |
| Level of studies |  |  |  | 0.976 |
|  | unschooled | 1(0.02%) | 0(0%) |  |
|  | elementary school | 15(34.1%) | 11(30.5%) |  |
|  | Secondary school | 11(25%) | 9(25%) |  |
|  | college | 17(38.6%) | 16(44.4%) |  |
| Paternity |  |  |  | 0.289 |
|  | Yes | 24(54.5%) | 14(38.9%) |  |
|  | No | 20(45.4%) | 21(58.3%) |  |
| Job |  |  |  | 1 |
|  | Yes | 30(68.2%) | 25(69.4%) |  |
|  | No | 14(31.8%) | 11(30.5%) |  |
| Substance abuse |  |  |  | 0.559 |
|  | Yes | 9(20.4%) | 5(13.89%) |  |
|  | No | 35(79.6%) | 31(8.6%) |  |
| Type of substance abuse |  |  |  | 0.358 |
|  | Alcohol | 3 | 1 |  |
|  | Cannabis | 7 | 5 |  |
|  | Cocaine | 5 | 0 |  |
|  | Heroine | 0 | 0 |  |
|  | Hallucinogens | 1 | 0 |  |
|  | Drugs design | 2 | 0 |  |
|  | Others | 2 | 0 |  |
| Type of behavior |  |  |  | 0.656 |
|  | Casual/recreational | 31(70.4%) | 28(77.7%) |  |
|  | Vital event | 11(25%) | 6(16.7%) |  |
|  | Socio-family | 2(4.5%) | 2(5.5%) |  |
| Smoking |  |  |  | 1 |
|  | Yes | 13(29.5%) | 10(27.8%) |  |
|  | No | 31(70.5%) | 26(72.2%) |  |

Table 2. Quantitative variables in sociodemographic characteristics for comparison between Physical CSB and Online CSB.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variable | Physical CSB  N = 44 | Online CSB  N = 36 | p-value | Cohen’s d |
| Age | 43.5(±10.0) | 42.2(±9.7) | 0.629 | 0.10 |
| Years of conduct | 15.2(±14.5) | 13.6(±10.5) | 0.418 | 0.17 |
| Problematic months | 92.0(±97.7) | 75.0(±90.2) | 0.470 | 0.17 |
| No. of autolytic attempts | 0.11(±0.4) | 0.11(±0.3) | 0.802 | 0.01 |
| Years evolution | 7.67(±8.1) | 6.28(±7.5) | 0.470 | 0.18 |
| Age start | 36.0(±15.0) | 36.0(±12.2) | 0.991 | 0.002 |

*Personality traits: Physical CSB vs Online CSB.*

In the TRI-C no significant differences in each of the personality dimensions were observed between physical CSB and online CSB (Table 3). The size effect on each of the variables is very small apart from novelty-seeking (d=0.352), which could be considered medium.

Table 3. Measures of personality for comparison between Physical CSB and Online CSB.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| TRI-C | Physical CSB | Online CSB | p-value | Cohen’s d |
| ***Novelty Seeking*** | 108(±13.8) | 102(±18.2) | 0.132 | 0.352 |
| ***harm avoidance*** | 104(±21.3) | 105(±22.1) | 0.864 | -0.039 |
| ***reward dependence*** | 99.7(±15.4) | 98.4(±13.0) | 0.686 | 0.089 |
| ***persistence*** | 108(±19.0) | 106(±21.3) | 0.625 | 0.111 |
| ***self-directedness*** | 124(±26.2) | 126(±20.8) | 0.782 | -0.06 |
| ***cooperativeness*** | 130(±21.7) | 133(±14.8) | 0.382 | -0.19 |
| ***self-transcendence*** | 67.4(±15.0) | 67.0(±15.7) | 0.827 | 0.023 |

*Psychopathology traits: Physical CSB vs Online CSB.*

The scores of each measure were compared for each of the four tests studying psychopathology (Table 4). When the comparisons were made between the experimental groups of patients, significant differences were observed on the SLC-90-R test, Anxiety (p-value = 0.04) and PSDI (p-value = 0.05). Regarding Anxiety, the physical CSB obtained a score of 1.33(±0.9), while the online CSB patients obtained a score of 0.8(±0.66), the size of the effect is medium-large (d= 0.5). Regarding PSDI, we observed that the physical CSB reached 2.12(±0.6) and online CSB was 1.11(±0.58), with a medium effect size (d=0.47). No significant differences were found in other measures.

Table 4. Measures of psychopathology for comparison between Physical CSB and Online CSB.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variables |  | Physical CSB | Online CSB | p-value | Cohen’s d |
| **SLC-90-R** | |  |  |  |  |
| Somatization | | 1.05(±0.86) | 0.93(±0.63) | 0.756 | 0.15 |
| Obsession-Compulsion | | 1.5(±0.8) | 1.45(±0.79) | 0.782 | 0.06 |
| Sensitivity | | 1.37(±1.01) | 1.16(±0.8) | 0.389 | 0.23 |
| Depression | | 1.62(±0.96) | 1.48(±0.8) | 0.601 | 0.15 |
| Anxiety | | 1.33(±0.9) | 0.8(±0.66) | 0.037 | 0.55 |
| Hostility | | 1.21(±1.06) | 0.78(±0.66) | 0.108 | 0.47 |
| Phobia | | 0.64(±0.82) | 0.61(±0.75) | 0.787 | 0.04 |
| Paranoia | | 1.25(±0.89) | 0.97(±0.77) | 0.130 | 0.34 |
| Psychoticism | | 1.38(±0.88) | 1.07(±0.66) | 0.08 | 0.39 |
| Overall severity | | 1.32(±0.79) | 1.11(±0.58) | 0.197 | 0.30 |
| PSDI | | 2.12(±0.6) | 1.88(±0.49) | 0.05 | 0.44 |
| **BIS** | |  |  |  |  |
| Cognitive | | 16.8(±5.32) | 16.7(±5.57) | 0.982 | 0 |
| Motor | | 19(±7.01) | 15.8(±7.77) | 0.06 | 0.43 |
| Unplanned | | 19.9(±7.65) | 21.1(±8.59) | 0.51 | -0.15 |
| **STAI** | |  |  |  |  |
| Anxiety state | | 24.9(±14.7) | 22.9(±9.77) | 0.482 | 0.15 |
| Anxiety trait | | 27.4(±11.1) | 26.3(±11.2) | 0.22 | 0.28 |
| **ESC** | |  |  |  |  |
| Inference | | 14.2(±3.93) | 12.9(±3.31) | 0.71 | -0.18 |
| Impulse control failure | | 15.1(±4.22) | 12.8(±3.95) | 1 | 0.07 |
| TOTALECS | | 28.8(±7.33) | 25.7(±6.57) | 0.74 | -0.07 |

*Sociodemographic: CSB vs Control.*

The mean for controls (N = 25) and CSB patients (N = 80) are 43.8(±17.1) years respectively. Tables 5 and 6 show the comparison of those two groups for sociodemographic traits. Significant differences were observed in the marital status (p-value = 0.003), in which patients have a greater tendency to marry and divorce than controls.

We note that the variable for substance abuse the sampling was reduced to 12. Furthermore, the consumption of substances has not been analyzed separately, as their consumption among controls is zero.

Table 5. Quantitative variables in sociodemographic for comparison between CSB and Control.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variable | Control | CDB | p-value | Cohen’s d |
| n | 25 | 80 |  |  |
| Edad | 43.8(±17.1) | 42.9(±11.2) | 0.85 | -0.52 |

Table 6. Qualitative variables in sociodemographic for comparison between CSB and Control.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variable |  | Control  N = 25 | CSB  N = 80 | p-valor |
| Sex |  |  |  |  |
|  | male | 25 | 80 |  |
| Sex orientation |  |  |  | 0.53 |
|  | Heterosexual | 22(88%) | 62(77.5%) |  |
|  | Homosexual | 3(12%) | 15(18.7%) |  |
|  | Bisexual | 0 | 3(3.75%) |  |
| marital status |  |  |  | 0.03 |
|  | Single | 11(44%) | 16(20%) |  |
|  | Married | 14(56%) | 52(65%) |  |
|  | Separated | 0(0%) | 11(13.75%) |  |
|  | Widow | 0(0%) | 1(1.25%) |  |
| Paternity |  |  |  | 0.09 |
|  | Yes | 13(52%) | 38(47.5%) |  |
|  | No | 12(48%) | 41(51.25%) |  |
| Job |  |  |  | 0.35 |
|  | Yes | 14(56%) | 25(31.25%) |  |
|  | No | 11(44%) | 55(68.75%) |  |
| Substance abuse |  |  |  | 0.201 |
|  | Si | 0(0%) | 14(17.5%) |  |
|  | No | 12(100%) | 66(8.25%) |  |
| Autolytic attempts |  |  |  | 0.19 |
|  | Sí | 0 | 8(10%) |  |
|  | No | 25(100%) | 72(90%) |  |

*Personality traits: CSB vs Control.*

Significant differences in personality tests (Table 7) between controls and CSB patients can be observed in harm avoidance (p-value = 0.002), where CSB patients reached a higher score (105(±21.5)) in comparison with control (91.9(±15.9)), with a large effect size (0.62). It was also observed in self-transcendence (p-value <0.001). Additionally, there are also significant differences in self-directedness and cooperativeness (p-value = 0.007 and <0.001, respectively), where CSB patients reached lower scores than controls.

Table 7. Measures of personality for comparison between CSB and Control.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| TCI-R | Control | CSB | p-value | Cohen’s d |
| Novelty -seeking | 99.2(±13.9) | 105(±16.1) | 0.07 | 0.39 |
| harm avoidance | 91.9(±15.9) | 105(±21.5) | 0.002 | 0.62 |
| reward dependence | 104(±13.3) | 99.1(±14.3) | 0.12 | -0.35 |
| persistence | 106(±21.5) | 107(±20.0) | 0.85 | 0.04 |
| self-directedness | 117(±17.8) | 81(±23.2) | <0.001 | -1.53 |
| cooperativeness | 107(±12.9) | 68(±18.9) | 0.007 | -0.56 |
| self-transcendence | 52.3(±11.5) | 67.2(±15.2) | <0.001 | 1.03 |

*Psychopathology traits: CSB vs Control.*

Significant differences were observed in each of the psychopathology tests in the comparison between CSB patients and controls (Table 8). Regarding the SLC-90-R test, CSB patients obtained higher scores than in controls. Additionally, the effect size was large (d > 0.8). Regarding the Barratt Impulsiveness Scale (BIS), there are important differences in their component variables: cognitive impulsivity (p-value<0.001), motor impulsivity (p-value=0.003), and unplanned impulsivity (p-value=0.001), which have a medium to high effect size. Even greater differences can be observed in the STAI test, where the score on anxiety as both trait and state is higher among CSBs than among control (p-value <0.001) with large effect size (d > 1). In the SCS test, it is important to remark that there is no data for all patients, where the sample has been reduced to 74. Moreover, statistical differences can be observed for all variables (p-value <0.001), with a very high effect size (d > 2).

Table 8. Measures of psychopathology for comparison between CSB and Control.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variables | Control | CSB | p-value | Cohen’s d |
| **SLC-90-R** |  |  |  |  |
| Somatization | 0.323(±0.31) | 0.995(±0.76) | <0.001 | 0.983 |
| Obsession-Compulsion | 0.448(±0.347) | 1.48(±0.791) | <0.001 | 1.45 |
| Sensitivity | 0.231(±0.252) | 1.27(±0.923) | <0.001 | 1.28 |
| Depression | 0.32(±0.296) | 1.55(±0.89) | <0.001 | 1.55 |
| Anxiety | 0.288(±0.288) | 1.13(±0.83) | <0.001 | 1.14 |
| Hostility | 0.24(±0.38) | 1.02(±0.92) | <0.001 | 0.94 |
| Phobia | 0.07(±0.14) | 0.63(±0.78) | <0.001 | 0.8 |
| Paranoia | 0.153(±0.24) | 1.12(±0.85) | <0.001 | 1.29 |
| Psychoticism | 0.144(±0.226) | 1.24(±1.2) | <0.001 | 1.55 |
| Overall severity | 0.279(±0.2) | 1.22(±0.71) | <0.001 | 1.5 |
| PSDI | 1.26(±0.45) | 2.02(±0.56) | <0.001 | 1.4 |
| **BIS** |  |  |  |  |
| Cognitive | 12.2(±4.8) | 16.7(±5.4) | <0.001 | 0.86 |
| Motor | 12.4(±7.21) | 17.6(±7.48) | 0.003 | 0.69 |
| Unplanned | 15(±6.8) | 20.4(±8.05) | 0.001 | 0.7 |
| **STAI** |  |  |  |  |
| Anxiety state | 10.2(±8.19) | 24.0(±23.7) | <0.001 | 1.16 |
| Anxiety trait | 13(±6.16) | 28.0(±11.2) | <0.001 | 1.46 |
| **SCS** |  |  |  |  |
| Inference | 5.4(±0.76) | 13.6(±3.69) | <0.001 | 2.55 |
| Impulse control failure | 5.6(±1.15) | 14.0(±4.24) | <0.001 | 2.27 |
| TOTALECS | 11.0(±1.87) | 13(±7.11) | <0.001 | 2.6 |

*Proportional odds logistic regression for SLC-90-R: Physical CSB and Online CSB.*

The best model according to AIC includes 6 covariables (Table 9): somatization, obsession-compulsion, depression, anxiety, phobia, and psychoticism, which AIC value is 98.73 vs. 106.12 for the complete model. Anxiety seems to be the main measure to distinguish between Physical CSB and Online CSB. The covariate effect is negative(-13.55), which indicates that large anxiety scores are more likely in Physical than in online CSB-

Table 9. Model estimates for psychopathology between Physical CSB and Online CSB.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variable | Estimate | Std.Error | Z value | p-value |
| Somatization | 2.96 | 1.914 | 1.548 | 0.12 |
| obsession-compulsion | 4.07 | 2.22 | 1.829 | 0.07 |
| depression | 4.41 | 2.29 | 1.928 | 0.054 |
| Anxiety | -13.55 | 3.71 | -3.65 | <0.001 |
| Phobia | 4.05 | 2.06 | 1.96 | 0.0503 |
| Psychoticism | -1.06 | 0.66 | -1.6 | 0.108 |

*Proportional odds logistic regression for SLC-90-R: CSB vs Controls.*

The best model according to AIC has 2 variables (Table 10): self-directedness and self-transcendence, which are statistical significant. Regarding self-directedness, the model estimates a negative effect, which determines that large scores can lead to a diagnosis of CSB. Regarding self-transcendence, the significant effect is positive, so that a diagnosis of CSB would not show a low score in this measure.

Table 10. Model estimates for personality between CDB and Control.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variable | Estimate | Std.Error | Z value | p-value |
| self-directedness | -6.883 | 1.679 | -4.1 | <0.001 |
| self-transcendence | 5.05 | 1.923 | 2.627 | 0.009 |

Conducting the same analysis for SLC-90-R of psychopathology, the best model has three variables (Table 11): depression, anxiety, and psychoticism, which the significant variables depression (p-value = 0.0422) and psychopathology (p-value = 0.0131). The effect of both variables are positive, so higher scores on these variables of SLC-90-R would lead to a diagnosis of CSB.

Table 11. Model estimates for psychopathology between CDB and Control.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variable | Estimate | Std.Error | Z value | p-value |
| Depression | 9.06 | 4.46 | 2.03 | 0.042 |
| Anxiety | -5.72 | 5.6 | -1.02 | 0.311 |
| Psychopathology | 3.77 | 1.52 | 2.48 | 0.013 |

*Multinomial logistic model in personality and psychopathology.*

Regarding the TCI-R personality test (Table 12), the best model includes two variables: self-directedness and self-transcendence. However, they are not significant for determining differences between pathologies, only between online CSB patients and controls.

Table 12. Multinomial logistic model in personality. Coefficients (p-value)

|  |  |  |
| --- | --- | --- |
|  | self-directedness | self-transcendence |
| CSB online | 0.003(0.78) | -0.001(0.94) |
| Control | 0.066(<0.001) | -0.069(0.01) |

Equivalently for the SLC-90-R test for psychopathology (Table 13). The best model included 4 variables: depression, anxiety, phobia, and psychoticism. However, we obsreved that only the variables of depression, anxiety, and phobia for the online CSB group are significant, while psychoticism is significant for the control group.

Table 13. Multinomial logistic model in psychopathology. Coefficients (p-value)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Depression | Anxiety | Phobia | Psychoticism |
| CSB online | 1.65(0.01) | -2.81(0.001) | 1.08(0.046) | -0.43(0.436) |
| Control | -1.94(0.159) | 0.19(0.905) | 1.48(0.303) | -4.27(0.009) |