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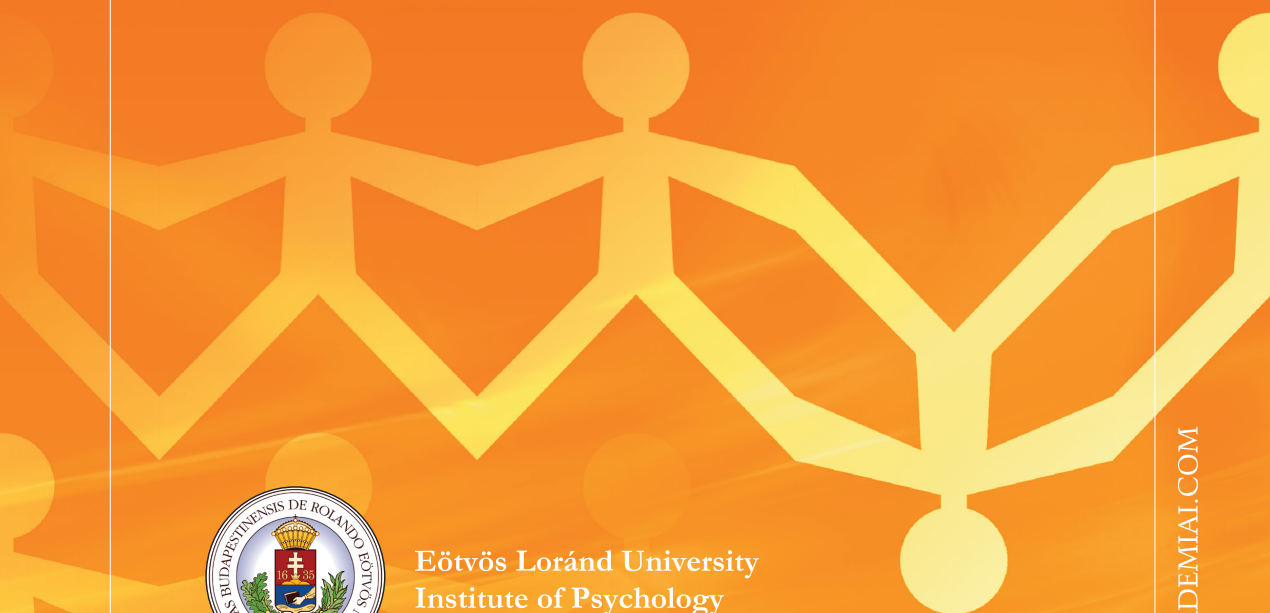
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PLENARY LECTURES

PL-1

The Psychotherapy of Internet Addiction with special consideration of Gaming Disorder and Online Sex Addiction

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Introduction: Based on international evidence-based research results, the disorder "Gaming Disorder" was logically suggested for the ICD-11 in the chapter "Disorders due to addictive behaviors". Clinical practice shows that patients with Internet-related disorders can be addicted on (online) computer gaming - but also on specific Internet usage behavior such as chatting, social networks, online purchasing behavior or the consumption of pornographic material (Online Sex Addiction). *Method:* In a multi-centre, randomized controlled clinical trial (Short-term Treatment of Internet and Computer Game Addiction, STICA) the effectiveness of a cognitive behavioral therapy intervention was examined in 143 patients with computer game and Internet addiction. In addition, further analyzes examined how effective this therapy is in individual sub-forms of Internet-related disorders, especially for Online Sex Addiction. *Results:* The results show that the presented behavioral therapy is comprehensively effective (10-fold increased chance of being symptom-free at the end of the therapy). In a sub-group analysis, it was also shown, which effectiveness values are to be expected for those affected with Online Sex Addiction. *Discussion:* One can assume that specific group concepts especially for online sex addiction should be developed. The lecture draws learnings from STICA. We designed a specific psychotherapeutic treatment approach addressing Online Sex Addiction. This newly designed approach is abstinence-focused and combines cognitive behavioral therapy (CBT) and mentalization-based therapy (MBT). Recently, we are testing this approach.

Keywords: Internet Addiction, Online Sex Addiction, psychotherapy, CBT, effectiveness

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PL-2

Internet related disorders: Past and future challenges for Health systems

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Background: Maladaptive use of Internet and electronic devices started to be concerning for health professionals since mid-90s. An unknown disorder with no blueprint for treatment approaches and no specific and adapted care offer. Numerous lacks which were highly contrasting with growing demands from health service users.

The magnitude these concerns were gaining over time in different parts of the world, along with the accumulating scientific evidence of clinical and neurobiological consistency with previous addictive disorders, led to a global public health bundle of achievements and ongoing projects.

Inclusion of Gaming disorder (GD) by World Health organization (WHO) in ICD-11 draft, in 2018 and its endorsement by World Health Assembly (WHA), in 2019 as a new health condition, is one of the milestones reached to stimulate health systems preparedness for these disorders.

Method: The present talk will be structured in 3 parts around the turning point of ICD-11 decision to include GD. Some data will be extracted from National case studies, research protocols, and recent scientific papers.

The first part, will consist in presenting an overview from different jurisdictions, on national health systems and policy response towards challenges resulting from Internet related disorders, before ICD-11 decision to include GD in 2019.

The second part, will consist in presenting some ongoing global health projects that aim at supporting national systems' efforts in response to challenges for health systems of Internet-related disorders.

The third part, will consist in drawing challenging perspectives for health systems in integrating Internet related disorders after ICD-11 implementation in 2022, including those which are unexpected such as pandemic.

Results: Health systems globally have been challenged 2 decades ago by emerging care needs related to Internet maladaptive patterns of use. Their response have been heterogeneous from one jurisdiction to another. It has been shaped by several national determinants, including digital infrastructure (penetrance of Internet), medical culture (concepts underlying health response), organizational models (health system structure and governance), and economics (health costs, and industry competing interests).

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World Health Organization engaged in major projects to help its member states to prepare their health systems to tackle Internet related disorders. It consisted in offering landmarks for public health entities to design suitable monitoring, prevention and treatment response, opportunities for individuals to have their health costs covered, and gold standard of identification for practitioners.

Future challenges for health systems will be to smoothly integrate these disorders into national prevention planning and care delivery, and to ensure access for help to individuals including during sanitarian crisis.

Conclusion: Internet has been a great change maker for health in many positive and less positive ways such as maladaptive use and its associated health conditions for a minority of users. A long way has been undergone by health systems worldwide to integrate this new care needs. A major future challenge will be to increase a balanced awareness of public audience on opportunities and risks resulting from the use of Internet and digital worlds.

Keywords: Internet disorders, Gaming disorder, Health systems, Global public health

PL-3

A Coping Motives Mediational Model Explaining Links of Romantic Conflict to Addictive Behaviors

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Motivational models of addiction posit that individuals engage in addictive behaviors for a variety of different reasons or "motives" some of which are riskier than others in terms of links with heavy and problematic involvement. Coping motives (i.e., addictive behavior to reduce or avoid unpleasant emotional states) have consistently been linked with both greater intensity and more problematic involvement in a variety of addictive behaviors. Romantic conflict is one interpersonal contextual factor that theoretically can trigger coping motives for various addictive behaviors. In this talk, Dr. Stewart will outline a model that considers motivational theory from an interpersonal lens to explain links between romantic conflict and adverse addictive behavior outcomes. Next, she will present a set of studies from her lab that test links between conflict and addictive behaviors/problems as mediated though risky coping motives. These studies span addictive behaviors (e.g., alcohol, gambling) and make use of a variety of methodologies (e.g., dyadic studies of couples, longitudinal assessment), settings (e.g., the COVID-19 pandemic context), and analyses (e.g., chained mediation). Implications of the results for motivational theory and for intervention will be discussed.

Keywords: romantic conflict, motivational theory, addictive behaviors

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PL-4

Gambling: Policy and Treatment in the Post Gambling Review Era

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The last two years have been ones of great change for England's gambling landscape. This talk will cover in depth several issues that are key to England's future approach to gambling related harm.

– The Gambling Review's much delayed White Paper.
– The newly created national system of NHS clinics.
– The appointment of a National Advisor on Gambling Related Harms.
– The recent Coroner's Report on Gambling Related suicides.
– The changes to the advertising of gambling products in football.
– The new funding system for gambling related harms.
– The submitted paper to treasury on the statutory levy.
– The industry funded new research hub.

These and many more topics will be presented during what promises to be a very lively Q and A.

Keywords*:* gambling, policy, treatment

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SYMPOSIUMS AND PARALELL SESSIONS

S-1A1

Current opinions in research on online addictive behaviors

MATTHIAS BRAND (chair)

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Symposium summary: The symposium will summarize current research trends in the context of four prominent examples of primarily online behavioral addictions. First, an overview of current trends in assessment will be provided (Rumpf). All subsequent presentations will address psychological mechanisms of specific Internet use disorders, addressing constructs such as cue reactivity and craving, implicit cognitions, positive and negative reinforcement. The first presentation (Wölfling) will summarize the current evidence for gaming disorder. Subsequently, recent findings on the problematic use of pornography will be presented (Stark). The third presentation (Müller) is dedicated to buying-shopping disorder and the fourth presentation (Wegmann) will address the problematic use of social networks. Finally, each presentation proposes a synthesis and provides an outlook for future research including the approaches that will be realized in the DFG-funded Research Unit FOR2974 "Affective and cognitive mechanisms of specific Internet use disorders (ACSID)".

Keywords*:* cue reactivity, craving, reinforcement, assessment, Internet-use disorders

S-1A2

New assessment approaches

HANS-JÜRGEN RUMPF

University of Lübeck

Background: The diagnosis of behavioral addictions is based on various underlying disease concepts, with increasing use of the features proposed for gaming disorder in the Diagnostic and Statistical Manual of Mental Disorders, 5th revision (DSM-5), and the International Classification of Diseases, 11th version (ICD-11). *Methods:* A narrative review highlights the merits and criticisms of the approaches in DSM-5 and contrasts them with the approach in ICD-11. A review of the literature validating the ICD-11 criteria for behavioral addictions is provided. In addition, an overview new tools based on ICD-11 is provided. *Results:* The criteria proposed in the DSM-5 for the diagnosis of computer gaming disorder partly show a high rate of agreement, leading to possible overpathologization. One reason for this is seen in the fact that features such as dysfunctional coping are to be understood as a process rather than a criterion, and that peripheral features are included in addition to core features. In contrast, the clinical guidelines in ICD-11 are to be understood as core features of addictive behavior

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and also require the presence of functional impairment. Initial studies strengthen the concept embodied in ICD-11 ad present novel scales. *Conclusions:* The approach to classifying behavioral addictions anchored in ICD-11 appears promising. Initial screening procedures have already been developed for this purpose. Further studies - also using clinical as well as population-based samples - are of high importance. In addition, instruments are needed that allow economic assessment of different specific behavioral addictions in one approach.

S-1A3

Psychophysiological correlates of positive and negative reinforcement in adolescent patients with Internet Gaming Disorder

KLAUS WÖLFLING

University Medical Center, Mainz

Background: Positive reinforcement, as well as cognitive control processes, are involved in the development and maintenance of Internet Gaming Disorder (IGD). Positive reinforcement (e.g. gaming achievements) increase the probability of reproducing the specific gaming behavior. This is also accompanied by changes on a neuropsychological or physical level (cue reactivity). *Methods:* On a basis of a systematic literature review regarding the underlying processes of IGD it was revealed, that the interplay between reinforcement processes and cue-reactivity serves as a core mechanism in the development of IGD. Several studies indicated the immanent role of cue reactivity and craving, implicit cognitions, positive and negative reinforcement. Thus, such processes are exemplarily analyzed in a study using the cue-reactivity paradigm to experimentally contrast addicted gamers and non-addicted (regular) gamers with skin conductance response (SCR). As part of a cue reactivity paradigm, the SCR of the subjects was recorded during role playing game sessions. In addition, subjective craving was assessed both before and after the exposition. *Results:* A preliminary analysis showed that addictive patients exhibited a greater psychophysiological change in the context of specific gaming situations (esp. kill, level-up, achievements) than controls. This is in line with abovementioned findings on cue reactivity and craving in IGD. Afterwards the gaming session, addicted gamers showed higher subjective craving compared to controls. *Conclusions:* The identified patterns of psychophysiological processing in addicted gamers underline the involvement of positive reinforcement processes in a Behavioral Addiction, like IGD are linked to the recent literature review.

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S-1A4

Pornography Use Disorder – Impulse control disorder or behavioral addiction?

RUDOLF STARK, SANJA KLEIN, CHARLOTTE MARKERT

University of Giessen

Background: Pornography use disorder may be present if somebody experienced diminished control over the use of pornography and continued using pornography despite significant negative consequences. In the ICD-11, it is possible to diagnose pornography use disorder as compulsive sexual behavior disorder under impulse control disorders. However, among experts a categorization as behavioral addiction is also discussed. Which of these conceptualizations is more appropriate can only be decided based on scientific evidence. *Methods:* Experimental findings on pornography use disorder will be summarized in a literature review and own research will be presented. We will demonstrate brain correlates of cue reactivity in individuals suffering from pornography use disorder. Further, findings on other important constructs such as attention and conditioning processes will be discussed. Finally, findings on vulnerability factors for the development of pornography use disorder will be presented. *Results:* The compiled findings suggest that pornography use disorder resembles other behavioral addictions. In particular, imaging studies using functional magnetic resonance imaging demonstrate that brain regions within the reward system are involved in processing sexual stimuli. The reward system plays a major role in the development and maintenance of addictions. It should be emphasized, however, that in contrast to other behavioral addictions, sexual cues may be more rewarding per se due to their presumably special biological significance. *Conclusions:* The empirical data suggest that pornography use disorder may be considered most appropriately a behavioral addiction rather than an impulse control disorder.

S-1A5

Problematic shopping on the internet – Recent trends in buying-shopping disorder

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Background: With the increase in e-commerce, problematic shopping on the internet became a recent research topic. The question arises as to whether it would be useful to differentiate between a "predominantly online" and a "predominantly offline" compulsive-buying shopping disorder (CBSD) subtype by analogy with gaming disorder and gambling disorder in the ICD-11. This presentation aims at reflecting the psychological mechanisms of problematic online shopping and the discussions on its overlaps with both offline CBSD and potential

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specific internet-use disorders. *Methods:* Focused narrative literature review. *Results:* Online CBSD shares many commonalities with both offline CBSD and potential specific internet-use disorders (e.g., gaming disorder, pornography-use disorder, or social-networks-use disorder) with regard to diminished control over the activity, priority given to the activity, impairments in different areas of functioning due to the activity and continuation/escalation of the activity despite negative consequences. Experimental studies further indicate that cue-induced craving responses, reward sensitivity, and disadvantageous decision-making play an important role in problematic online shopping. In addition, specific using motives and characteristics of the internet and e-marketing may contribute to problematic online shopping, e.g. material values endorsement, identity-seeking motives, and the triad of accessibility, affordability and anonymity. *Conclusions:* The question of whether online CBSD represents a standalone specific internet-use disorder or the online subtype of CBSD remains unanswered due to limited research on the topic. Future studies should examine which approach has clinical utility and indicates specific treatment options and better outcomes.

S-1A6

An overview of problematic use of social networks: The role of psychosocial characteristics and further risk factors

ELISA WEGMANN, MATTHIAS BRAND

University of Duisburg-Essen, Germany

Background: Social-networks-use disorder describes the uncontrolled, addictive use of applications such as WhatsApp and Instagram. Research emphasizes the relevance of psychosocial characteristics such as feelings of belonging, loneliness, and Fear of Missing Out. Reinforcement mechanisms, affective and cognitive processes, and the experience of gratification and compensation are also thought to contribute significantly to the development and maintenance of the problematic behavior. *Methods:* Different theoretical approaches describing risk factors as well as reinforcing processes of the development and maintenance of problematic use will be discussed, and the current empirical evidence will be summarized. *Results:* The overview illustrates that in addition to psychopathological factors (e.g., depression, anxiety), individual psychosocial characteristics (e.g., loneliness, shyness), and social cognitions (e.g., Fear of Missing out, need to belong) seem to be relevant risk factors for problematic use of social networks. Empirical studies also show the importance of affective, cognitive, and other reinforcing processes associated with the development and maintenance of the problematic behavior such as cue reactivity and craving, higher attentional bias, and implicit associations as well as the expectancies to experience positive feelings and to avoid negative emotions. Furthermore, initial suggestions on the significance of gratification and compensation experiences are postulated. *Conclusions:* We postulate two hypotheses that integrate the (partly mixed) results: the fear-driven/compensation-seeking hypothesis and the reward-driven hypothesis that both could lead to symptoms of social networks-use disorder, depending on interindividual differences in predisposing and reinforcing factors. The integration of problematic social-networks use as "disorder due to addictive behaviors" should be discussed.

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S-1B1

The correlation between ADHD and Gaming Disorder symptom severity is universal: Preliminary results of a meta-analysis

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Background: The co-existence of Gaming Disorder (GD) with other mental health problems is widely observed. While there is a growing research interest on the comorbidity of GD with attention-deficit hyperactivity disorder (ADHD), no quantitative synthesis was performed yet. *Methods:* We ran a systematic literature search on four databases: Scopus, Science Direct, Web of Science, PubMed. As a result of our two-wave search ran in October 2019 and August 2021, we identified 461 articles. The inclusion criteria were the following: English language, journal articles, including quantitative analysis examining the association between ADHD and GD symptoms. After the exclusion of non-relevant research, 80 articles remained. Data of 30 samples from more than 12 countries involving correlation analysis were included in our preliminary analyses. *Results:* The mean correlation coefficient of the association between GD and combined ADHD symptoms severity was .317 (CI=.277-.356, p<.001). The mean correlation coefficient for the two ADHD symptom domains were .330 (CI=.282-.376, p<.001) (inattention) and .244 (CI=.199-.289, p<.001) (hyperactivity/impulsivity). No sign of publication bias was found. Studies measuring internet addiction resulted in higher estimates (p=.0280) with combined ADHD symptom severity scores (.421, CI=.323-.509, p<.001) than studies using GD measurement (.301, CI=.259-.343, p<.001). Date of data collection moderated the association with inattention symptoms (Coefficient=0.0106 CI=0.0003-0.0209, p=.0435). *Conclusion:* GD and ADHD symptoms are associated across cultures. The association with inattention symptoms is somewhat stronger than with hyperactive/impulsive symptoms. The relation of ADHD symptom severity is stronger with general internet addiction than with GD. Newer studies found stronger association with inattention symptoms.

Keywords: ADHD, Gaming disorder, comorbidity, meta-analysis, correlation

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S-1B2

Frequency and factors associated with Attention Deficit Hyperactivity Disorder in patients with Sex Addiction

BENOÎT SCHRECK[1,2], CAMILLE FORCIER[1], MARIANNE BALEM[1,2], JULIETTE LEBOUCHER[1], MARIE GRALL-BRONNEC[1,2], GAËLLE CHALLET-BOUJU[1,2]*

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Introduction: Sex addiction (SA) is excessive, uncontrolled sexual behavior that produces pleasure and/or relieves internal discomfort. Attention deficit disorder with or without hyperactivity (ADHD) is a neurodevelopmental disorder that begins in childhood and can lead to behavioral addictions. The objectives of our study were to determine the frequency of history of ADHD in a population of patients with AS, to explore factors associated with the presence of ADHD in this population and to compare patients with persistent ADHD in adulthood with those in whom ADHD was present only during childhood. *Methods:* Sociodemographic, clinical, and SA data were collected in the EVALADD cohort through interviews and questionnaires. The sample used for the present study included 185 patients with SA. The presence of SA was assessed by the Sexual Addiction Screening Test and the presence of ADHD by the Wender-Utah Rating Scale Child and the Adult ADHD Self-report Scale. *Results:* More than 35% of patients had a history of ADHD (66/185). Having an anxiety disorder, another addictive disorder, a high negative urgency score, a high novelty-seeking score, a high harm avoidance score, a low age of onset of SA, and a low education level were factors associated with a history of ADHD. Patients with persistent ADHD in adulthood had lower levels of self-directedness and perseverance. *Conclusion:* The association between ADHD and SA is frequent. Factors associated with ADHD could alert the clinician on the presence of a dual disorder and prompt a search for ADHD when the patient initiates treatment for SA.

Keywords: ADHD, sex addiction, hypersexuality

S-1B3

Prevalence of behavioral addictions in adult ADHD patients: A case-control study

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Background: attention deficit hyperactivity disorder (ADHD) and substance-related and addictive disorders share several common neurobiological dimensions (e.g. from impulsivity to reward dysfunction). Indeed, a large amount of literature in the past decades showed a high

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comorbidity rate between substance-related disorders and ADHD. Also, in the last years, many studies started showing also a high rate of comorbidity between behavioural addictions (BAs) (such as internet gaming disorder, internet addiction and gambling disorder) and ADHD. In this study we investigated the rate of BAs symptoms in adult ADHD patients compared to healthy controls. *Methods:* 50 adult ADHD outpatients consecutively recruited at the Brain Center Firenze and 50 healthy controls were assessed on both ADHD and behavioral addictions symptoms. ADHD symptoms were assessed through a clinical scale (the Barkley Adult ADHD Rating Scale-IV) and behavioral addictions symptoms were assessed through the Internet Addiction Test, the Bergen Shopping Addiction Scale, the Sexual Addiction Screening Test – Revised, The South Oaks Gambling Screening and the Yale Food Addiction Scale – 2.0. Global function was assessed through the Barkley Functional Impairment Scale. Results: preliminary results showed higher prevalence of intenet addiction, sex addiction and gambling disorders symptoms in ADHD patients respect to healthy controls. *Conclusion:* behavioral addictions symptoms should be investigated in adult patients complaining for ADHD symptoms. Assessing and treating comorbid addictive disorders could play a central role in the patients' global outcome.

Keywords: ADHD, internet addiction, sex addiction, gambling disorder, food addiction

S-1B4

Attention deficit hyperactivity disorder and behavioral addictions in patients with gender dysphoria

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Background: In the current literature there is an increasing amount of data on the presence of comorbidity between gender dysphoria and neurodeve- lopmental disorders such as autism spectrum disorders. Much less data is available on the presence of Attention Deficit Hyperactivity Disorder (ADHD) and even less on Behavioral Addictions (BAs) in gender dysphoria. The aim of the present study is to assess the presence of ADHD symptoms in subjects with gender dysphoria and healthy controls. *Methods:*10 consecutive patients with primary diagnosis of gender dysphoria disorder referred to Brain Center Firenze and 10 healthy controls (without history of psychiatric disorders) were included in the study. The assessment included the administration of the BAARS-IV (Barkley Adult ADHD Rating Scale), for the evaluation of ADHD symptoms, and a battery of tests to investigate the presence of BAs. *Results:* preliminary results showed higher rates of ADHD and BAs in GD patients vs controls. Conclusions: since the presence of ADHD may impact gender dysphoria assessment, understanding of medical information, and involvement in the care pathway, we believe it is important to investigate it and its comorbidity in this specific population.

Keywords: gender dysphoria, ADHD, behavioral addictions

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S-1B5

Behavioral addictions and attention deficit hyperactivity disorder in Parkinson disease: a case-control study

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Dysexecutive syndrome consists of a group of symptoms that fall into cognitive, behavioural and emotional categories. It is observed in almost 80 % of individual with Parkinson's disease (PD) by prominent impairments in deduction, flexibility, flexibility, inhibition and initiation in the cognitive domain , and by global hypoactivity with apathy and hyperactivity in the behavioral domain. These symptoms are in part present in children with Attention Deficit Hyperactivity Disorder (ADHD) so that, Grassi G et al, in a previous study, tested the hypothesis of a potential link between these two syndromes by an exporative work reported an unexpected high rate (38 %) of adult ADHD in PD patients and especially in those with PD impulse control disorder (ICDs) Aim of the present study is to evaluate the distribution of ADHD symptoms according to the clinical variables of PD. We test 200 individuals with PD and 200 age-matched controls by a dedicated neuropsycological and psychometric battery including QUIPRS, BIS-11, Bergen Shopping Addicition Scale, Internet Addiction test, Sexual Addiction Screening Test-revised, The south oaks gambling screening, Yale Food Addiction Scale 2.0, Save Inventory Revised, Stroop Test, Clock Test, Schallice cognitive test, Wechsler test, Belville Working memory Test, Caltagirone verbal fluency test, Rey Test, Trial Making test A and B, Modified Five Point Test, FAB, The Pittsburgh Sleep Quality *Index:* BAARS-IV, SDQ and Y-BOCS, PD Non -motor symptoms scale, PD KingPain scale We discuss the results focusing on these main clinical variables such as stage and duration of disease, levodopa equivalent daily dosage and non-motor symptoms.

Keywords: Parkinson's disease, ADHD, executive functions

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S-1C1

Clarifying the role of reinforcement, motivations, reward sensitivity and impulsivity in Gambling Disorder

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Symposium summary: Clarifying the role of reinforcement, motivations, reward sensitivity and impulsivity in Gambling Disorder.

Keywords: gambling disorder, personality, impulsivity, motivation, self-regulation

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S-1C2

Testing the Pathways Model in a sample of patients with gambling disorder

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Background: Since 2002, the Pathways Model has been a useful theoretical explanatory framework for considering the heterogeneity of gambling disorder (GD). Both from clinical and research perspectives, this model has been supported in adolescent and adult populations. However, it has been less well tested in clinical samples of people with GD. *Methods:* We aimed to test the Pathways Model, specifically pathways 2 (emotionally vulnerable) and 3 (antisocial impulsivist), in 241 consecutive treatment-seeking adults with GD. Structural equation modeling was used to explore both pathways. *Results:* Path analyses showed, in general, that the Pathways Model was supported in clinical populations, albeit with some caveats. The results demonstrate the presence of different profiles of gamblers, with some having emotions more prominently involved and others having impulsivity-related factors more prominently involved. Additional associations, not raised by the model, were also found. For example, a greater role for anxiety as compared with depression was observed in pathway 2, and important mediating roles for cognitive distortions and habituation were observed across pathways. *Conclusions:* These findings suggest complexities regarding relationships between factors involved in GD clinical samples. These findings have implications for characterizing subtypes of GD and development of optimal prevention and treatment approaches.

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S-1C3

Motivational background of gambling – A preliminary study

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Background: Recently, the motivational background of different addictions has been extensively studied. As part of it, the Gambling Motives Questionnaire (GMQ) has been developed by Stewart and Zack (2008), however later studies raised the necessity to extend the model. We aim to identify additional factors including escapism, omnipotence, pleasure, and financial motives in addition to the already included coping, enhancement, and social aspects. *Methods:* A set of 40 motivational items (25 items to assess the additional motives and the original 15 GMQ items) were analysed on two datasets. Sample #1 consisted of those who gambled in the last year in a representative sample of the Hungarian population aged 18-64 (N=437; mean age: 42.9 [SD=13.55]; Females: 49.2% [N=215]) while Sample #2 was a player panel from a gambling provider (N=1829; mean age: 42.45 [SD=13.27]; Females: 30% [n=548]). *Results:* Exploratory Factor Analysis on Sample #2 identified four factors (including a total of 27 items): coping/escapism, social motives, enhancement/pleasure, and financial motives. The structure was confirmed on Sample #1 showing adequate model fit (CFI=0.987; TLI=0.986; RMSEA[CI]=0.047 [0.041-0.052]), however with high correlation among the factors. *Conclusions:* Although the new motives are overlapping with the original ones, the content of the factors enables the inclusion of certain aspects, like escapism, that proved to be the most important ones in relation to problem behaviours. This suggests that the examination of the role of these motivations in gambling could be crucial in differentiating between problem and recreational gambling and could be helpful to reduce gambling related harm.

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S-1D1

Making sense of social networking sites in Body Dysmorphic Disorder: The clinician's perspective

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Much research looking into social networking site (SNS) use and body image has predominantly focused on body dissatisfaction, or eating disorders such as anorexia and bulimia. However, there is a paucity of research that has explored the role of SNS in Body Dysmorphic Disorder (BDD). This study therefore, aimed to explore how health professionals in the field of BDD make sense of SNS use in BDD. A total of five clinicians were interviewed about their experience working with individuals with BDD, focussing on their perspectives of SNS use in the context of BDD. Interpretative phenomenological analysis (IPA) resulted in five themes being developed from the data. Firstly, seeking appearance reassurance online was highlighted as a form of validation for appearance concerns and a need for appearance acceptance in BDD in the theme 'the vulnerability for self-appraisal online'. The second theme, 'making sense of constant comparisons', highlighted appearance comparisons online as a way for BDD individuals to socially rank themselves against others. The third theme, 'going beyond the importance of appearance', highlighted SNS as reinforcing appearance values through idealised images. The fourth theme, 'SNS as a therapeutic tool in BDD treatment', revealed SNS as also being beneficial for BDD individuals to seek support online. In the fifth theme, 'a clinician's need for understanding', SNS use was emphasised as being a maintenance factor in BDD rather than a causative factor. These findings are discussed in the context of developing current therapeutic interventions and protocols for BDD within clinical settings.

Keywords: social networking sites, Body Dysmorphic Disorder, interpretative phenomenological analysis

S-1D2

Problematic internet use and self-image among a children and youth psychiatric clinical sample: An experimental approach

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The connectivity provided by social networking sites plays a key role in communication and self-expression. Platforms such as Facebook, WhatsApp, and Instagram are dominating, reaching over 3.5 billion monthly users. Recent internal investigations of the Facebook-

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group show a high body image dissatisfaction among female adolescent users. In accordance with these findings problematic social media use can lead to impairment of psychosocial functioning, poor mental health, and emotional difficulties. Online experiences, such as receiving negative feedback and comparison with others, may lead to low self-esteem. Especially the variety of edited online images of idealized "beauty" and "role models" are influencing individual self-perceptions. On the other hand, low self-esteem leads to a greater vulnerability to develop social media addiction partly mediated by reward dependency and fear of missing out. In order to address the question of how problematic internet use influences self-image we choose a novel and experimental approach. In the study to be presented we offered children and juveniles that accessed child psychiatric treatment a professional photo session. Using standardizes questionnaires we collected data on internet behavior, self-esteem, psychopathological symptoms and emotional adaptive and maladaptive strategies (trait emotionality) and state emotionality before and after the shooting, including a longitudinal design in a three-month period after the shooting. The study design and results will be presented at the congress.

Keywords: Problematic internet use, self-image, adolescence, clinical psychiatric sample, experimental approach

S-1D3

Problematic social networking site use, psychopathology, resilience, and emotion dysregulation

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Background: Social networking sites (SNSs) allow people to socially connect with each other, collaborate, and share information. There are now millions of SNS users worldwide as these platforms serve multiple purposes. However, there are concerns of problematic social networking site use (PSNSU) and psychopathological symptoms that may be co-morbid with this behaviour. *Method:* This talk will discuss the findings of two survey studies that examined PSNSU, anxiety severity, attention deficit hyperactivity disorder (ADHD) severity, dark triad personality traits, resilience, and emotion dysregulation. *Results:* Bivariate correlations, regression, and structural equation modelling results involving the aforementioned variables will be described. Particular focus will be placed on the variables that potentially predict PSNSU. Conclusions: This talk will conclude by discussing the risk factors associated with PSNSU. Future research and practical implications will also be discussed.

Keywords: Problematic social networking site use; anxiety; attention deficit hyperactivity disorder; resilience, emotion dysregulation

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S-1D4

The contribution of reward and incentive processes to the use and overuse of Social Networking Sites

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Background: Social Networking Sites (SNSs) provide abundant opportunities to seek and receive social rewards and other types of incentives: SNSs can satisfy basic needs to belong and to affiliate but can also be used as a vehicle to obtain social approval ('likes' and 'retweets'), improving one's standing in social hierarchies. At the same time, social rewards are known to engage key structures of the cortical and subcortical reward system, eliciting similar activation patterns as other elemental reward categories (e.g. food and drugs). In this talk I will argue that considering reward as a fundamental process determining SNS use can help to understand the intensity and problematicity of some use behaviours, including excessive and compulsive SNS use. *Methods, Results and Conclusions:* Using self-report data from 411 young adults, I will delineate several reward-related motives predicting SNS use behaviours. I will also present results from several online studies indicating that it is possible to disentangle motivational (wanting) and hedonic (liking) processes of SNS reward, which - similar to some substance use and food-related behaviours - may diverge in "heavy" SNS users. A preliminary interpretation is offered, attributing these effects to the reward system being sensitised to SNS cues. Using new data from two laboratory experiments, I will then discuss how SNS reward can affect time perception and abstinence from SNSs. *Keywords:* Social Networking Sites (SNSs), Social Media Addiction, Reward

Keywords: Social Networking Sites (SNSs), Social Media Addiction, Reward, Incentive-Sensitisation

S-1D5

Which aspects of narcissism are related to Social Networking Sites addiction? The role of self-enhancement and self-protection motives

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Background: Narcissism was found to be one of the essential personality-related risk factor of Social Networking Sites (SNS) addiction. However, most of the research neglected its heterogeneous nature. In this study, we focus on four aspects of narcissism (i.e., admirative narcissism, communal narcissism, rivalrous narcissism, and vulnerable narcissism), acknowledging that they might be associated with different underlying narcissistic motives (i.e., self-enhancement or self-protection) and realized in different domains (i.e., agency or

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communion). *Method:* We tested whether four aspects of narcissism separately and additively contribute to SNS addiction using self-report measures of narcissism and SNS addiction in three cross-sectional studies (N = 1659; one students' sample and two general Polish samples). *Results:* The results indicate that all four aspects of narcissism were positively related to SNS addiction. However, only rivalrous, communal, and vulnerable narcissism aspects were independent predictors of SNS addiction. *Conclusions:* The role of communal narcissism (not examined in previous SNS addiction studies) is discussed. As SNSs enable low-cost communion-based ego-boosts, their use might substitute other means of self-enhancing, increasing the risk of addiction. We also conclude that SNSs might not be the optimal platform for gaining gratifications via solely agentic self-enhancement as admirative narcissism was not an independent predictor of SNS addiction. Furthermore, SNS addiction may develop not only as a compensatory mechanism of interpersonal sensitivity and poor social relations in the relatively controllable SNS' environment (as indicated by vulnerable narcissism) but also maladaptive self-regulation via antagonism and hostility towards others (as indicated by rivalrous narcissism).

Keywords: SNS addiction, aspects of narcissism, multiple studies

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S-1E1

Objectively-measured and self-reported smartphone use in relation to surface learning, procrastination, academic productivity, and psychopathology symptoms in college students

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Numerous psychological variables are associated with self-reported/estimated smartphone use in college students. However, less is known about how additional psychological variables involving academic study and productivity relate to objectively-measured smartphone usage, such as procrastination, surface learning, academic productivity. We administered psychological surveys to 103 college students from an American university and collected their objective smartphone use data using the iPhone's Screentime feature. Self-report smartphone use surveys administered were the Smartphone Use Frequency Scale and Smartphone Addiction Scale-Short Version. Other surveys administered were the Depression Anxiety Stress Scale-21, fear of missing out (FOMO) Scale, Irrational Procrastination Scale, Study Process Questionnaire-Reivsed's Surface Learning subscale, and a validated scale of perceived academic productivity. Levels of depression, anxiety and stress symptoms, as well as greater procrastination and surface learning, mildly-to-moderately inversely correlated with the number of objectively-measured phone pickups/screen-unlocks. Academic productivity moderately inversely correlated with objectively-measured smartphone use minutes. Unemployed students had more pickups and received more notifications. Problematic smartphone use severity was not significantly related to any of the objectively-measured smartphone use variables. Results are discussed in the context of theory on pathways to excessive internet use, and the threaded cognition model of cognitive task interference.

Keywords: Smartphone use, depression, anxiety, procrastination, productivity

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S-1E2

Fear of Missing Out and anxiety symptoms are associated with latent profiles of problematic smartphone use severity within Chinese high school students

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Background: The flourishing body of research demonstrates that problematic smartphone use (PSU) fulfills many existing addiction criteria and needs detailed and thorough study. When conceptualized using the I-PACE model, anxiety can be seen as a personal factor influencing PSU. Fear of Missing Out (FoMO) involves cognitive anxiety compelling a need to stay in touch with social information and can lead to the overuse of smartphones as a mechanism through which to access that information. *Method:* A web-based survey collected data from high school students (N = 1,797; 1164 female; ages 13–18 years) in Tianjin, China. Using Mplus 8.7, we conducted a mixture model latent profile analysis to understand within-group heterogeneity of responses to the Short Version of the Smartphone Addiction Scale (SAS-SV). *Results:* We determined that a three-profile model evidenced superior fit indices using likelihood ratio tests, with entropy and Bayesian Information Criterion (BIC) decreasing after three profiles. SAS-SV item responses were lowest in profile 1, moderate in profile 2, and most severe in profile 3. Except for sex, both profiles 2 and 3 had significantly higher scores on anxiety and FoMO covariates. *Conclusions:* Individual groups modeled by latent profile analysis demonstrate significant differences in FoMO and anxiety based on the severity of problematic smartphone use.

Keywords: problematic smartphone use, latent profile analysis, anxiety, Fear of Missing Out

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S-1E3

The relationship of self-regulation, fear of missing out and smartphone addiction: The mediation role of classroom cyber-slacking

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Classroom cyber-slacking is defined as using the Internet for non-class related purposes during class hours, which is associated with negative academic consequences. This study aims to investigate whether cyber-slacking would mediate the effect of low self-regulation and fear of missing out (FoMO) and exert a promoting influence on smartphone addiction tendency (SAT) among university students. An anonymous questionnaire survey was conducted among 431 participants (Mage=19.39; 66.4% female), at a public university in mainland China through convenience sampling. Path analyses were used to test the proposed mediation model in which two latent variables were involved: Self-regulation has two cognitive indicators (i.e., impulsive control and goal setting) while SAT was indicated by four types of symptoms (i.e., compulsive behavior, functional impairment, withdrawal, and tolerance). The results found the full-mediation model did not fit the data satisfactorily ($\chi 2=164.85$, $p<.001$, CFI=.87, RMSEA=.138). The partial mediation model with two direct paths from self-regulation and FoMO to SAT showed a better model fit, but the hypothesized path from self-regulation to cyber-slacking was non-significant ($p>.05$). After removing this path, the model fit was found satisfactory (χ 2=35.76, $p<.01$, CFI=.98, RMSEA=.051). The indirect effect of FoMO on SAT via cyber-slacking was .034 (p=.01). Our findings indicated that FoMO, but not low self-regulation, was a salient factor of cyber-slacking, which in turn associated with higher vulnerability to smartphone addiction in university students. Despite the limitation of cross-sectional design, our findings highlighted the affective factor to be addressed in future interventions for cyber-slacking and smartphone addiction.

Keywords: smartphone addiction; cyber-slacking; mediation model

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S-1E4

Phubbing as a Mobile Phone Addiction

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Background and aims: A modern man faces fast technology changes influencing close relationships. A recent process in interpersonal sphere is phubbing or distraction from a real partner, switching attention to their mobile device, neglect of live communication (Karadağ, 2015). Is phubbing a defence mechanism, digital obsession (Vaghefi, 2017), or a new social norm? *Methods:* sample is 206 people (18 – 47); Partner phubbing scale (Roberts, David, 2016); Internet Addiction Test (Young, 1994); ADOR; MIMARA (Shaver, 1995). *Results:* obsession with checking the phone is more typical for teens and young adults, less for adults. Adolescents` higher level of Internet-addiction has a direct correlation with phubbing ($r < .49$; $p < .01$). Phubbing means not remaining present and connected, seems an addictive consequence of being online among adolescents more often than in their mothers. Teens having a higher level of phubbing easily replace actual communication and resort to a more comfortable psychological state using a phone. They choose distraction to alleviate boredom, etc. Socio-emotional ties in child-parent relationships are weakened, a mother`s authority decreases for a teenager. Women are more often becoming phubbers than men ($p<.001$); men more often estimate the partners` phubbing negatively. Higher sensitivity to phubbing in men associates with an anxious or avoiding attachment type: they are more likely to consider distraction on the gadget as neglect of themselves. Conclusions. Phubbing is an ambivalent new social communication norm quickly turning into a defensive mechanism and addiction in teens and women mostly. The study is supported by RFBR, 18-013-01005.

Keywords: changes, phubbing, close relationships, distraction

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S-1F1

Associations between emotion regulations and life satisfaction with flow experience and problematic gaming behaviours

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Introduction: Although previous studies have shown that problematic gaming behaviours and flow experience could have inverse associations with well-being, their association is generally considered controversial, and needs further understanding. Emotion regulation can provide relevant insights about the interpretation of the different experiences during gaming and help to understand the different paths between optimal experience (flow) and problematic gaming behaviours. For this reason, this study aims to test a model of associations between emotion dysregulation, suppressive regulation, integrative regulation, flow, problematic gaming behaviours and life satisfaction. *Method:* The sample consisted of 299 Italian young adults who regularly spend time playing video games, and were asked to complete the following measures: Emotion Regulation Scale, Internet Gaming Disorder Scale–Short-Form, Flow Short Scale, and Satisfaction with Life Scale. *Results:* SEM showed good fit ($\chi 2(155) = 253.99$, $p < .01$, CFI = .97, SRMR = .05, RMSEA (90%CI) = .05 (.04, .07)) and results showed that there was a significant positive association between emotion dysregulation and problematic gaming behaviour, and between integrative emotion regulation and flow. Suppressive regulation showed significant positive associations both with problematic gaming behaviour and flow. Furthermore, there was a significant positive association between flow and life satisfaction. Finally, life satisfaction was positively associated with emotion dysregulation, and emotion suppression, while it was negatively associated with integrative regulation. *Conclusion:* Although both flow and problematic gaming behaviour are represented by absorption in gaming, they could be considered two opposite manifestations of adaptive and maladaptive emotion regulation.

Keywords: flow, problematic gaming, emotion regulation

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S-1F2

Empty feelings and problematic videogaming: the serial mediating role of avatar identification and physical body dissociation

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Alexithymia and emptiness play a central role in the appearance and persistence of various addictive behaviors, including problematic video gaming (PVG). Video game environments may function as a tool to transform chaotic emotions and/or emptiness into psychologically meaningful events through player-avatar identification. However, high identification with the avatar might result in the subjective perception of disconnection from one's physical body, which in turn might lead to PVG. The present study tested a serial mediation model, whereby it was hypothesized that player-avatar identification and one's physical bodily dissociation experiences were serial mediators of the relationship between alexithymia and emptiness, on the one hand, and PVG, on the other hand. A sample of 285 highly-engaged players (64.2% M; mean age = 30.38 ± 7.53) using avatar video games (e.g., MMORPG) completed a survey that included the Toronto Alexithymia Scale, the Subjective Emptiness scale, the Scale of Body Connection, the Self-Presence Questionnaire, and the IGD 9-SF. The structural model produced a good fit to the data [$\chi 2 = 175.14$, df = 55, $p < .001$; RMSEA = 0.08 (90% C.I. =0.07-0.09), CFI = 0.96, SRMR = 0.08] and it explained 28% of the PVG variance. Alexithymia was indirectly associated with PVG through avatar identification and body dissociation ($\beta = 0.52$, $p<.001$). Conversely, emptiness was not associated with avatar identification. The current study highlights some psychological processes that might explain the well-established link between alexithymia and PVG.

Keywords: alexithymia, emptiness, dissociation, internet gaming disorder, player-avatar bond

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S-1F3

Motivation, Addiction and Engagement in Gaming: A 12-month Perspective

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Background and aims: Motivation for gaming has been shown to be an important indicator for problematic gaming. However, a limited number of studies have focused on changes in the relationship between motivation and problematic gaming over time. This study explored several factors of Gaming Motivation and their associations with Gaming Addiction and Gaming Engagement in a 12-month period. *Methods:* An online questionnaire in the Czech language was administered twice within 12 months. N = 2,008 respondents (Mage = 21.2, SD = 6.4 years; 94% males) participated in both waves. Structural equation modelling was employed as the main analytical strategy. *Results:* A seven-factor solution (i.e., Competition/Achievement, Mastery, Fantasy, Exploration, Escapism, Cooperation, and Communication) best fit the Online Gaming Motivation Scale. The factors were stable over time (rs ranging from .69 to .83 between occasions). Both Gaming Addiction and Gaming Engagement were highly stable over time (r = .75 and .77, respectively), and their relationship with Gaming Motivation factors remained the same between the two occasions. Gaming Motivation explained 38% of the variance in Gaming Addiction and 42% in Gaming Engagement. The strongest predictors for Gaming Addiction were Escapism, Competition, Mastery, and Exploration (βs =.56, .39, -0.10, and -0.11, respectively). Most factors of Gaming Motivation predicted Gaming Engagement, especially Competition (β = .43) and Mastery (β = .31). *Conclusion:* Gaming Motivation, Gaming Addiction, and Gaming Engagement, as well as their mutual associations, remain stable over a 12-month period and exhibit trait-like properties.

Keywords: Gaming motivation, Addiction, Engagement, Longitudinal

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S-1F4

Positive urgency, but not negative urgency, correlates with problematic use of video games via craving: A study with Ecuadorian and Spanish samples

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Craving is an emotional state. Accordingly, it has been shown that urgency (i.e. the tendency to lose control of one's actions when experiencing positive and negative emotions) is associated with the intensity of craving, and, eventually, with severity of symptoms of addictive disorders. These associations have been shown to be particularly strong for negative urgency. In the case of problematic video game use, the nature of craving has been under recent scrutiny. In the present study, two samples of Spanish and Ecuadorian video gamers (total N = 454) were assessed in positive and negative urgency, intensity of craving for video gaming, and problematic video gaming (using the DSM5-based, 9-item IGD scale). The role of craving in the relationship of negative and positive urgency with problematic video gaming was investigated using mediation analysis. Across samples, positive urgency, but not negative urgency, was observed to be strongly predictive of craving intensity, and this, in turn, of video gaming-related problems. Negative urgency was observed to have a small but significant direct association with video gaming problems, not mediated by craving. This pattern of results is indicative of the importance of positive emotional states in craving for video gaming, and it seems congruent with the overvaluing hypothesis of problematic video gaming. It contrasts, however, with the observed negative valence of craving, and the role of negative urgency in craving dysregulation in most addictive disorders.

Keywords: gaming disorder, video games, impulsivity, urgency, craving

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S-1G1

A peer support-based group intervention helps young adults to control their gaming behavior

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Introduction: Gaming Disorder (GD) causes adverse consequences to individuals' well-being and key areas of functioning. In addition to GD treatment protocols, a need to provide low-threshold interventions for those at high risk of developing GD has been recognized. One such intervention is the professionally guided peer support group (Limit'less Gaming Bootcamp), which incorporates instructor-guided thematic discussions, peer support, gaming and other social activities, and gamification of skill training. Participants attended ten weekly 3-hour meetings with ten fixed discussion themes. *Aim:* The aim of the study is to investigate the effects of the group intervention on gamers' GD tendencies, and subjective well-being among Finnish young adults, and to determine the program's effectiveness over time. *Methods:* Inclusion criteria for the intervention groups were: self-assessed excessive gaming, an age between 18 to 29 years, and the need for external support to control one's gaming behavior and well-being. Participants' (n = 37) mean age was 23.8 ± 2.84 years and they were mostly men from five geographic regions in Finland. The Baseline, post-test, and six-month follow-up included measures concerning gaming behavior, psychosocial well-being, and quality of life. *Results:* Participants' conscious gaming behavior in terms of GD tendencies and time spent on gaming positively changed over time. Changes in participants' other daily free-time routines were minor. *Conclusions:* Findings demonstrate the effectiveness of the group intervention, especially concerning gaming behavior control. Further studies with larger sample sizes and control groups are warranted to deepen the understanding of this intervention's efficacy.

Keywords: problematic gaming, gaming disorder, intervention, peer support

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S-1G2

A pre-registered, systematic review considering mindfulness-based interventions and neurofeedback for targeting affective and cognitive processes in behavioral addictions

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Background: Psychological core processes that underpin disorders due to addictive behaviors, including craving, inhibitory control, maladaptive decision-making, and cognitive biases, are important factors to target and modify in interventions. Mindfulness-based and neurofeedback techniques have been particularly promising interventions. The aim of the present systematic review was to evaluate the research evidence on their effectiveness for behavioral addictions. *Method:* The electronic databases PubMed, Scopus and Web of Knowledge were searched for peer-reviewed articles published from Jan 1, 1985, to Dec 20, 2020. Terms reflecting the intervention methods, the extent of the behavioral problem, and the specific addictive behaviors were combined within the search. Results: Fifteen studies were included in this review. Results suggest that mindfulness-based interventions are effective in reducing mental distress and craving reactions. Reductions in craving levels were reported in four of six studies with largest effects for mindfulness-based cognitive therapy and mindfulness-enhanced cognitive behavioral therapy. Successful reductions in mental distress were identified in five of seven studies that used diverse mindfulness-based techniques. However, no more than one study on mindfulness-based interventions reporting improvements in self-control, inhibitory control, maladaptive decision-making and cognitive biases could be identified. No research could be found on neurofeedback. *Conclusion:* This review highlights the potential of mindfulness interventions for behavioral addictions, and the specific mechanisms of therapeutic change warrant further investigation. Although we did not identify studies that investigated neurofeedback techniques, promising results in the area of substance-use disorders may nevertheless motivate future similar studies in behavioral addictions.

Keywords: Addictive behaviors, mindfulness, neurofeedback, affective, cognitive

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S-1G3

Virtu-A: A new manualized treatment for 15–25 year olds addicted to video games

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In Quebec, video game and internet use problems have doubled in the last ten years. During the pandemic alone, the prevalence of youth at risk increased by 3.6%. In its latest inter-ministerial action plan, the Quebec government decided to include Internet and video game addiction in the family of addictions and to provide access to free treatment. Our team has been mandated to develop and evaluate this treatment. The objective of this presentation is to present the results of the scoping review and the resulting new treatment. *Method:* A scoping review was carried out with different keywords: treatment, youth, Internet addiction, video game addiction, social media addiction. Among the 160 articles addressing treatment, only 31 described in more detail the intervention performed and 7 had a manualised treatment. A content analysis of the treatments reveals nine common themes in the intervention: 1) social skills; 2) irrational beliefs; 3) emotional management; 4) self-control; 5) functional analysis; 6) alternative activities; 7) problem solving; 8) time organization; 9) self-esteem. From the different themes, the Virtu-A treatment was developed. This presentation will conclude by presenting the structure of the new manualized Virtu-A treatment.

Keywords: treatment, youth, video game addiction, Internet addiction

S-1G4

eSport program in high school: What is at play?

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Background: A growing number of high schools are now offering eSport (ES) programs. Little is known on ES players and how they might differ from more traditional video game (VG) players. The aim of the present study is to explore the potential influence of ES program on youth in an academic context. *Methods:* 176 high students from a high school (11th and 12th grade) in the province of Quebec (Canada) answered a questionnaire. 67 students were participating in the ES school program and 109 were gamers not involved in ES. The groups were compared on: 1) their sociodemographic and academic characteristics; 2) their online and offline activities; 3) their problematic Internet use and potential gaming disorder

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and 3) their psychological characteristics and 4) their perceived impacts of VG. *Results:* The adolescents involved in ES were similar to their peers in terms of their mental health, the proportion of problematic Internet users and the perceived benefices obtained from gaming. However, ES players spent significantly more time playing VG, displayed a higher proportion of potential problematic VG users and perceived more negative consequences in their academic and professional sphere when compared to their peers. *Conclusions:* ES players, or the participation in a structured ES program in an academic context, may present specific risk factors for the development of the gaming disorder. However, considering the overall high proportion of students at risk of developing gaming problems, general prevention programs should be offered in high schools.

Keywords: eSports, adolescents, high school, mental health, gaming disorder

S-1G5

Tackling naturally occurring gambling craving among problem gamblers with interference

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Background: Gambling craving is an important factor of maintenance and relapse of gambling disorder. A growing body of literature tested interventions targeting substance-related craving and, to a lesser extent, gambling-related craving. Among those methods, interference-based techniques aim at moving resources allocated to the elaboration of craving-related thoughts to a competing task recruiting similar cognitive resources, thus reducing the vividness and overwhelming nature of craving. Despite promising results in laboratory experiments, few studies investigate the relevance of such techniques in real clinical settings. This pilot study aims to test the efficacy of interference-based techniques on gambling craving in a realistic clinical setting. A multiple single case design, easily implementable in treatment, will be used to test interference-based intervention among a small number of adult outpatients with a gambling disorder recruited by clinicians at the Center for Excessive Gambling in Lausanne, Switzerland. *Methods:* A web-app specifically designed for the study will allow for the assessment of naturally occurring gambling craving and the administration of the techniques through three consecutive phases (one week each): baseline, intervention, and three-month follow-up. Potentially confounding variables will also be measured (e.g. cogni-

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tive distortions, impulsivity traits). *Results:* Data collection has not started. The data analytic strategy will include both visual analyses and inferential tests. Non-overlap of all pairs and slope and level change will be used to estimate the effect-size, and Cohen's d will be used to summarize treatment effects in each patient. *Conclusions:* Preliminary results, and efficacy and effectiveness of interference-based treatment will be discussed

Keywords: gambling, single case, craving, intervention, treatment

S-2A1

A systematic overview of gaming motivation scales and the development of a comprehensive and up-to-date measure

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Background: Research into video gaming motives dates to the 90s, the first well-known model being the Bartle-model. Since then, several measurement instruments have been developed and used. Major limitations of the existing measures are that: (i) a lot of them is genre-specific (i.e., the measure can only be applied to specific type of games because the content of some items is related to certain game genres) and (ii) some of them are either not exhaustive or outdated to certain degree. To address these limitations, a comprehensive motivational item pool was developed and tested in a large sample of video gamers. *Methods:* Empirical studies assessing gaming motives with a scale were systematically collected to identify the most frequently used motives. These were used to generate a comprehensive item pool of motives. Psychometric properties of the motivational factors and their second-order structure was tested on data obtained from highly involved video gamers. *Results:* Items covering twenty-seven motives were generated based on the literature review, with three to five items belonging to each motive. The second-order structure resulted in six overarching dimensions, which were related to relevant demographic, personality, psychological and gaming-related variables. *Conclusion:* The new measure can be used in video game research but also in the clinical field as some of these motives (e.g., immersion/escapism, habit/boredom) are considerably related to pathological video game use.

Keywords: video games, gaming motives, gaming disorder

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S-2A2

Assessment of disordered gaming: Challenges and ways forward

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Background and aims: Disordered gaming has been preliminarily recognized as a tentative mental health disorder in the 5th revision of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) by the American Psychiatric Association (APA) in 2013 and termed as 'Internet Gaming Disorder' (IGD). More recently, the World Health Organization (WHO) has formally recognized disordered gaming as a mental health disorder under the label of 'Gaming Disorder' (GD) in 2019. Although both IGD and GD refer to the same construct, their operationalization and conceptualization are fundamentally different. *Methods:* Therefore, the aim of this talk is to discuss the latest comparative evidence analyzing how the APA and WHO framework may differ in terms of risk levels, assessment, comorbidity, and estimation of prevalence rates of disordered gaming on regular gamers (N1 = 1,429 and N2 = 2,865) and professional e-esports gamers (N3 = 2,865). Results: The results suggest that both the APA and WHO diagnostic frameworks appear to consistently capture disordered gaming within their specific clinical criteria. However, important discrepancies exist in relation to predicting specific outcomes and correlates when comparing the two frameworks. Moreover, professional e-sports gamers present increased vulnerability to disordered gaming. *Conclusions:* Additional diagnostic research investigating the APA and WHO frameworks is needed to help elucidating discrepancies found in recent research. Furthermore, investigation of each disordered gaming criteria is needed to help estimating the relative clinical importance of each criterion. Finally, the findiwngs obtained among professional e-sports gamer indicate that assessment of disordered gaming in this group presents with important challenges.

Keywords: gaming disorder, assessment, comorbidities, esports

S-2A3

Design in video games: Operationalization, assessment and relationship to gaming use

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Design features in video games have been associated with longer duration of play, immersion experience in gamers and cognitions related to prolonged player engagement. However, most previous work on operationalising design in games remains conceptual with limited

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empirical basis. The proliferation of new games, player segmentation based on preferred gaming genres, and their association to increased symptoms of disordered gaming, has reinforced the need to update previous taxonomies. The aim of the present study is to cover this gap in knowledge by updating the operationalisation of design elements across popular gaming genres and explore the relationship between design-driven engagement, maladaptive cognitions and problematic gaming. The quantitative study involves a large cross-cultural online survey with experimental features with data collected on a sample of 2,100 gamers and involves scale validation and a structural equation model to assess the relationships amongst the constructs. Results are currently being analysed. This novel study is aiming to help understand better the role of design on gamer behaviour by educating gamers on how developers endorse habitual play and policymaking by classifying exploitative mechanisms involved in problematic gaming.

Keywords: video games, gaming, game design, maladaptive cognitions, problematic gaming

S-2A4

Assessment of specific Internet-use disorders: Overview and presentation of a new screening tool for uniform assessment based on ICD-11 criteria

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Background: According to ICD-11, impaired control, increasing priority, and continuation or escalation of the behavior despite negative consequences are the main diagnostic criteria for disorders due to addictive behaviors including gambling and gaming disorders. These criteria could also be applied to other potential Internet-use disorders. *Method:* Existing instruments assessing symptoms of (potential) specific Internet-use disorders will be summarized. The instruments measuring different types of online addictive behaviors have been developed independently from each other in most cases and therefore capture diagnostic criteria very inconsistently across different behaviors. The new 11-item scale "Assessment of Criteria for Specific Internet-use Disorders" (ACSID-11) is introduced as a comprehensive screening tool assessing the ICD-11 criteria for gaming disorder and transferring them to other online addictive behaviors. *Results:* Potential Internet-related behavioral addictions such as problematic use of online pornography, social networks or online shopping show similarities with gaming disorder symptoms. Results of confirmatory factor analyses showed the assumed 5-factorial structure (impaired control, increasing priority, continuation despite negative consequences, functional impairment, and marked distress) for gaming disorder and the other

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specific Internet-use disorders. Data from multiple studies demonstrate good reliability and validity of the ACSID-11. *Conclusion:* The uniform assessment across different behavioral addictions is essential for further research on similarities and differences of specific types of disorders. The application of the ICD-11 criteria for gaming disorder, as well as their comprehensive coverage, as with the ACSID-11, have significant value for future research and practice.

Keywords: Internet-use disorder, gaming disorder, ICD-11, diagnostic criteria, screening instruments

S-2A5

WebAddict: A new diagnosis interview for Internet Dependence

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Context: Despite the conceptual and diagnostic breakthroughs surrounding Internet addiction, very few comprehensive diagnostic interviews have been developed on a sound basis. Despite a growing demand for services concerning people reporting difficulties to control time in front of screens, clinical settings lack access to appropriate assessment to identify their treatment needs. *Objectives:* The current studies aimed to develop and validate a diagnosis tool on Internet addiction. *Method:* Two rounds of interviews with international experts provided the six dimensions used to operationalize the concept. A first exploratory study with young adults (17-23 years old; n=93) allowed the development of a first decision tree. Within a second study, an improved interview was conducted with 336 participants (13-65 years old). Two clinical experts revised 25% of the interviews to provide an independent opinion concerning the severity of Internet dependence. All cases where experts disagreed with the proposed decision provided by WebAddict, a discussed in a larger expert committee was conducted to adjust the criterion used. The process was repeated until no more disagreement emerged. *Results:* WebAddict is a structured interview providing a four levels categorization of Internet addiction on each of three specific types of screen use (gaming, networking, other web activities, excluding pornography use) plus an exploratory one on streaming. The final score is based on an assessment of six domains: time spent, use of screens to deal with difficult emotions, over preoccupation, craving, self-control and negatives consequences. Based on score on each domain, the structured algorithm provides the final classification.

Keywords: Internet addiction, gaming, social network, streaming, diagnosis

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S-2B1

Compulsive Sexual Behavior Disorder: Examining biological, epidemiological, treatment interventions, and clinical correlates among help seeking populations

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Symposium summary: The recent inclusion of the new diagnosis of Compulsive Sexual Behavior Disorder (CSBD) in the International Classification of Diseases (11th edition) has provided a diagnostic framework for clinicians and researchers for conceptualizing out-of-control sexual behaviors in helping seeking clients. However, knowledge gaps currently remain around its etiology, prevalence in general and clinical populations, underlying biological mechanisms, and efficacy of psychotherapy and pharmacotherapy treatments for clients. Joshua Grubbs will present data examining the prevalence of CSBD in the American populace, the clinical correlates other behavioral conditions, and examine reasons for help seeking for CSB. Michał Lew-Starowicz will present results from a double-blind, randomized study of treatment-seeking heterosexual men with CSBD receiving either paroxetine 20mg, naltrexone 50 mg or placebo for 5 months. Marco Scanavino will present results from a randomized controlled trial examining the efficacy of: (1) short-term psychodynamic group therapy followed by relapse prevention group, (2) pharmacological treatment, and (3) the combination of interventions (1) and (2) on sexual compulsivity. Małgorzata Draps will present data from a series of 3 magnetic resonance imaging studies investigating the brain structure, resting state functional connectivity and white matter anisotropy of individuals with CSBD. Karol Lewczuk will present results from a sample of the Polish adults investigating the existence of withdrawal symptoms and tolerance in the sexual domain, as well as their relations to CSBD and problematic pornography use. Collectively, these works present innovative research employing a variety of methods to further elucidate the clinical underpinnings of CSBD in clinical and non-clinical populations.

Keywords*:* compulsive sexual behavior, treatment, brain imaging, help seeking, pornography

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S-2B2

Compulsive sexual behavior in a U.S. nationally representative sample: Clinical correlates and predictors of treatment seeking

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Background: The inclusion of the new diagnosis of Compulsive Sexual Behavior Disorder in the International Classification of Diseases, 11th edition, has revolutionized the ways in which the psychiatric, psychological, and broader medical and mental health communities view out-of-control sexual behaviors. Even so, relatively little is known about the prevalence of compulsive sexual behavior (CSB) in the American populace, the clinical correlates such behaviors at a population level, and the reasons for help seeking for persons reporting issues with CSB. *Method:* In March, 2022, a weighted, nationally representative sample of adults in the United States will be collected. Compulsive sexual behavior will be assessed using a novel, in-development scale, the CSBD-19, the Brief Pornography Screener, and the Cyber Pornography Use Inventory 4. Among participants with elevated scores on measures of CSB, we will examine the co-occurrence with suicidality, depression, anxiety, substance use, disordered gambling, and disordered gaming. Finally, participants will complete a series of questions about past treatment seeking behaviors and future treatment seeking probabilities. *Results:* Data will be analyzed using a variety of statistical techniques to determine how, when, and why participants are likely to report CSB, the specific behaviors they report concerns of CSB about, and the various factors that might make someone with CSB seek treatment. *Conclusions:* The results of the present work will allow us to draw inferences about the clinical profile of CSB and CSBD broadly as well as help to identify clear risk and protective factors for and comorbidities of these behaviors.

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S-2B3

Randomized, double-blind, placebo-controlled trial of paroxetine and naltrexone in treatment of heterosexual males with compulsive sexual behaviour disorder

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Background: The "off-label" use of selective serotonin reuptake inhibitors and opioid antagonists in the treatment of compulsive sexual behaviour disorder (CSBD) has been proposed since many years; however, evidence-based data on clinical efficacy and safety of such interventions is extremely scarce. *Method:* In this double-blind, randomized study, 73 treatment-seeking, heterosexual males meeting the ICD-11 criteria of CSBD received paroxetine 20mg, naltrexone 50 mg or placebo for 5 months. The efficacy of the treatment was evaluated by clinical scales including Sexual Addiction Screening Test (SAST), Hypersexual Behavior Inventory (HBI), the Brief Pornography Screen (BPS), as well as in the Ecological Momentary Assessment and repeated clinical interviews. Treatment safety was assessed by repeated clinical examinations and laboratory tests. *Results:* The measures of CSBD significantly improved in all treatment arms with no statistical interaction of treatment time and medication. Receiving active treatment was related to better satisfaction with the therapy and self-reported decrease of problematic sexual behavior. The most prevalent side effects included sedation, apathy, sexual dysfunction, and weight gain but were relatively seldom related to drop-out. *Conclusions:* Results from this double-blind, randomized study suggest that paroxetine and naltrexone represent safe treatment options for CSBD patients; however, due to mixed results, their clinical efficacy should be confirmed in future trials that should also include women and non-heterosexual groups of patients.

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S-2B4

Compulsive sexual behavior: Medication, therapy, and adhesion

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Background: A randomized controlled trial (RCT) was conducted to investigate the effects of: (1) short-term psychodynamic group therapy followed by relapse prevention group (STPGP-RPGT), (2) pharmacological treatment (TAU), and (3) the combination of interventions (1) and (2) on sexual compulsivity (SC). *Methods:* 135 men (Mean age = 37.1, 72.6% Caucasian) were randomly assigned to one of three arms. Participants completed the Sexual Compulsivity Scale at baseline (T1), week 25 (T2), and week 34 (T3). Considering the attrition of 42.2% between T1 and T2, and 50.4% between T1 and T3, we conducted (1) complete case analysis; (2) adhesion (taking 80% of medication and/or attending to 75% of therapy sessions) vs. non-adhesion to treatment. *Results:* Time effect has a significant impact in SCS scores ($X^2 = 25.25$, $p < 0.001$) from T1 to T2, and to T3. There was a significant difference between TAU, and the other two groups at T2 ($p < 0.001$), and T3 ($p < 0.024$). Significant interaction effect was found ($F = 2{,}62$; $p = 0{,}038$). The therapy groups showed significantly decreasing score from T1 to T2, and to T3, which did not occur with TAU. Adherent to treatment participants compared to non-adherent presented time effect from T1 to T2, and to T3, and between group effect at T2, and T3, but did not present interaction effect ($p = 0.062$). *Conclusions:* Participants from groups including psychotherapy decreased more the SC scores, than those from TAU. Similar findings were also observed from adherent participants compared to non-adherent.

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S-2B5

Between addiction and compulsion – New data on neural mechanisms of Compulsive Sexual Behaviors Disorder

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Background: Initial neuroscience studies on Compulsive Sexual Behaviors Disorder (CSBD) showed similarities to substance (SUD) and behavioral addictions (BA) in incentive sensitization. Our recent studies have examined specific brain mechanisms differentiating CSBD from SUD and BA and from OCD. *Method:* In a series of 3 magnetic resonance imaging studies, we have examined brain structure, resting state functional connectivity and white matter anisotropy of individuals with CSBD. *Results:* In Study 1, we compared brain structure of individuals with CSBD (n=26), SUD (n=21) and BA (n=26) and healthy controls (HC; n=25) showing similar deficits in orbitofrontal cortex gray matter volume across CSBD, SUD and BA, but also decreased gray matter volume in the anterior cingulate cortex related specifically to the symptoms of CSBD. In Study 2, by comparing brain resting state connectivity between CSBD (n=52) and HC (n=29), we identified 5 functional brain networks differentiating CSBD from HC, and supporting incentive sensitization mechanisms in CSBD, akin to SUD and BA. In study 3, we analyzed white matter brain microstructure of CSBD (n=36) and HC (n=31) using diffusion tensor imaging and compared to findings from studies on SUD and OCD. CSBD individuals showed white matter anisotropy shared both with SUD and OCD. *Conclusion:* All three studies support previous findings on similarity between CSBD, SUD and BA. New findings suggest interesting neural patterns which are more specific to CSBD than other addictions.

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S-2B6

Withdrawal and tolerance as related to Compulsive Sexual Behavior Disorder and Problematic Pornography Use – Preregistered study based on a nationally representative sample in Poland

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Background: The possible reclassification of compulsive sexual behavior disorder (CSBD) is debated. Although withdrawal symptoms and tolerance are unique to the addiction model of CSBD, no clear data on their presence is available. *Method:* In our preregistered study based on the sample representative of the Polish adult population (n=1541), we investigated the existence of withdrawal symptoms and tolerance in the sexual domain, as well as their relations to CSBD and its most prevalent phenotype problematic pornography use (PPU). We adjusted for variables regarding sexual activity and sociodemographic characteristics. *Results:* Both withdrawal and tolerance statistically predicted severities of CSBD (β=.34; $p<.001$ and β=.38; $p<.001$, respectively) and PPU (β=.24; $p<.001$ and β=.27; $p<.001$, respectively). We investigated withdrawal symptoms (21 types) in emotional, cognitive, and functional domains. The most often reported symptoms attributed to withdrawal from or limiting sexual activity were frequent sexual thoughts difficult to stop (for participants with CSBD: 65.2% and with PPU: 43.3%), difficult to control level of sexual desire (CSBD: 57.6%; PPU: 31.0%), increased overall arousal (CSBD: 37.9%; PPU: 29.2%), irritability (CSBD: 37.9%; PPU: 25.4%), frequent mood changes (CSBD: 33.3%; PPU: 22.6%), and sleep problems (CSBD: 36.4%; PPU: 24.5%). *Conclusions:* The study provides preliminary evidence for withdrawal symptoms and tolerance in the sexual domain and their relations to CSBD and PPU symptoms. The symptoms related to arousal and mood reflect symptoms similar to those proposed for gambling and internet gaming disorders. Current results have significant implications for understanding the etiology and classification of CSBD and PPU.

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S-2C1

Associated Factors in Gambling Disorder

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Symposium summary: This symposium analyzes different factors associated with Gambling Disorder (GD), such as psychiatric comorbidity and their impact on the symptoms of GD, illegal acts because of gambling problems, compulsivity from a gender perspective as well as self-harm and suicidal attempts in clinical samples of this disorder. The impact of some of these associated factors on the treatment outcome will be also presented.

Keywords*:* gambling disorder, comorbidity, illegal acts, compulsivity, suicidal behavior

S-2C2

Psychiatric comorbidity in clinical gambling disorder – what came first? Temporal associations of co-morbidity and gambling disorder differ between women and men

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Aims: The present study aimed to assess psychiatric comorbidity in female and male GD patients, and to analyze differences in the temporal association between GD and other mental health disorders. *Methods:* A 1:2-matched case-control national register study, assessing patients diagnosed with in Swedish specialized health care 2005-2020 (n=3,689) and age- and gender-matched controls without GD (n=7,378). Occurrence of mental health disorders any time during the study period was assessed, as well as whether diagnoses were registered before GD diagnosis, in association with (+/-180 days) GD diagnosis, or after. *Results:* All psychiatric diagnostic groups were more common in GD patients than in controls, and the risk increase was significantly larger in women than in men for affective conditions (F30-39) and anxiety-related disorders (F40-49). Among patients with each comorbidity, the temporal associations differed significantly between women and men. In affective disorders, comorbidities were more likely to appear before GD in women ($p<0.001$), whereas for alcohol use disorders ($p<0.01$) and neuropsychiatric disorders including AD/HD ($p<0.05$), these were significantly more likely to appear before GD in men. *Conclusions:* As seen in previous studies, affective and anxiety-related comorbidity is higher in female than male GD patients in clinical settings. Time frames are, however, different between genders, and this needs to be paid attention to in mental health screening programs for women and men.

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S-2C3

Gambling-related offenses and treatment outcome

GEMMA MESTRE-BACH[1], CRISTINA VINTRO-ALCARAZ[2], ROSER GRANERO[3], FERNANDO FERNANDEZ-ARANDA[4], SUSANA JIMENEZ-MURCIA[4]

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Aims: In the present longitudinal study, we sought: (1) to explore sociodemographic and clinical differences between individuals with GD who had committed gambling-related illegal acts (differentiating into those who had had legal consequences and those who had not), and patients with GD who had not committed crimes; and (2) to compare the treatment outcome of these three groups, considering dropouts and relapses. *Methods:* Our clinical sample included n=117 patients with GD, classified into three groups: patients with no history of gambling-related illegal acts (n=85), patients with a history of gambling-related illegal acts without legal repercussions (n=55), and patients who had committed gambling-related illegal acts that had legal consequences (n=31). GD severity, psychopathology, personality traits and impulsivity levels, as well as other sociodemographic and clinical variables related to gambling behavior and gambling-related offenses were assessed in this sample. Patients received 16 sessions of cognitive-behavioral therapy, and dropouts and relapses were documented. *Results:* Patients who reported an absence of gambling-related illegal behavior were older, and showed the lowest GD severity, the most functional psychopathological state, the lowest impulsivity levels, and a more adaptive personality profile. The group of patients who had committed offenses with legal consequences presented a higher risk of dropout and relapses, compared to the other two groups. *Conclusions:* Our findings uphold that patients who have committed gambling-related offenses show a more complex clinical profile that may interfere with their adherence to treatment. Therefore, specific treatment plans are required for this type of patient.

S-2C4

Compulsivity-related neurocognitive domains in gambling disorder: Exploring gender differences

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Aims: There are very few studies exploring compulsivity related variables and even less studying compulsivity in GD with a gender perspective. The present aim is to explore gender differences between domains of compulsivity in patients with GD. *Methods:* The studied

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sample consisted of 117 participants divided into four groups: two clinical groups that included women (n=27) and men (n=30) with a GD diagnosis and two HC groups that comprised women (n=30) and men (n=30) without psychopathology. *Results:* Worse attentional set-shifting performance in women with GD than in men (total trials ($p = 0.042$, $|d| = 0.56$), perseverative responses ($p = 0.001$, $|d| = 0.89$), trails to complete the first category ($p = 0.001$, $|d| = 0.78$) and categories completed ($p = 0.001$, $|d| = 0.98$. Also, men with GD presented higher difficulties than HC men in the two assessed compulsivity domains (attentional bias and disengagement and attentional set-shifting; Stroop interference ($p = 0.015$, $|d| = 0.11$), TMT-B ($p = 0.041$, $|d| = 1.96$) and lower scores for the WCST perseverative responses ($p = 0.007$, $|d| = 0.78$), whereas the differences observed in women with GD and HCs were most significantly in attentional set-shifting. *Conclusions:* We discuss the first evidence of gender compulsivity differences in GD. The results are relevant for improving current treatments by targeting specific compulsivity domains that can lead to more successful treatment options.

S-2C5

Self-injuries, suicidal behavior and Gambling Disorder

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Aims: The aims of this presentation are to describe the prevalence of NSSI and suicidal behavior and associated clinical correlates in patients with GD as well as to assess their response to cognitive-behavioral therapy. *Methods:* A sample of treatment-seeking adults who met criteria for GD were assessed at a hospital specialized unit for the treatment of addictive behaviors. Participants completed self-reported questionnaires to explore GD, NSSI, personality traits, and psychopathological symptomatology. Lifetime history of suicidal ideation and attempts were assessed during a structured face-to-face clinical interview. *Results:* Prevalence estimates of suicidal ideation and attempts were 26,6% and 6,7% respectively. A greater risk for suicidal ideation was found in women but no differences were observed based on gambling preference. Regarding suicide attempts, the odds were higher among women with non-strategic forms of gambling disorder. Suicidal ideation and attempts were associated with greater GD severity, a worse psychopathological state, and higher self-transcendence levels. In terms of treatment outcomes, neither gambling preference nor past suicidal behavior had an influence on dropouts and relapses. *Conclusions:* These results have clear clinical and research implications as they contribute to better understanding the risk of self-harm in patients with GD.

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S-2D1

Operationalizing compulsivity in behavioral addictions: a systematic review

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According to dominant learning and psychobiological models, the transition of behavior towards compulsion is what makes it genuinely addictive. Unfortunately, the operationalization of compulsivity (defined as opposed to goal-driven behavior) remains indistinct and subject to interpretation. A systematic review was performed to identify the existing self-report instruments for potential behavioral addictions that are sensitive to behavior-specific compulsivity. Our selection resulted in 97 different instruments that were carefully inspected to identify compulsivity-sensitive items. These items were identified and compiled, and their content was analyzed to identify separable operationalizations of compulsive behavior. Analysis of items' content resulted in six discriminable types of behaviors that can be identified as compulsive: (1) urge, i.e. a response driven by an intense desire or craving that is experienced before it starts and severely compromises its control, (2) binging, or inability to stop once the behavior has started, resulting in that episode to be unintendedly intense or prolonged, (3) behavior insensitive to punishment or negative consequences, despite awareness of them, (4) inflexible rules regarding closure, or the way the activity is carried out, (5) habitual/automatic behavior, i.e. behaving in absence of instrumental goals, and (6) attentional capture and cognitive hijacking. Operationalizing compulsive behaviors in potential behavioral addictions is a necessary step to investigate if compulsivity can be defined as a single or multifaceted construct, and to better understand its etiology. This advance is crucial to understand the neurocognition of addiction, and thus to overcome criteria-based models.

Keywords: compulsivity, etiology, systematic review

S-2D2

Behavioral addictions in obsessive-compulsive disorder

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Background: obsessive-compulsive disorder (OCD) share several common neurobiological dimensions (e.g. from impulsivity to reward dysfunction) with addictions. Indeed, some studies comparing OCD with behavioral addictions (BAs) (e.g. gambling disorder) showed several similarities between these disorders. However, there is a paucity of studies directly

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investigating the presence of behavioral addictions in patients with a primary diagnosis of OCD. In this study we investigated the rate of BAs symptoms in adult OCD patients compared to a sample of healthy controls. *Methods:* 40 adult OCD outpatients consecutively recruited at the Brain Center Firenze and 40 healthy controls were assessed on behavioral addictions symptoms through the Internet Addiction Test, the Bergen Shopping Addiction Scale, the Sexual Addiction Screening Test – Revised, The South Oaks Gambling Screening and the Yale Food Addiction Scale – 2.0. Global function was assessed through the Barkley Functional Impairment Scale. *Results:* preliminary data on BA(s) symptoms frequency in OCD patients showed a higher prevalence respect to healthy controls. Correlations between BAs symptoms and clinical OCD variables will be presented. *Conclusion:* behavioral addictions symptoms should be investigated in adult patients with OCD. Assessing and treating comorbid addictive disorders could play a central role in the patients' global outcome.

Keywords: OCD, impulsivity, shopping, internet, food

S-2D3

Impulsivity and compulsivity in Compulsive Sexual Behaviour Disorder patients in treatment

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Background and aims: The aim of the study was to investigate sexual impulsivity and compulsivity among adult males who attend a clinic for treatment of compulsive sexual behaviour and control participants. *Methods:* 17 male participants with CSBD M= 32 years and 2 months (SD = 10.87), and 17 control participants M= 31 years (SD = 8.96). They filled in the Bergen-Yale Sex Addiction Scale (BYSAS), Sexual Risk Survey (SRS), Cyber-Pornography Use Inventory (CBUI), CSB version of the Yale Brown obsessive compulsive scale (CSB-Y-BOCS), and performed on the computerized Balloon Analogue Risk Task (BART) and delay discounting task (DDT). *Results:* CSBD participants scored higher on the BYSAS, CBUI and CSB-Y-BOCS but not on the SRS than control participants. Ratings on the BYSAS were positively associated with risk-taking measured on the BART task. Participants with CSBD with high compulsivity scores, showed lower measures of risk-taking on the BART (lower gains) than participants with CSBD with low compulsivity scores. Finally, there was a positive association between compulsivity scores, sex addiction scores and impulsivity scores. *Discussion and conclusions:* Participants undergoing treatment for CSBD showed an association between sex addiction scores and risk-taking behaviour. High scores of sexual compulsivity in these participants were associated with reduced risk-taking. The positive as-

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sociation between sex addiction, impulsivity and compulsivity in all participants supports the notion of an impulsivity-compulsivity spectrum. The results support the argument that CSBD is associated with impulsivity, and it could therefore be classified as a behavioural addiction.

Keywords: sexual addiction, compulsive sexual behaviour, compulsivity, impulsivity, online pornographyw

S-2D4

New frontiers of impulsivity and compulsivity in Parkinson's disease: from pathology to creativity

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Impulse control disorders (ICD) occur in 15 to 35 % in individuals with Parkinson's disease (PD) and include pathological gambling, compulsive shopping, compulsive eating, altered sexual behavior punding and dopamine dysregulation syndrome The major associated risk factor is an high intake of levodopa equivalent daily dose (LEDD). Therapeutical strategies include reduction of LEDD and consider neuromodulation techniques such as TDCS, rTMS and DBS. It seems that dopamine agonist with a greater risk of development of ICD in PD, such as pramipexolo, ropinirolo and rotigotine, show a major affinity to D3 receptors more than D2 that are more involved in other forms of addictionw. All forms of addiction seem to be linked to some cognitive dysfunction such as response, choice and reflection impulsivity, attention and working memory, response perseveration comulsivity, risk-reward decision making. By the way, we believe that inside pathology we may find even same positive traits, such as, following the Carson's model, creative and psychopathological individual may share common traits such as cognitive disinhibition, conceptual overinclusiveness and experiencing personality. We report the clinical cases of individuals with PD who show a form of impusive creativity, never manifested before, characterized by a new hyperability to obtain from waste material artistic works that often revive one professional life. We discuss potential reasons (even genetical hypothesis) explaining why a percentage of people with PD, may show suddenly in course of their disease, a new form of impulsivity and compulsivity, not directed to pathological behavior, but to form of creativity, never manifested before.

Keywords: Parkinson's disease, ICD, creativity

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S-2D5

Mindfulness and inhibitory control across different reward contexts

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Background: Previous studies suggest that behavioral addiction is characterized in part by deficient stopping behavior (inhibitory control), especially in reward contexts. Interventions have been developed aimed at improving inhibitory control, including mindfulness-based training. Though mindfulness has been associated with inhibitory control, the role of reward context has not yet been fully elucidated. The present study addressed previous limitations and focused on the role of reward context regarding the relationship between mindfulness and inhibitory control. *Method:* Seventy-five participants (31 men, 44 women) between 18-50 years old (M=30, SD=9) were included in the final sample. Participants filled out a self-report measure of mindfulness and performed a stop signal task with three conditions that varied in terms of reward context. In the neutral condition, go stimuli (stimuli to which a response was required) were letters, in the food and money condition these were pictures of food and money, respectively. *Results:* Inhibitory control was reduced in the money condition relative to the neutral condition ($p = 0.004$). Mindfulness was positively correlated with inhibitory control, but only in the money condition ($p = 0.001$). *Conclusions:* Taken together, results imply that mindfulness training should take into account the role of reward context as the relationship between mindfulness and inhibitory control seems to depend on reward context. However, results might differ when inhibitory control is required while perceiving a learned reward-related stimulus. The latter represents an open question for future research.

Keywords: mindfulness, inhibition, addiction, reward

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S-2E1

Adolescents and emerging adults suffering from Internet use disorders

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Symposium summary: Despite the growing research in the field of (Internet) gaming disorders, young individuals suffering from this new diagnosis have been especially overlooked in contrast to research on adult patients. Therefore, this symposium will focus especially on children, adolescents and emerging adults suffering from Internet use disorder symptoms and present four studies that contribute to the understanding of emergence, phenomenology and interventions especially in young individuals. In the first contribution, Kai Müller from the University hospital in Mainz, Germany, will present data from a 2-year longitudinal risk factor study on N=503 adolescents. The authors investigated the reciprocal effects of personality traits on internet-related disorders. In the second contribution, Sonja Kewitz from the Goethe-University Frankfurt, Germany, investigated the prevalence of Internet Gaming Disorder on N=413 children and adolescents that were in outpatient psychotherapy treated due to other diagnoses. In the third contribution, Christian Ebner from the Goethe-University Frankfurt, Germany, presents the concept and pilot results of an app-based approach-avoidance task training that aims at reducing symptoms of hazardous Internet use. We will close with a contribution from Hannah Schmidt, university Hospital Lübeck, Germany. She will present data from the iPIN study that investigated the effects of motivational interviewing on Internet use disorders in emerging adults.

Keywords*:* Internet Use Disorders, adolescents, development

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S-2E2

Estimated prevalence of unreported Internet Gaming Disorder in routine outpatient child and adolescent psychotherapy

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Internet Gaming Disorder (IGD) has been included in the DSM-5 as a diagnosis for further study, and Gaming Disorder as a new diagnosis in the ICD-11. Nonetheless, little is known about the clinical prevalence of IGD in children and adolescents. Additionally, it is unclear if patients with IGD are already identified in routine psychotherapy, using the ICD-10 diagnosis F 63.8 (recommended classification of IGD in ICD-10). This study investigated N = 358 children and adolescents (self and parental rating) of an outpatient psychotherapy centre in Germany using the Video Game Dependency Scale. According to self-report 4.0% of the 11- to 17-year-old patients met criteria for a tentative IGD diagnosis and 14.0% according to the parental report. Of the 5- to 10-year-old patients, 4.1% were diagnosed with tentative IGD according to parental report. Patients meeting IGD criteria were most frequently diagnosed with hyperkinetic disorders, followed by anxiety disorders, F 63.8, conduct disorders, mood disorders and obsessive-compulsive disorders (descending order) as primary clinical diagnoses. Consequently, this study indicates that a significant amount of the clinical population presents IGD. Meaning, appropriate diagnostics should be included in routine psychological diagnostics in order to avoid "hidden" cases of IGD in the future.

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S-2E3

Pilot study and concept of an app-based approach-avoidance task training aiming at reducing symptoms in students with hazardous Internet use

CHRISTIAN EBNER, INA NEUMANN, KATAJUN LINDENBERG

Goethe-University Frankfurt

Approach-avoidance task trainings show promising results in reducing symptoms of various addictions. Therefore we developed an App for Mobile Devices (PROTECTapp) to reduce symptoms of hazardous Internet use. Our paradigm involves response training to functional stimuli (approach response, swipe toward the body) and dysfunctional stimuli (avoidance response, swipe away from the body). Dysfunctional stimuli correspond to negative consequences of excessive Internet-usage and functional stimuli correspond to positive consequences of behavioural activities such as social engagement or physical activity. We conducted a pilot study to test whether this app-based approach-avoidance training is capable of reducing symptoms in students with hazardous Internet use. For this pilot study, N=40 students from a German University were randomly assigned to the PROTECTapp intervention (n=20) or the control group (n=20). The intervention group was asked to train for 6 weeks in three 2-minute-training intervals each day, using the 50 (25 functional, 25 dysfunctional) most individually relevant stimuli from a set of several hundred given stimuli. The control group was asked to use their devices as usual. Assessments were conducted right before the first training-session, after 3 weeks and after 6 weeks of training. Concept and design of the PROTECTapp and results from the pilot study are presented and discussed.

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S-2E4

Brief telephone-based intervention for adolescents and young adults with problematic Internet use: Results from the randomized-controlled iPIN study

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Background: Compared to older individuals, adolescents and young adults (AYA) have an increased risk for problematic behavior on the Internet. To date, hardly any low-threshold prevention approach for this vulnerable group exists. This study aimed to investigate the efficacy of a telephone-based brief intervention for AYA with Internet use disorders (IUD). *Methods:* In total, 8,230 German vocational students (age M=20.6, SD=4.7; 51.8% female) were screened for problematic Internet use behavior with the Compulsive Internet Use Scale (CIUS). Participants scoring at least 21 points took part in diagnostic interviews. Participants fulfilling at least two IUD criteria according to DSM-5 criteria for Internet Gaming Disorder were randomly assigned to the intervention group (n=240; up to three counseling sessions) or control group (n=257; booklet on problematic Internet use). Primary outcome parameter was the reduction of the IUD criteria. Secondary outcome parameters were the reduction of impairments caused by dysfunctional Internet use and improvements of participants' readiness and self-efficacy to change. Follow-ups were conducted after 5 and 10 months. Data were analyzed with intention-to-treat and complier average causal effect analyses. *Results: In* the intervention group, 63,8% individuals took part in at least one counseling session. While self-efficacy was improved in this group compared to the control group after 5 months, no further intervention effects were identified. Bayes statistics showed inconclusive results. *Discussion:* Low participation rates in the intervention group, low inclusion criteria, and the intensive assessment might have contributed to the lack of intervention effects.

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S-2F1

Exploratory and confirmatory Bayesian analysis of the nosographic structure of Internet Gaming Disorder

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Introduction. The diagnosis of Internet Gaming Disorder (IGD) remains controversial. This study aimed to contribute to the stabilization of the nosographic structure of IGD by specifying the network of interactions between the symptoms of IGD and uncovering the causal paths between them. *Methods.* A community-based sample of Portuguese gamers (N=127) between the ages of 18 and 55 (Mage=23.28; SD=6.26), mostly male (n=106; 83.5%) and college students (n=64; 50.5%), completed the IGDS9-SF. A large multinational community-based sample was also analyzed (N=1247; N=1254; N=5777; N=3766; N=1899; N=2477) for confirmatory purposes. These were the samples of a previous study on IGD (Przybylski et al., 2016). Bayesian Gaussian Graphical Models were used to estimate the weighted, non-directed, psychopathological network of interactions between IGD symptoms in the community-based sample of Portuguese gamers. This network was then confirmed in the multinational community-based sample. Directed acyclic graphs were used to estimate the causal paths between the symptoms of IGD. *Results.* Two network modules composed by the symptoms "use as escape", "tolerance", "withdrawal", "loss of control" and "preoccupation", "continued use", "reduced interest", "risked opportunities", and "mislead other" were found. The modules are connected through a pathway linking "withdrawal", and "reduced interest". "Withdrawal" and "reduced interest" were the most central symptoms. *Conclusion.* The IGD symptoms are organized in two communities: one composed of symptoms related to addiction, and the other one of symptoms related to excessive use of videogames. "Withdrawal" and "reduced interest" have a central role in the origin and maintenance of the IGD network.

Keywords: Internet Gaming Disorder, network, causal discovery

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S-2F2

The mediating role of the dark tetrad in the links between gaming violence and aggression: A preliminary study

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Previous research has shown relationships between gaming violence and real-life aggression, some studies showing a causal effect indicating that playing violent videogames would increase aggression. Nonetheless, the research on the underlying mechanisms supporting this relationship is currently scarce, limiting the understanding of this important topic. The dark personality traits, a variable recently associated with gaming disorder, showed promising mediating power due to its association with both gaming violence preference and real-life aggression. Therefore, this study aims to study how the dark tetrad (i.e., Machiavellianism, narcissism, psychopathy, and sadism) mediates the link between gaming violence and real-life aggression. A sample of 113 participants filled the Short Dark Triad, the Short Sadistic Impulse Scale, the Violent Video Game Preference Measure, the Aggression Questionnaire, as well as diverse videogame preference measures (e.g., time spent gaming daily). Although the results corroborated the association between violent game preference and aggression through a correlation analysis, the mediation analyses showed that the dark tetrad measures fully mediated this association. More specifically, both Machiavellianism and Psychopathy mediated the link between violent videogame preference and physical aggression, verbal aggression, and hostility. Although preliminary, these results cast doubts upon the previously inferred causality between violent gaming and real-life aggression. Instead, gaming violence would only transfer to real-life aggression in the presence of specific personality traits. This is of particular interest as individuals suffering from gaming disorder exhibit higher tendencies to express aggression in real-life when playing violent videogames, both variables being associated to the dark tetrad.

Keywords: gaming, Dark Triad, violence, aggression

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S-2F3

Online gaming and prolonged self-isolation: Evidence from Italian gamers during the COVID-19 outbreak

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Objective: The self-isolation measures employed during the COVID-19 pandemic made it difficult for basic needs to be met, thus increasing emotional distress. It has been suggested that socially meaningful online gaming buffered emotional distress during the lockdown. This study aimed to test the protective effect of online gaming during the lockdown and to investigate the differences between highly involved gamers (those who play videogames intensely without adverse consequences) and problematic gamers in this regard. *Method:* Capitalizing on a data collection that started before the pandemic, we adopted a cross-sectional between-groups study design in which gaming patterns, gaming-related variables and levels of emotional distress were compared between a pre- COVID group (N=298) and a COVID group (N=366). *Results:* Compared to the pre-COVID group, high involvement in gaming was more prominent and emotional distress was decreased in the COVID group. Moderated regression analyses further revealed that the interaction between social compensation via gaming and highly involved gaming was associated with lower levels of emotional distress in the COVID-19 group. In contrast, the interaction between gaming-related relaxation and problematic gaming predicted higher emotional distress in the COVID-19 group. *Conclusions:* This study suggests that gaming for social compensation might mitigate the experienced emotional distress during pandemic related self-isolation, whereas maladaptive gaming patterns could constitute a vulnerability factor deserving clinical attention.

Keywords: COVID-19, online gaming, problematic gaming, emotional distress, anxiety, depression

S-2F4

Gaming disorder and stigma-related perceptions of problem and non-problem gamers

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The inclusion of gaming disorder in the International Classification of Diseases (ICD-11) has generated significant debate, including strong opposing perspectives about the validity of the condition and its wider social implications. Researchers in allied health areas have argued, for example, that the gaming disorder classification enables improved assessment

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and interventions for problematic gamers. On the other hand, some scholars contend that formally recognizing excessive gaming as an addictive disorder may stigmatize the activity of gaming and individuals who play. Although there has been strong conjecture on both sides, there has been only limited empirical data to support stigma-related arguments. This talk will summarize our recent preregistered (see https://osf.io/vzebc/) experiment which evaluated the impact of the new diagnostic category of gaming disorder on stigma-related perceptions of different types of gamers. The study involved a 2 (health information: addiction vs non-addiction explanations of problem gaming) x 3 (vignette: problem, regular, and casual players) design. Participants (N=1,228) were randomly assigned to one of six groups. They were asked to read health information that provided either an addiction or non-addiction explanation of problem gaming, followed by a case vignette describing a problem gamer, a regular gamer, or a casual gamer. Participants then completed questionnaires regarding their perceptions of the vignette, including standard measures of stigma. Our findings provide needed evidence to inform continuing debate regarding the social, clinical, public health and policy implications of gaming disorder as a diagnostic category.

Keywords: gaming disorder; stigma; ICD-11 Debate; experiment

S-2F5

Student Problematic Internet Use Understood using the I-PACE model, Partial Network Correlation and Variance Partitioning

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Subtypes of Problematic Internet usage (PIU), general PIU, smartphone addiction, social media addiction, problematic internet gaming, and problematic internet pornography consumption are consistently linked with wellbeing, loneliness and FOMO. However the inter-relationships between PIU subtypes and wellbeing, loneliness and FOMO are not clear. A sample of 834 students completed measures of subtypes of PIU and correlates wellbeing, loneliness and Fear of Missing Out (FOMO). Partial correlation network was used to examine relationships between the subtypes of PIU and FOMO, loneliness and wellbeing. Such network topology identifies influential nodes with nodes central to the network (Problematic Social Media use and general PIU) having the greatest influence on the development and maintenance of PIU, wellbeing, loneliness and FOMO. Variance partitioning further explained the contribution and interaction effect of general PIU, social media and smartphone, wellbeing and loneliness in explaining variation in wellbeing, loneliness and FOMO. Some variation in loneliness (>15%) is explained by social media use, smartphone use and general PIU. The interaction between general problematic internet use and loneliness explains 15% of the vari-

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ance in male wellbeing and 7% female wellbeing. FOMO variance is explained (>32%) by variance in problematic social media use and problematic smartphone use. Sex differences were evident in the network partial correlation and response measures for all PIU subtypes except general PIU. Findings were supported by the I-PACE model and suggest Addressing problematic social media use, general PIU and problematic smartphone use in particular should be considered to address PIU and improve student wellbeing, loneliness and FOMO.

Keywords: Internet addiction, social media addictions, smartphone addiction, network of problematic internet use subtypes, variance explained by problematic internet use subtypes

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S-2G1

Development of the Metacognitions about Binge Eating Questionnaire (MBEQ)

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Background: Previous studies have suggested that metacognitions are involved in eating problems and may be relevant to the understanding of Binge Eating Disorder. In this study we aimed to develop and test the structure and psychometric proprieties of the Metacognitions about Binge Eating Questionnaire (MBEQ), as well as to explore the role of metacognitions in predicting the severity of binge eating. *Method:* Exploratory Factor Analysis and Confirmatory Factor Analysis were used to assess the factor structure of the questionnaire. *Results:* A principal components methods of factor extraction was performed suggesting a two-factor solution consisting in positive and negative metacognitions about binge eating. The two factors together accounted for 64.8% of variance, and the inter-correlation between factors was 0.69. The self-report questionnaire consisted of 24 items. *Conclusion:* The results of our study support the use of the MBEQ in patients with Binge Eating Disorder.

Keywords: Binge Eating Disorder, metacognitions, questionnaire

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S-2G2

The relationship between Problematic Instagram use and Eating Disorders psychopathology: An explanatory model

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Background: An emerging body of research has evidenced the negative influence of using and being exposed to social networking sites (SNSs) on body image. Specifically, a wide number of studies have found that image-centric SNSs use (e.g., Instagram) is associated with body dissatisfaction and body image disturbance among young women. Concerns have been raised on how the use of SNSs may be affecting the development or perseverance of eating disorders (EDs). The aim of the present study was to evaluate a model explaining how problematic Instagram use (PIU)(conceptualized as a potential behavioral addiction comprising withdrawal, conflict, tolerance, salience, mood modification and relapse) relates to EDs psychopathology. We hypothesized that PIU would be associated with ED symptoms and interpersonal difficulties through the mediating role of appearance comparison, individual psychological investment in physical appearance, and body uneasiness. *Method:* A sample of 386 female participants (mean age=26.04 ±6.73; mean Body Mass Index= 21.79±4.70) was recruited. The Eating Disorder Inventory 2, the Appearance Schema Inventory-Revised, the State Appearance Comparison Scale, and the Body Uneasiness Test were administered. *Results:* Results from structural equation modeling (fit indices: $\chi 2$= 44.54, df = 19, p <.001; RMSEA = .059; CFI = .98; SRMR = .02) showed that PIU predicted appearance comparison and psychological investment in physical appearance which in turn predicted body uneasiness. In turn, body uneasiness predicted EDs psychopathology and interpersonal difficulties. *Conclusions:* Our model provides a useful account of how eating disorder symptoms could be drawn and maintained by an addictive use of Instagram.

Keywords: Problematic Instagram use, eating disorders, social comparison

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S-2G3

Body-related factors and anxiety predict exercise dependence and eating disorders in university students: A path analysis

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Background and aims: The common potential risk factors contributing to the development of eating disorder and exercise dependence during early adulthood are still unclear. The present study aimed to examine the role of BMI, body image inflexibility, and anxiety to these two behavioral disorders symptoms in a sample of college students. *Methods:* 878 habitual exercisers (M age = 20.09 years, SD = 1.76 years) in universities participated in this study. Participants filled out demographic information, exercise behavior, questionnaire for exercise dependence (EDS-R), eating disorder (EDE-QS), body image inflexibility (BI-AAQ), and generalized anxiety disorder (GAD-7). *Results:* After controlling for age, gender and major, lower BMI was linked to more exercise dependence symptoms but not significant (β=-0.04, p=0.26), while greater BMI was significantly associated with a higher risk of developing eating disorder (β=-0.08, p<0.001). Moreover, higher body image inflexibility is significantly positive contributed to sever exercise dependence (β=0.26, p<0.001) as well as abnormal eating attitudes and behaviors (β=0.74, p<0.001). Furthermore, generalized anxiety is a significant contributor to exercise dependence symptoms (β=0.14, p<0.001) but not eating disorder symptoms (β=0.02, p=0.43). *Discussion and Conclusions:* Body image inflexibility as a common contributor to developing exercise dependence and eating disorders, suggests that the prevention and treatment of these two behavioral disorders should involve the improvement of psychological flexibility. In addition, the individual with higher BMI is more vulnerable for developing eating disorder, while those who have the sever anxiety symptoms should be given more attention to screen for exercise dependence.

Keywords: exercise addiction, eating disorder, anxiety, body image, Body Mass Index

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S-2G4

Is the three-pathway model applicable to food addiction in patients with obesity?

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Background: Although it is demonstrated that different pathways may lead to a given addictive disorder, few studies investigated these interindividual differences in patients with food addiction (FA). The objective of this study was to test the reliability and extrapolability of a three-pathway model (derived from the one proposed by Blaszczynski and Nower) to patients with severe obesity and FA, with a focus on personality dimensions. *Method:* We assessed 259 patients seeking treatment for bariatric surgery (University Hospital of Tours, France; cross-sectional study) for FA (YFAS 2.0), binge eating (BES), depression (BDI), current and maximal BMI, childhood/adulthood ADHD symptoms (ASRS, WURS), personality dimensions (BFI), and PTSD symptoms (PCL-5). We performed a hierarchical cluster analysis in patients with FA and compared the three different clusters using one-way ANOVAs. *Results:* Prevalence for FA was 28.2%. Patients with FA (vs. without FA) had higher depression, PTSD, and ADHD scores; they exhibited lower extraversion, lower conscientiousness, and higher neuroticism. The hierarchical cluster analysis differentiated three clusters of FA patients: cluster#1 (low to moderate psychopathology scores, moderate conscientiousness, low BMI and low extraversion), cluster#2 (high psychopathology scores with depression, ADHD, neuroticism and PTSD, low conscientiousness, low extraversion, low agreeableness and low openess) and cluster#3 (low to moderate psychopathology scores, moderate conscientiousness, high BMI, high extraversion and high agreeableness). *Discussion:* This study demonstrates that patients with obesity and FA exhibit interindividual differences. This suggests that different pathways may lead to FA in bariatric surgery candidates. Tailor-based interventions may be proposed depending on the patient's personality profile.

Keywords: food addiction; personality dimensions; three-pathway model; ADHD; depression

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S-2G5

A Personalized Medicine Approach to Improve Bariatric Surgery Outcomes Utilizing Psychosocial and Genetic Risk Assessments

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Bariatric surgery effectively achieves significant weight loss in obese individuals. However, adverse behavioral outcomes include weight regain, smoking resumption, and substance use disorders. The pilot study goal was to predict recidivism better using genetic data regarding reward deficiency syndrome (RDS) in evaluating outcomes in bariatric surgery patients. *Methods:* The study examined the presence of risk alleles associated with reward using the Genetic Addiction Risk Severity (GARS) test in bariatric surgery patients (n=34) and psychosocial trait questionnaire results (n=26). *Results:* Six months post-surgery saw a significant ΔBMI (M=10.0±1.05 kg/m2) and mean percent excess weight loss (52±3.7%). Additional findings included significant positive correlations for the DRD4 risk allele and Δweight loss (kg) (p=0.04) and ΔBMI (p=0.02), and positive correlations between DRD4 and preoperative weight (p=0.03) and preoperative BMI (p=0.03). GABRB3 correlated with eating expectancies (p=0.008) and food craving behavior (p=0.0003), and an inverted correlation between the catechol-O-methyltransferase (COMT) allele type and eating expectancies (p=0.04). Heterozygosity was also significant. Psychosocial questionnaire responses indicated reported sleep quality changes, food cravings, depressive-like symptoms, and food addiction scores similar to studies surveying obese patients. *Conclusion:* As expected, weight loss was significant, with genetic results showing a positive correlation between the DRD4 (associated with ADHD) risk allele and ΔBMI and Δweight. An array of psychosocial questionnaire scores identified some interesting, specific allelic associations. While follow-up at12 months may strengthen and confirm the six-month data, this is likely the first report of the potential value of a personalized medicine approach, including genetic testing.

Keywords: obesity, bariatric surgery, reward deficiency syndrome, addiction, precision medicine, psychosocial risk factors, genetic risk assessment

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S-3A1

Cross-cultural studies on compulsive sexual behaviors

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Symposium summary: Research into compulsive sexual behaviors (CSBs), including problematic pornography use (PPU), has proliferated in the past two decades, culminating in the inclusion of a novel diagnosis of Compulsive Sexual Behavior Disorder in the 11th edition of the International Classification of Diseases (World Health Organization, 2019). However, most prior work in the field was characterized by simplistic methodological designs, often lacked quality measurements and theoretical integration, and typically used homogenous, relatively small samples from WEIRD (i.e., White, Educated, Industrialized, Rich, and Democratic) countries (Grubbs et al., 2020; Grubbs & Kraus, 2021), resulting in considerable knowledge gaps and limited knowledge on culturally diverse individuals. The overarching aims of this symposium are to provide insights on CSBs in cross-cultural settings. We will (1) examine the heterogeneity and homogeneity of CSBs' symptom structure and culture-related predictors of CSBs (Lewczuk et al.), (2) discuss CSBs in relation to comorbid disorders, such as depression (Kraus et al.), (3) identify potential overlaps between CSBs and paraphilic disorders (Nagy et al.), (4) evaluate the potential applicability of the moral incongruence model of PPU in different cultures (Bőthe et al.), and (5) examine the associations between a wide range of pornography use motivations and PPU (Koós et al.). This symposium will provide crucial insights to improve the theoretical understanding and differential diagnosis of CSBs and help identify potential treatment targets for prevention and intervention programs in a culturally-informed manner, with a special focus on culturally diverse, underserved, and underrepresented populations, promoting a more inclusive perspective on CSBs.

Keywords: compulsive sexual behavior, cross-cultural survey study, hypersexuality, problematic pornography use, sex addiction

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S-3A2

A cross-cultural study on compulsive sexual behavior disorder and problematic pornography use in Brazil, China, Germany, Poland, and the USA, based on males between 18 to 35 year old

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Background: Direct and reliable cross-cultural analyses and comparisons of variables related to sexual functioning (including compulsive sexual behavior disorder [CSBD] and problematic pornography use [PPU]) are scarce, and the current study is aimed to help fill this gap. The study is focused on the (a) prevalence, (b) hetero- or homogeneity of symptom structure, and (c) predictors of CSBD and PPU (including culture-related predictors like religiosity, sexual conservatism, sexual guilt, and moral incongruence regarding pornography use) between analyzed samples. *Method:* The study is based on an online survey, and a sample of 1600 participants, males aged 18 to 35 years old, residing and originating in one of five countries: Brazil, China, Germany, Poland, and the USA (320 participants per country). *Results:* Preliminary analyses indicate that there are significant differences between analyzed countries, including declared frequency of pornography use (lowest in Brazil and China), frequency of dyadic sexual activity (highest in Brazil and China), dating apps use for sexual encounters (decidedly highest in the USA), sexual satisfaction (highest in China and Brazil), moral disapproval of pornography, as well as religiosity (both highest in Brazil), perceived

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openness toward sexuality in one's country (lowest in Poland and China), as well as differences in the prevalence and predictors of CSBD and PPU. *Conclusions:* There are significant cross-cultural differences in problematic sexual behavior, which has significance for the diagnosis, therapy as well as further scientific research on CSBD and PPU.

S-3A3

Compulsive sexual behaviors and comorbid disorders – Findings from a 45-country survey

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Background: Research into compulsive sexual behaviors has increased in the past 25 years, but most studies have been characterized by several shortcomings, including the focus on WEIRD (i.e., White, Educated, Industrialized, Rich, and Democratic) countries, limiting the generalizability of the findings for diverse populations. The present study aims to provide insights into compulsive sexual behaviors across more than 40 countries and examine the associations between compulsive sexual behaviors and potential comorbid disorders in cross-cultural settings. *Method:* We use data from the International Sex Survey (ISS). The ISS is a large-scale, international, multi-lab, multi-language study using cross-sectional survey methods involving 45 countries from five continents. Data collection takes place between the fall of 2021 and the spring of 2022. Compulsive sexual behaviors and comorbid disorders (e.g., depression, anxiety, alcohol use disorder, attention-deficit hyperactivity disorder) are assessed with well-validated scales. Associations between the variables will also be examined using Structural Equation Modeling (SEM). The expected total sample size is 90,000 participants, with a minimum of 2000 participants from each participating country. *Expected results:* As the present study is exploratory in nature (i.e., no previous large-scale study has examined compulsive sexual behaviors and comorbid disorders in cross-cultural settings), we do not have a priori expectations about the findings. *Conclusions:* This study will provide important insights to improve the theoretical understanding of compulsive sexual behaviors and differential diagnosis and help identify empirically supported treatment targets for future public health campaigns and intervention programs, considering potential cultural differences yet to be identified in prior studies.

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S-3A4

Do paraphilic disorders and compulsive sexual behavior disorder occur together? – Findings from a 45-country cross-cultural study

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Background: According to the ICD-11 diagnostic criteria, paraphilic disorders (PDs) are exclusion criteria in the diagnosis of compulsive sexual behavior disorder (CSBD). However, studies suggest positive associations between CSBD and paraphilic interests. Our knowledge about both paraphilias and CSBD is further biased, as most studies have been conducted on WEIRD (i.e., White, Educated, Industrialized, Rich, and Democratic) and dominantly clinical samples. The aims of the present study are to examine the co-occurrence rates and associations between PDs and CSBD in large, culturally diverse samples, including non-WEIRD countries. *Method:* The International Sex Survey is a large-scale, cross-cultural, collaborative study with 40+ participating countries. Data collection is conducted between the fall of 2021 and the spring of 2022. Each participating country is expected to collect a minimum of 2000 participants, including diverse populations (e.g., sexual minorities) with a balanced gender ratio (expected total sample size N=90,000). Paraphilias (e.g., voyeurism) and CSBD are assessed with ICD-11-based scales (i.e., Paraphilic Disorder Screening Scale, Compulsive Sexual Behavior Disorder Scale). *Expected results:* Based on previous preliminary studies, participants meeting the criteria of one or more PDs are expected to report higher levels of CSBD, and participants scoring above the cutoff score of CSBD-19 would show a greater likelihood of meeting PD criteria. *Conclusions:* Assessing the co-occurrence and strength of the associations between PDs and CSBD will contribute to the development of clinical protocols for more accurate differential diagnosis and help improve current treatment options for PDs and CSBD in a culturally-informed manner.

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S-3A5

Cross-cultural examination of the moral incongruence model of problematic pornography use – Insights from the 45-country International Sex Survey (ISS)

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Background: Although research related to problematic pornography use (PPU) has proliferated in the past two decades, most prior studies were characterized by homogenous, relatively small samples from WEIRD (i.e., White, Educated, Industrialized, Rich, and Democratic) countries, a lack of substantive integration, and a lack of large-scale, collaborative studies between research laboratories, resulting in crucial knowledge gaps. This presentation aims to shortly describe the study protocol of the International Sex Survey and provide insights on the applicability of the Moral Incongruence Model of PPU across 40+ countries, focusing on potential cultural differences. *Method:* A large-scale survey study is conducted across 45 countries from five continents between the fall of 2021 and the spring of 2022. Moral incongruence towards pornography use, PPU, and related correlates (e.g., religiosity) are assessed with well-validated scales. Associations between the variables will be examined using Structural Equation Modeling (SEM). The expected total sample size is 90,000 participants, with a minimum of 2000 participants per country. *Expected results:* As the present study is exploratory in nature (i.e., no large-scale cross-cultural studies have examined the different pathways of PPU based on the Moral Incongruence Model), we do not have a priori expectations about the findings. *Conclusions:* Although preliminary studies are available on the applicability of the Moral Incongruence Model of PPU outside of the US, the present study contributes to a better understanding of the different pathways that may result in PPU in diverse cultures, furthering theoretical knowledge and providing key insights for developing more efficient interventions targeting PPU.

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S-3A6

Do the motivational background of pornography use frequency and problematic pornography use differ? Findings from a 45-country survey study

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Background: Despite growing research interest, there is a relative lack of studies examining the motivational basis of pornography use. Recent studies suggest that non-problematic and problematic pornography use (PPU) might have different motivational backgrounds. However, most previous studies were conducted in WEIRD (i.e., White, Educated, Industrialized, Rich, and Democratic) countries. The aim of the present study is to examine the associations between pornography use motivations, PPU and pornography use frequency (PUF) across 40+ countries and identify potential cultural, gender, and sexual orientation-based differences. *Method:* A large-scale survey study is conducted across 40+ countries between the fall of 2021 and spring of 2022. Pornography use motivations are assessed with the Pornography Use Motivation Scale (PUMS), PPU with the Problematic Pornography Consumption Scale (PPCS), and PUF with an item about respondents' past-year pornography use frequency. Associations between the variables will be examined using Structural Equation Modeling (SEM). The expected sample size is a minimum of 2000 participants per country (i.e., total expected N=90,000), with a balanced gender ratio. *Expected results:* Based on previous studies, positive and moderate associations are expected between stress reduction, emotional avoidance, and boredom motivations and PPU, and positive and weak-to-moderate association between boredom, stress reduction, and sexual pleasure motivations and PUF. Potential differences between countries, genders, and sexual orientations will be examined in an exploratory manner *Conclusions:* Examining the motivational basis of pornography use may contribute to the identification of potentially at-risk users in an early stage, when the behavioral components of problematic use are not easily detectable.

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S-3B1

Clinical and psychological features of persons with Internet dependence: Experience of a pilot research

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The prevalence of Internet addiction (IA) is growing steadily. The purpose of the study was to investigate the socio-demographic characteristics, clinical varieties, and profile of psychopathological symptoms of mental disorders in patients with IA. The study included 2 groups: 1) Individuals with IA , 44 people aged 16 to 34 years, males - 33, females - 11 2) The control group included 120 people aged 19 to 30 years, male - 90, female - 30. Groups were identified at the testing stage based on the total score on the Chen Internet Addiction Scale (CIAS). The main group included individuals with CIAS >65 points. We used the specially developed Unified Study Card, MINI, HADS, Beck Depression Questionnaire (BDI), Prodromal Questionnaire-16 (PQ-16), and SCL-90-R, Among IA subjects there were more persons with secondary specialized education and unemployed. The family burden of addiction and psychiatric disorders did not differ in both groups, and the heredity of somatic diseases was lower in the IA group. IA group consumed less alcohol and smoked. In the IA group a psychiatric diagnosis was detected 9 times more often. The severity of affective and anxiety disorders was higher in the IA group, while the risk of developing psychosis was low, which allows us to consider the symptoms of IA outside the framework of subpsychotic mental disorders. The features of the psychopathological symptoms of IA were: total "tension" of the psychopathological profile; a relatively uniform and slightly specific profile of psychopathological symptoms with a certain tendency to the prevalence of personality-related stress manifestations.

Keywords: Internet addiction, socio-demographic characteristics, clinical features, comorbid psychopathological conditions, profiles of psychopathological symptoms

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S-3B2

Garbage in, garbage out? Improving the quality of behavioral addiction data from panel and crowdsourced samples

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Background: The use of crowdsourced and panel survey data in behavioral addiction research has become widespread. However, the validity of data obtained from newer panels such as Qualtrics has not been extensively evaluated and has been criticized for begin of potentially low quality. Furthermore, research reviews of gambling addiction literature suggest that most researchers are using view measures to evaluate and improve the quality of their collected data. *Method:* To address these goals, we present data from a panel sample of 600 regular video gamers (gaming at least one hour per week, every week, for the past three months), recruited via Qualtrics in Canada, to evaluate the quality of data obtained for Qualtrics's internal data screening process and to demonstrate an implementation of best practices for maximizing crowdsourced/panel data quality. *Results:* The results of the study reveal that while the paid internal data quality processes of panel companies flag and remove many low-quality participants, there is still a large portion of participants presented by companies such as Qualtrics as high-quality that are likely fake responses that need to be screened out. *Conclusions:* The presentation will outline a rigorous, tested data screening protocol, including step-by-step application, for crowdsourced samples in behavioral addiction research for maximizing data quality that is recommended for any researchers using panel or crowdsourced recruitment in their work.

Keywords: Gaming, panel, crowdsourced, Qualtrics, data quality

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S-3B3

Gambling and COVID-19 – Swedish national gambling data from a state-owned gambling sports and casino operator

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The lockdown of sports and gambling venues during COVID-19 caused a fear of increased gambling on other online gambling types, with a risk for transfer to more addictive gambling than otherwise. This study aimed to analyze changes in gambling activity during COVID-19-affected periods. This study includes gambling tracking data from the Swedish state-owned gambling operator Svenska Spel Sports & Casino (sports betting, online casino, online bingo, poker). It included all individuals who gambled at least once from 10/02/2020 to 19/07/2020. The study period was divided into four periods, depending on their expected level of COVID-19 impact on gambling opportunities: pre-COVID period, and three COVID-affected periods (sports cancellation, emerging return of sports, substantial return of sports). Mixed models were used to analyze changes in gambling activity for each gambling type and for each period compared to the pre-COVID period. Models were estimated for two weekly gambling variables (wagers and number of gambling days) for each gambling type and adjusted for gender, age and initial gambling involvement (gambled or not during the first three weeks of the study). Results types differed markedly between gambling types. Sports betting followed the pattern of an apparent decrease and a gradual normalization but end levels significantly below pre-pandemic levels. In contrast, online poker and bingo frequency/intensity increased upon sports lockdown but were not sustainable. Regarding online casino, no significant change was observed. Dramatic changes in the content of the gambling market may divert some gamblers to other gambling types, but maintained effects could not be demonstrated.

Keywords: COVID-19, gambling disorder, gambling tracking data, generalized linear mixed models, on-line gambling

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S-3B4

Influence of bingo halls temporary closure due to Covid-19 on gamblers' reported perceptions and behaviours.

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Background: In 2020, the Covid forced the shutdown of Bingo halls for a few months in the province of Quebec, Canada. This communication describes some changes it had on the clientele of bingo players, comprised mainly of women who were retired. *Method:* A longitudinal design served to examine reported behaviours and perceptions of Bingo players on different variables including Canadian Problem Gambling Index (CPGI) scores, consequences on different life aspects, internet gambling activity and money spent on other forms of gambling than bingo. Graduate students conducted phone interviews on two occasions: (1) during the summer of 2019 and (2) during the summer of 2020, three months after the bingo halls closure (n = 211). *Results:* At follow-up, as compared to pre-closure, bingo players were less numerous in proportion to report moderate to high risks of problem gambling and more numerous to gamble on the Internet. At both measures, the majority of players did not report negative consequences on most aspects of their life. There was no difference between measures on weekly money spent on other gambling activities than bingo. *Conclusion:* Based on this longitudinal study, gambling characteristics reported by Quebec participants playing in bingo sites were different after bingo halls closure. A discussion will explore the important links between money spent in bingo halls and the CPGI categorisation of bingo player. The discussion will also identify study limitations.

Keywords: Gambling, Bingo players, problem gambling

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S-3B5

Predictors of cyberchondria during the COVID-19 pandemic: A supervised machine learning approach

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Background and aims: Cyberchondria is characterized by repeated and compulsive online searches for health information, resulting in increased health anxiety and distress. This behaviour has been considered an emerging public health issue, which may have been exacerbated by the COVID-19 pandemic. The present study aimed to investigate changes in the severity of cyberchondria during the pandemic and identify predictors of cyberchondria at this time. *Method:* Self-reported data on cyberchondria severity (before and during the pandemic), attachment style, impulsivity traits, somatic symptoms, COVID-19 related fears, health anxiety, and intolerance of uncertainty were collected from 725 participants using an online survey distributed in French-speaking European countries during the first wave of the COVID-19 pandemic. *Results:* COVID-19 pandemic affected various facets of cyberchondria: cyberchondria-related distress and interference with functioning increased, whereas the reassurance facet of cyberchondria decreased. Using supervised machine learning regression analyses, the specific COVID-19-related fears and health anxiety emerged as the strongest predictors of cyberchondria-related distress and interference with functioning during the pandemic. *Conclusions:* These findings provide evidence about the impact of the COVID-19 pandemic on cyberchondria and identify factors that should be considered in efforts to prevent and manage cyberchondria at times of public health crises. In addition, the findings have implications for the conceptualization and future assessment of cyberchondria.

Keywords: cyberchondria, COVID-19, machine learning

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S-3C1

Accelerated repetitive transcranial magnetic stimulation (rTMS) in the treatment of gambling disorder: Preliminary findings from a double-blind, sham-controlled trial

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Gambling disorder (GD) is a behavioral addiction in which dysfunctions in prefrontal activity have been proposed as relevant pathophysiological correlates. Effective treatment strategies for GD remain a challenge. Pilot studies indicated repetitive transcranial magnetic stimulation (rTMS) as a promising technique to target craving as well as other symptoms of GD. This is a between-subject, randomized, double-blind, sham controlled study to investigate the efficacy of accelerated rTMS over prefrontal cortex to treat GD. The study consisted of 3 phases: (1) an outpatient screening phase, during which patients were screened to assess their eligibility; (2) a 2-week, intensive treatment phase, during which subjects received active or sham rTMS protocol; and (3) a follow-up visit 30 days after the intensive treatment phase. Sixteen treatment-seeking patents with GD were enrolled. Active group (n=8) underwent 1 week of intensive rTMS treatment (15Hz; 5 days/week, 120% resting motor threshold, three times a day for a total of 15 stimulation sessions) of the left dorsolateral prefrontal cortex (DLPFC). Sham group (n=8) underwent the same treatment schedule but with placebo rTMS treatment. GD severity and treatment response were assessed at the baseline and after the intensive treatment phase using Yale Brown Obsessive Compulsive Scale adapted for Pathological Gambling (PG-YBOCS), the Gambling Symptom Assessment Scale (G-SAS) a TimeLine Follow Back (TLFB) and a VASc (Visual Analogue Scale) for craving. The presentation discusses the preliminary findings obtained by treating these sixteen patients.

Keywords: gambling disorder, repetitive transcranial magnetic stimulation, neuromodulation, craving, DLPFC, cognitive control

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S-3C2

As-needed intranasal naloxone for the treatment of gambling disorder: A randomized control trial

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We are reporting results from a single-center, 12-week, double-blind, placebo controlled clinical trial comparing intranasal naloxone to placebo in the treatment of gambling disorder (GD). Participants were instructed to use the nasal spray (naloxone or placebo) up to four times daily in response to gambling urge. In addition to pharmacotherapy all participants received psychosocial support during the trial. The primary endpoint was the change in gambling urge measured by the Gambling Symptom Assessment Scale (GSAS). Secondary objectives included other gambling a psychosocial measurements and drug safety. Out of 126 participants enrolled in the trial 106 (84%) completed the entire trial. Drop-outs were more common in the placebo group. The study found no difference in the primary endpoint GSAS at the end of treatment, both groups had a similar reduction in gambling urge. The results of other gambling related parameters showed similar results. Intranasal naloxone was deemed safe, with no severe adverse events attributed to it. In this presentation we present the main results of this pharmacotherapy trial. In addition to this we will present unpublished results from further analysis of the trial population. This includes analysis of the effects of medicine compliance on participant trial outcome (regardless of treatment allocation) and factors that are related to a better treatment outcome. Clinical relevance of the findings will be discussed.

Keywords: gambling disorder, pharmacotherapy, randomised control trial, intra-nasal naloxone

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S-3C3

Impact of CBT based treatment and therapeutical contract on problem gambler treatment

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This study aims to test the efficacy of a Cognitive Behavioral Therapy (CBT) combined with an initial therapeutical contract (TC) in a Portuguese treatment centre for Problem Gamblers (PG) with variables like; gambling abstinence, self-exclusion, limited access to money, psychotherapy sessions for PG and significant others, Gamblers Anonymous attendance, therapeutical exercises, pre-determined consequences if relapse, among others and a Relapse Prevention Program (RPP). As far as we are aware, this is the first study that evaluates the efficacy of a psychotherapeutic program in the treatment of PG in Portugal. The same self-questionnaire assessment data was collected at two different times: moment 1 (N = 150) of pre-treatment was completed after the first session and moment 2 (N = 30), between the 15th and the 20th psychotherapy session. The protocol focused on socio demographics, gambling behavior's, relapse questionnaire, gambling disorder assessment and other diagnostics measures. Preliminary results showed significant differences between moment 1 and moment 2 concerning the improvement of a psychological measure of quality of life; recovery in overall symptomatology (depression, anxiety, sensorial interference, obsession/compulsion and psychoticism) and decrease of motor impulsivity. It is expected that abstinent group will show differences in type/mode of gambling, and respective adherence to different variables of the TC at moment 2. Finally, different motivations seem to appear concerning the relapse process, its treatment and/or prevention. This study shows how the combination of CBT, TC and RPP helps to improve clinicians' intervention and achieve better treatment results. It also provides information for responsible gambling interventions.

Keywords: problem gambler, treatment, intervention, therapeutical Contract, CBT

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S-3C4

Using virtual reality to reduce problematic gambling in young adults

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Background: College students exhibit problematic gambling (PG) at a prevalence rate that is 2-4 times higher than any other adult population. Previously, we published a smoking cessation intervention whereby participants who searched for and crushed virtual cigarettes in a virtual reality (VR) environment displayed significant reductions in real-life nicotine dependence and smoking (Girard et al., 2009). The current project's goal extends this intervention to young adults with PG to reduce real-life gambling. *Method:* 80 participants with PG are being recruited. Half of the participants are immersed in a VR environment in which they search for and destroy virtual gambling stimuli (e.g., slot machine, poker chips, dice, Fan Duel stimuli, Lucky-7 icons, etc.), while the remaining participants are immersed in a VR control task. The intervention consists of 4 lab sessions over a 2-week period and an online follow-up 1 week later. PG is characterized by administering validated assessments. *Results:* Preliminary data characterizing the frequency and types of gambling that college student engage in have been collected from 41 participants. We are currently collecting data on the efficacy of our VR intervention to reduce PG. We will compare these results to our previous studies showing that VR is successful in reducing real-life cigarette and vaping use. Lastly, self-efficacy will be discussed as a potential mechanism underlying the strength and efficacy of VR in reducing problematic behaviors. *Conclusions:* VR can be a powerful and engaging platform in which PG and other addictions can be reduced. Treatment strategies using VR are discussed.

Keywords: gambling, virtual reality, intervention, online sports gambling

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S-3C5

Predictors of suicide attempts in male UK gamblers seeking residential treatment

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Disordered gambling can have serious negative consequences for the individual and those around them. Previous research has indicated that disordered gamblers are at an increased risk of suicidal ideation and attempts. The current study sought to utilise data from a clinical sample to identify factors that are associated with prior suicide attempts. The sample included 621 patients entering a gambling-specific residential facility in the UK. A series of statistical tests were run to identify clinical and sociodemographic variables associated with suicide attempts. Of the 20 variables analysed using Chi-square statistics, five were significantly associated with the outcome variable (lifetime attempted suicide): loss of family relationships, loss of home, prior depression, prior suicidal thoughts, and medication use. Regression analysis showed that individuals were more likely to have reported suicide attempts if they had experienced loss of family relationships, loss of a home, prior depression, prior suicidal thoughts, or were taking medication compared to those not reporting such individual events. Disordered gamblers are vulnerable to suicide; a number of factors have been identified in the current study that predict an increased likelihood of attempted suicide. The factors mainly revolve around loss: not financial loss, but rather disintegration of an individual's support network and deterioration in the individual's mental health. Findings indicate that isolation and negative affect associated with gambling are most influential in attempted suicide and should therefore be more strongly considered when creating and providing the legislative, educational and treatment environments for those experiencing gambling related harm.

Keywords: gambling, disordered gambling, suicide, treatment

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S-3D1

Interface of internet, social media and alcohol use

INA KONING[1], YATAN PAL SINGH BALHARA[2] (chairs)

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Symposium summary: A distinction between behavioral addictions and substance addictions is often made. Yet, in this symposium we present an overview of four presentations that link digital media and alcohol use in different ways. In the first presentation, Singh Balhara describes how the interface of internet and social medial platforms can impact the diverse aspects related to alcohol use. These include shaping the perception of the public, attitude of the potential consumers, aspects related to alcohol use (including patterns and context of use), public discourse on the approach to address the alcohol use disorders. Second, Geurts will talk about the domain and/or substance specificity of self-efficacy by investigating longitudinal relations between general self-efficacy and alcohol-specific self-efficacy and alcohol use, cigarette use and digital media use among adolescents. In the third presentation, Koning will share some preliminary findings on the shared and unique factors contributing to alcohol and problematic social media use among youth. Last, Spijkerman will discuss her findings on youth with alcohol use disorder and the prevalence of comorbidity with gaming disorder. There is a need to study the complex interplay of the various factors that underlie the connection between digital media use and alcohol use. The current symposium aims to offer insights into certain salient aspects of this interaction based on the research findings from India and Netherlands.

Keywords: social media disorder, internet use, alcohol use, gaming disorder, comorbidity

S-3D2

Alcohol use related Internet search behavior and reporting on alcohol availability in online media during COVID- 19: Observations from India

YATAN PAL SINGH BALHARA

National Drug Dependence Treatment Center and Department of Psychiatry

The nationwide lockdown triggered by the COVID-19 pandemic resulted in a 41-day prohibition on the sale of alcohol. The impact of an interruption in the alcohol supply chain and difficulty in accessing healthcare facilities during the lockdown can be better understood by tracking internet interest for alcohol use-related search queries. Also, the media have an important influence in moulding public opinion, attitudes, and conversation on a wide range of issues, including health. This presentation shall focus on findings from the evaluation of

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the shift in internet search interest for keywords representing various alcohol-related themes throughout India's lockdown period. Also, the coverage of alcohol sales on internet during India's third phase of lockdown shall be discussed.

S-3D3

How specific is alcohol-specific self-control? A longitudinal study of the mediating role of alcohol-specific self-control in the relation between general self-control and adolescent alcohol use

SUZANNE GEURTS, INA KONING, CATRIN FINKENAUER

Utrecht University

Background: Although accumulating studies indicate that alcohol-specific self-control can be useful in predicting adolescent alcohol use, little is known about its specificity. This longitudinal study aimed to advance our understanding of domain-specific self-control by examining whether alcohol-specific self-control mediates the effect of general self-control on adolescent alcohol use or has generalizing effects by also mediating the effect of general self-control on other behavior requiring self-control (adolescent digital media use and smoking). *Methods:* Data from 906 adolescents aged 11-14 years who were enrolled in the Dutch study Prevention of Alcohol Use in Students were used. Data were collected using online questionnaires at four annual measurements. *Results:* Structural equation modelling revealed that higher alcohol-specific self-control fully mediated the effect of higher general self-control on alcohol use. Alcohol-specific self-control did not mediate the effect of higher general self-control on digital media use, but did partially mediate the effect of higher general self-control on smoking. *Conclusions:* These results suggest that alcohol-specific self-control is domain-specific, but not necessarily substance-specific. The domain-specificity of alcohol-specific self-control provides evidence for its theoretical relevance for the explanation of adolescent alcohol use. It also suggests leverage points for intervention programs focusing on improving alcohol-specific self-control to reduce adolescent alcohol use.

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S-3D4

Shared and unique factors in the understanding of alcohol use and problematic social media use.

INA KONING

Utrecht University

In recent years, the prevalence of early adolescence drinking alcohol declined significantly, whereas the (problematic) use of social media increased. The aim of this longitudinal study was to identify shared and unique factors that contribute to adolescent alcohol use and/or problematic social media use. Preliminary analyses demonstrated that demographic characteristics (age, level of education, gender) and school truancy were less relevant for problematic social media use than for weekly alcohol use. On the other hand, parent modelling behavior contributed to adolescents' social media use and not weekly drinking. It seems as if there are shared as well as unique factors contributing to alcohol use and problematic social media use among youth. Interventions targeting youth and/or their parents may put emphasize on the shared factors in their programs.

S-3D5

Discussion: Is there an intersection between alcohol use and digital media addiction?

RENSKE SPIJKERMAN

Parnassia Group Academy, Brijder Youth Addiction Treatment

All previous presentations point at the connection between digital media and alcohol use. Yet, data from the Dutch addiction care center shows otherwise. How to go from here in future research?

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S-3E1

Buying-shopping disorder: Conceptualization and underlying mechanisms

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Symposium summary: The symposium will be addressing new findings concerning the conceptualization and underlying mechanisms of compulsive buying shopping disorder (BSD). The first talk (Laskowski et al.) will give an overview about potential diagnostic criteria for BSD developed based on an international Delphi study. Neuropsychological profiles of individuals with binge spectrum eating disorders and comorbid BSD will be addressed by the second presentation (Fernandez-Aranda et al.). The third talk (Kessling et al.) will focus on aspects of self-regulation that affect problematic use of social network sites and online shopping. In the last talk (Challet et al.), findings regarding the vulnerability to marketing in relation to BSD will be reorted.

Keywords: buying-shopping disorder, diagnostic, correlates

S-3E2

Development of diagnostic criteria for buying-shopping disorder by using the Delphi method

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[3]Flinders University, Adelaide, Australia
[4]General Psychology: Cognition and Center for Behavioral Addiction Research (CeBAR), University of Duisburg-Essen, Duisburg-Essen, Germany
[5]Technical University of Dresden, Dresden, Germany

Background: Buying-shopping disorder (BSD) is associated with burden of suffering, impairment in important areas of functioning, distress, reduced quality of life and other negative consequences. Even though it has been described for over 100 years of clinical history it is still not included in the classification systems as an independent mental health disorder and there are no formal diagnostic criteria. The aim of the current study is to use the Delphi methodology to reach expert agreement concerning appropriate diagnostic criteria for BSD.

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Method: First and last authors of scientific publications concerning BSD were included. The international systematic online survey included two rounds with feedback using the Delphi method. *Results:* 138 international experts from 15 countries completed the two rounds of the Delphi survey. Based on the experts' consensus, the study group proposed diagnostic criteria for BSD. *Discussion:* The results of the Delphi study, the proposal of the diagnostic criteria and future research directions will be presented and discussed.

S-3E3

Executive functions in binge spectrum eating disorders with comorbid compulsive buying and therapy implications

FERNANDO FERNÁNDEZ-ARANDA[1], LUCERO MUNGUÍA[1], IGNACIO LUCAS[1], SUSANA JIMÉNEZ-MURCIA[1], BERNAT MORA-MALTA[2], ROSER GRANERO[2], ROMINA MIRANDA-OLIVOS[1], ISABEL SÁNCHEZ[1], JULIA TESTA[1], MARIA LOZANO-MADRID[1], ROBERT TURTON[1]*

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Background: The aims were to explore if bulimic spectrum disorders (BSD) patients, who also present comorbid compulsive buying (CB), could represent a specific subtype considering its neuropsychological performance; to present a descriptive analysis of different clinical features; and to explore how these variables could influence treatment outcome. It was hypothesised that the comorbid group will present worse neuropsychological performance that will lead to a worse treatment outcome. *Method:* The study has a longitudinal design. Women (N = 75) diagnosed with BSD, BSD + CB and Healthy Controls (HC); completed an evaluation of: cognitive flexibility, decision making, eating disorder (ED) symptomatology, psychopathological state and personality traits. *Results:* BSD + CB was the group with the most severe clinical profile, worst treatment outcome and higher neuropsychological impairment, than other groups. Path-analysis evidenced that deficits in decision making were associated with bad treatment outcome, while deficits in flexibility with the presence of the comorbidity. Self-directedness and novelty seeking were associated with the neuropsychological performance and the comorbidity. *Conclusions:* BSD + CB exhibit a worse clinical and neuropsychological profile that seems to be related with the treatment outcome, which should be taken into account for the establishment of specific treatment approaches.

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S-3E4

Dealing with everyday temptations: How aspects of self-regulation affect problematic use of social network sites and online shopping

ANNICA KESSLING, ELISA WEGMANN, MATTHIAS BRAND, STEPHANIE ANTONS

General Psychology: Cognition and Center for Behavioral Addiction Research (CeBAR), University of Duisburg-Essen, Duisburg-Essen, Germany

Background: The risk of problematic use of online applications, such as social networks and online buying/shopping, has notably increased in recent years. Individuals with higher symptom severity often report decreased self-regulation, prompting consideration of possible contributing factors such as intrinsic motivation, attitude towards temptation enactment, and self-regulation strategies (SRS). Based on the Interaction of Person-Affect-Cognition-Execution (I-PACE) model, the aim of the present study was to investigate mediation effects of SRS on the relationship of intrinsic motivation and symptom severity of Social Network Use Disorder (SNUD) and Online Buying-Shopping Disorder (OBSD). *Method:* A sample of 322 participants answered an online survey including the Treatment of Self-Regulation Questionnaire, SRS (frequency, difficulty, success), Assessment of Criteria for Specific Internet-use Disorders (ACSID-11), and Valuation of Temptation Enactment (VOTE). *Results:* Structural equation modeling revealed that different measurements of SRS mediate the relationship between intrinsic motivation and symptoms of both SNUD and OBSD as measured by the ACSID-11. The models differ to small extent, as the mediation effect of SRS success in the OBSD sample could not be confirmed. VOTE was found to positively moderate the relationship between intrinsic motivation and severity of SRS regarding SNUD. *Conclusion:* Results indicate that self-regulation and associated aspects have an impact on symptom severity of SNUD and OBSD. This study provides preliminary insights into the potential relevance of intrinsic motivation, SRS, and the attitude towards temptations in prevention and intervention programs and the comparability of SNUD and OBSD which may drive future research on additional similarities or differences.

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S-3E5

Buying-Shopping Disorder and the role of vulnerability to fashion-related marketing in a community sample of 242 adult women

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Background: The vulnerability to marketing has been poorly explored in relation to Buying-Shopping Disorder (BSD). The objectives were to investigate the influence of several fashion-related marketing factors in the purchase intention of people with potential BSD (PBSDs) compared to healthy controls (HCs), and to explore whether vulnerability to marketing, among other risk factors of BSD, may be associated with a higher severity of BSD. *Method:* An online survey was completed by 242 women recruited through social networking. The survey included the Compulsive Buying Scale (CBS), the Buying Motives Questionnaire (BMQ), the UPPS-P Impulsivity Scale (UPPS-P) and the Rosenberg Self-Esteem Scale (RSES). Participants also completed an experimental task designed to investigate the level of vulnerability to marketing with variations in price, brand and packaging factors in several fashion-related purchase situations. Participants had to explain their choice in an open-ended item for each situation, and their responses were analysed through a qualitative analysis *Results and Conclusions:* The 34 participants with PBSD displayed a higher level of vulnerability to marketing, except for the packaging factor, compared to the 208 HCs. HCs were less influenced by the price (priority given to the respect of the imposed budget) and by the brand image. Characteristics that were associated with a higher severity of BSD were higher levels of positive urgency, lack of premeditation and coping motive, but not the level of vulnerability to marketing. Thus, vulnerability to marketing may favour the appearance of BSD, while its severity may be more linked to personality dimensions.

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S-3F1

The meaning of money in gambling

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Background: Money plays a complex role in the development of gambling problems. It is one key motivator to gamble. Problem gamblers often see money only as a mean to gamble and feel the urge to chase back their losses. Furthermore, money debts are one of the main reasons to seek for professional help. The presentation will address the sparse research evidence on associations between money attitudes and gambling and introduce a new instrument assessing these attitudes among gamblers. *Methods:* Analyses are based on one cross-sectional and two longitudinal studies conducted in Bavaria between 2014 and 2022. Existing measures of attitudes towards money were translated from English to German and tested among 2.588 young men from Munich to deliver a short measurement. Analyses on the concurrent and predictive criterion validity were conducted based on data from a subsample of n=173 young male gamblers and repeated among n=145 problem gamblers in outpatient treatment. The third, cross-sectional study is still ongoing and will include n>100 volunteer paramedic workers. *Results:* Explorative factor analyses indicate three dimensions: dealing with finances, money as a symbol of prestige and negative moral connotations of money. The three scales revealed temporal stability and were associated with indicators of gambling problems after 12 months. The third study will provide a comparison between volunteer workers and gamblers regarding their money attitudes. *Conclusions:* Attitudes towards money seem to play an important role in the development, upholding and recovery from gambling problems. Approaching money related views might benefit both prevention and treatment.

Keywords: money attitudes, gambling

S-3F2

Characteristics that predict engagement in instant win games

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While gambling problems have long been investigated in association with electronic gambling machines, recent attention has focused on engagement with instant lottery games. Instant win game engagement has been identified as one robust predictor of increased concurrent and subsequent problem gambling (see: Grusser et al., 2007; Short et al., 2015; Stark et al., 2021; Williams, Leonard, et al., 2021; Williams, Leonard, et al., 2021). This emergent

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finding contrasts with historical perceptions that lottery games are low risk. It is important to understand the individual characteristics of those who engage in instant lottery games, the potential harms associated with engagement, and the biopsychosocial profile of those at greatest risk for experiencing harms. This study sought to identify the characteristics that predict engagement versus non-engagement using a longitudinal data set, namely the AGRI National COVID Project online panel participant data (n = 3449), collected in Fall 2019 (baseline data for this study) and in Spring 2020 (during the nation-wide pandemic lockdown). Results indicate that, pre-pandemic factors including gender, employment status, household financial status, greater involvement in gambling, and elevated problem gambling scores, contributed significantly to the delineation of those who did – versus did not – engage in instant win games during the national lockdown. Additional research is required to understand both, the individual characteristics that lead to susceptibility for problems with instant win games, and the role of environmental factors including social and economic strain experienced during the COVID-19 pandemic in the manifestation of problems related with instant win game engagement.

Keywords: instant win lottery, gambling disorder, biopsychosocial model

S-3F3

Gambling marketing in matchday football programmes: A longitudinal study

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The UK's Premier League and Championship are two of the most well attended soccer leagues worldwide. Gambling is marketed in English soccer across various formats such as TV advertising, social media, pitchside hoardings, and shirt sponsorship. Knowledge is lacking on how gambling advertising frequency and marketing exposure have changed over time in specific media, such as in soccer matchday programmes. We present data from two studies. Study 1 sought to quantify exposure to gambling and alcohol marketing, and responsible gambling messages within matchday programmes. Programmes for each team in the English Premier League and Championship were analysed across consecutive matchday weekends. Direct adverts for, and incidental exposure to, gambling, alcohol, and responsible gambling marketing or messages were coded. There was more gambling marketing than either alcohol marketing or responsible gambling messages, observed across number of direct adverts, incidents of exposure and the percentage of pages with exposure. Teams with gambling shirt sponsors had more incidental marketing exposure, but did not have more direct gambling adverts. Gambling marketing was frequently evident in child specific sections of matchday programmes. Study 2 conducted a similar analysis across 3 periods spanning 18 months, incorporating changes gambling advertising legislation. Following legislation change, the number of gambling adverts decreased per-programme, however incidental exposure preva-

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lence stayed constant. Incidental exposure to gambling marketing was consistently more prevalent per-programme than alcohol or safer gambling messages. The policy implications regarding incidental exposure through shirt sponsorship and the efficacy of self-regulation are discussed.

Keywords: gambling, advertising, marketing

S-3F4

The influence of control beliefs on post-loss speeding – An online replication of Langer & Roth (1975)

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Background: In a wide range of experimental psychology tasks, participants slow down after negative outcomes (e.g., errors). However, such slowing might be task- or context-dependent. After all, in gambling tasks, people tend to speed up after losses compared to wins or non-gambles. One important difference between the tasks is that participants can exert control over the outcome in most experimental psychology tasks, but by definition not in a gambling task. We tested whether perceived controllability over the outcome influences response speed after negative outcomes in gambling. *Method:* In three online studies, we tried to create an illusion of control in a gambling task without changing the nature of the chance-determined gamble. For this, we replicated the study by Langer & Roth (1975) in which we presented three different groups with three different sequences of wins and losses in a coin-tossing task. *Results:* We replicated the finding that participants presented with more wins at the beginning of a sequence estimated their ability to predict the outcome of a coin toss higher than participants presented with more losses at the beginning, or those presented with a random sequence. Additionally, participants overall responded more quickly after a loss than after a win. *Conclusion:* Contrary to our predictions, we did not find evidence for a modulation of this post-loss speeding effect by the illusion of control over gambling outcomes as defined by Langer & Roth (1975). This result is not in line with several theoretical accounts for changes in response speed after negative outcomes.

Keywords: illusion of control, gambling, post-loss speeding

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S-3F5

Differences in gambling behaviors between people who gamble in legal and illegal settings in Israel

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The Israeli gambling market is unique in the fact that in addition to legal gambling, there is extensive illegal gambling conducted in partially visible and partially hidden ways, both physically and online. Most gambling studies worldwide do not distinguish between people who gamble in legal and illegal settings. The purpose of the present study was to examine differences in gambling behaviors, motivation, attitudes toward the legalization of gambling, and substance use between people who gamble in legal and illegal settings in Israel. Methods: A cross-sectional online survey recruited 1,367 people who gamble, of whom 34% (N=466) reported having participated in illegal gambling ever, and 12% (N=161) in the preceding year. *Results:* The study revealed significant differences in gambling behaviors between people who gamble in legal and illegal settings in almost all outcomes examined. People who reported having participated in illegal gambling reported more frequent participation in almost all types of legal gambling, more types of "multi-bets," more severe and high-risk gambling behaviors, more positive attitudes toward legalization of casinos and poker in Israel, higher motivations to gamble, and more substance use than did participants in legal gambling. *Conclusion:* Current gambling policy in Israel is sparse. It focuses on legal gambling and on individuals addicted to gambling. Almost no consideration is given to illegal gambling. A comprehensive gambling policy is needed in Israel, which would address illegal gambling as well, mostly with respect to harm reduction, treatment, and rehabilitation policies.

Keywords: gambling, illegal gambling, addiction, attitudes, Israel

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S-3G1

Examination of content validity of self-report measures of problematic exercise: A systematic review

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Background: The purpose of the present study was to examine the content validity of the main self-report measures assessing symptoms of problematic exercise (PE). *Method:* The electronic databases MEDLINE, PsycINFO, Web of Science, Current Contents Connect, SciELO, and Dissertations & Theses Global were systematically searched for eligible studies. The evidence on the content validity of the measures of interest was evaluated following the recommendations of the COSMIN guidelines. This involved conducting the following three sets of evaluations for each measure:(i) risk of bias of the retrieved studies, (ii) content validity, and (iii) quality grading of the evidence (GRADE). *Results:* Seventeen studies met the eligibility criteria to be included in the review. The results revealed the complete absence of cognitive interview studies, as well as a low use of external consultation when examining the relevance, comprehensiveness, and comprehensibility of the instruments under consideration. 'Sufficient' ratings in terms of content validity could be assigned just for a minority of the subscales examined (i.e., Mood improvement, CET; Lack of enjoyment, CET-4F; Positive reward, EDQ; Withdrawal, EDS; and Exercise preoccupation, OEQ-10). As a result of the GRADE procedure, the quality of the evidence concerning content validity of the measures under consideration was rated as 'low' or 'very low', except for the EDS-R, with most of its subscales being rated as 'moderate'. *Conclusions:* Future research aimed either at refining or proposing new self-report measures of PE may benefit from employing compressive techniques for the purpose of providing evidence of content validity.

Keywords: exercise addiction, exercise dependence, behavioural addictions

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S-3G2

An exploratory examination on the definition of the problematic exercise components assessed with psychometric instruments derived from different theoretical conceptualizations

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Background: Although case studies have described situations in which exercise behavior may be problematic and have negative consequences in a small number of individuals, this behavior is currently not officially recognized as a mental disorder in the main diagnostic manuals. The lack of consensus on whether problematic exercise may be a mental disorder is reflected in the fact that this phenomenon has been referred to by a multitude of terms, which to some extent reflect the different theoretical conceptualizations from which it has been studied. *Method:* The aim of the present paper was to review and compare, through a content analysis, the symptoms of exercise addiction included in the three psychometric instruments currently most used to measure problematic exercise (i.e., the Exercise Dependence Scale, the Compulsive Exercise Test, and the Exercise Addiction Inventory). *Results:* The results show inconsistencies among the psychometric instruments mainly reflected by: (i) the assessment of components that are identical under different names and definitions; (ii) the assessment of different components under the same terminology. *Conclusions:* The results suggest the need for a consensus to identify, define and assess the components that should define problematic exercise behavior in all its possible manifestations. This would allow the comparison of results that are obtained with different psychometric instruments assessing problematic exercise and the progress of research in this field.

Keywords: exercise addiction, exercise dependence, compulsive exercise

S-3G3

Cognitive and behavioral inflexibility in exercise dependence: a transdiagnostic process underpinning behavioral addictions

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Background: Cognitive and behavioral inflexibility are hallmark executive function abnormalities in a range of psychopathologies; however, their role in behavioral addictions remains understudied. Exercise dependence is a proposed new diagnosis in the broader cat-

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egory of behavioral addictions and is commonly comorbid with other established disorders characterized by inflexibility, including eating disorders. This study examined associations between exercise dependence and psychological inflexibility. *Methods:* 578 students (57.8% female; 50.2% White) completed the Exercise Dependence Scale (EDS-21), the Eating Disorder Flexibility Index (EDFLIX), a self-report measure of general and eating disorder-specific flexibility, and the Wisconsin Card Sorting Task (WCST), an objective test of cognitive and behavioral flexibility. *Results:* Linear regression models revealed significant associations between EDS-21 scores and self-report [$F(4,557)=8.12$, $p <.001$, $R2 = .06$] and objective measures of inflexibility [$F(4,494)=4.00$, $p <.01$, $R2 = .03$]. Subsequent multivariate analyses revealed significantly greater eating disorder-specific flexibility (post-hoc $p<.001$ on both "weight and shape" and "food and exercise" subscales) in the EDS-21 "nondependent asymptomatic" group, compared to symptomatic respondents; those "at risk for dependence" made significantly more WCST perseveration errors than the "nondependent" groups (post-hoc $p=.01$). *Conclusions:* Results suggest that inflexibility plays a role in addition-like exercise behaviors and provide further evidence for inflexibility as a transdiagnostic mechanism linking addictive and related disorders. Findings highlight important parallels in the mechanisms underlying non-substance and behavioral addictions and highly comorbid disorders including eating and obsessive-compulsive disorders and suggest that interventions targeting psychological inflexibility may be useful in the treatment of a range of psychopathologies, including addiction-like exercise.

Keywords: behavioral addictions, exercise dependence, psychological flexibility

S-3G4

Exercise addiction during the Covid-19 pandemic in Italy

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Severe restrictive measures were implemented globally to limit the spread of the Covid-19 pandemic leading to significant lifestyle changes and impacting on both the physical and the mental health of citizens. Caught by the fear of getting sick, some individuals have adopted behaviors which favored the development of Exercise Addiction (EA). Our aim was to evaluate the incidence of EA in the general Italian population during Phase 1 of the lockdown, and the role of Appearance Anxiety (AA), self-compassion and use of Performance and Image

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Enhancing Drugs (PIEDs) as predictors of its development. Between April to May 2020 an online survey was conducted across Italy. The rate of EA in the full sample (953 subjects) was 3.6%. 84.2% of the participants reported variations in their fitness routine. Perceived benefit of exercising resulted significantly higher in those with EA. Subjects with EA reported stronger motivation in engaging in physical activity as for "physical wellness", "psychological wellbeing" and "sexual attractiveness and confidence in relationship". A higher level of AA, a lower level of self-compassion, the use of PIEDs and a higher perceived benefit of exercising during lockdown were all significant predictors for the presence of EA. Our findings suggest that the fear of getting sick from Covid-19, combined with radical changes in the lifestyles induced by the lockdown and individual personological characteristics can favor the development of AE and related phenomena in the general population.

Keywords: exercise addiction, appearance anxiety, self-compassion, performance and image enhancing drugs, Covid-19

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S-4A1

The effects of a 60-minute mandatory play break on a real-world sample of UK online casino gamblers

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The present study was carried out comprising British online players from a UK based online casino operator. The operator provided anonymized player tracking data from several UK-based online casino sites for secondary analysis (i.e., analysis on a pre-existing dataset). Player tracking data were provided for the time period between July 23 and September 15, 2021. On August 20, 2021, the operator introduced a mandatory 60-minute play break if players made ten deposits into a gambling account on a single calendar day. The timestamp of each deposit was available for the entire observation period from July 23 to September 15. The first, second, third, and tenth deposit timestamp could be computed from the available raw data. The authors computed amount of money deposited, withdrawn, wagered, won, lost, number of games, and number of deposits were computed for the session during which the tenth deposit occurred. Moreover, the amount of money which was in the gambling account (last balance) when the session ended as well as the session length in minutes were also computed. Amongst others the authors computed the number of players who deposited again after the tenth deposit before and after the introduction of the 60-minute play break. The mandatory play break signifcantly reduced the number of players who deposited an eleventh time. Players who lost larger amounts of money before the play break did not increase their wagering on the next day. The 60-minute play breakdid not have significant long-term effects.

Keywords: online gambling, mandatory play break, personalized feedback

S-4A2

Cooling off: The effects of mandatory breaks in online gambling

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In this study, we investigate the effects of mandatory play breaks in a large-scale randomized experiment with more than twenty thousand online gamblers engaging in more than eight hundred million gambling transactions on a Norwegian gambling platform (Norsk Tipping) over a one-month period. In particular, we randomly assign gamblers to several treatment

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groups with varying duration of mandatory play breaks, varying personalized feedback, and one control group with Norsk Tipping's standard play break duration. We then analyze the relationship between the received treatment and the gambler's acceptance of the tool, the interaction patterns with the tool, how quickly they start to gamble again, how much they bet, as well as post-treatment effects on gambling behavior. We find that gamblers who are treated with longer mandatory breaks (i) tend to take longer voluntary breaks during the experiment and that they (ii) interact more frequently with the tool, for instance, by clicking the logout button. On the positive side, we uncover strong evidence for the tool's acceptance among gamblers. However, on the negative side, personalized feedback had no additional effect, and we find only weak signals of post-treatment effects, primarily for gamblers who received a substantial number of long mandatory play breaks. Overall, our research is the first large-scale controlled experiment of mandatory play breaks in online gambling. With our work we provide actionable insights for both researchers and the gambling industry to improve the effectiveness of mandatory play breaks as a responsible gambling tool.

Keywords: gambling, responsible gambling, mandatory play breaks, forced session termination, problem gambling

S-4A3

The impact of forced abstinence on gambling: A natural ABA design study

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The impacts of the COVID-19 pandemic, and responses used to mitigate the spread such as selective closure of non-essential businesses, have been far-reaching. Some of these impacts include changes in health, economic, social and recreation. Included among other non-essential business, in-person gambling venues were closed across Canada. Yet, online gambling opportunities remained available, making this period both a historical first in Canada, and a natural experiment. The current study examined quantifiable ramifications of the sudden forced abstinence from in-person gambling during the nation-wide lockdown in Canada, and what changes occurred six-months later upon reopening. For this cohort study, pre-pandemic base line data was provided six-month before the lockdown by online panel participants (n = 2,790), who were then re-surveyed during the national lockdown and again six-months post-lockdown. Nearly one-third of gamblers reported a complete cessation of gambling during the lockdown period. For those who continued gambling, quantitative data indicated signifi-

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cant decreases on all gambling engagement measures: frequency, time spent in gambling sessions, money spent, and the number of game types played. This was followed by significant increases on each engagement measure six-months post-lockdown. Although these increases did not return to pre-pandemic engagement levels. Problem gambling within the whole sample generally declined during lockdown, however, significant increases in high-risk gambling were evidenced six-months later. In fact, engaging in online gambling and COVID-specific changes in health, employment, and social isolation across the closure and re-opening periods were independent predictors for classification as a problem gambler six-months after the lockdown.

Keywords: gambling disorder, problem gambling, gambling engagement, COVID, pandemic

S-4A4

Limit setting and preventing problem gambling: Results of empirical studies using account-based tracking data

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Background: Social responsibility, responsible gambling, player protection, and harm minimization in gambling have become major issues for both researchers in the gambling studies field and the gaming industry. This has been coupled with the rise of behavioural tracking technologies that allow companies to track every behavioural decision and action made by gamblers on online gambling sites, slot machines, and/or any type of gambling that utilizes player cards. *Methods:* This paper presents results from a series of studies carried using behavioural tracking data provided by a number of different gaming companies in relation to data concerning the use of limit setting). *Results:* The findings demonstrate that limit-setting can be used to reduce the amount of time and money that players spend gambling, that players who voluntarily set money limits are more loyal to the gambling operator, and that players who voluntarily set money limits spend less money gambling over time. *Conclusions:* These studies demonstrate that tracking data can be used to evaluate responsible gambling tools such as limit-setting and that limit setting appears to be effective in reducing gambling intensity.

Keywords: gambling, gambling disorder, limit-setting, behavioral tracking, player protection

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S-4A5

Efficacy of a web-based self-help tool to reduce problem gambling: results of a two-armed randomised controlled trial

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Introduction: The past-year prevalence of problem gambling worldwide averages 2.3%. Only a minority of adults with problem gambling attend outpatient treatment. Surveyed problem gamblers have explained that they wanted to handle the problem on their own. The option of a web-based self-help programme could potentially reach those users who hesitate to approach treatment centres and help them to reduce or stop their problem gambling. *Methods and analysis:* In a two-armed randomised controlled trial (RCT) we are examining the efficacy of a web-based self-help intervention, relative to an active evidence-based control condition with a self-help manual, at reducing problem gambling. The active intervention programme, spanning 8 weeks, consists of nine modules developed to reduce gambling and attenuate psychopathological comorbidity, including depression, anxiety and stress-related disorder symptoms, relying on motivational interviewing and cognitive behavioural therapy. We recruited 352 participants from the general population and collected questionnaire data at baseline, and at 8 and 24 weeks after baseline. Primary outcomes was the number of days one has gambled in the last 30 days. Secondary outcomes included money and time spent on gambling activities, changes in gambling-related problems (Problem Gambling Severity Index, Gambling Symptom Assessment Scale), use of alcohol and cigarettes, and psychopathological comorbidity. *Results:* We are currently conducting the intention-to-treat analyses and results will be presented at the conference. *Trial registration number:* Current Controlled Trials registry (ISRCTN16339434).

Keywords: gambling, online, Internet- and mobile-based therapy, guided self-help

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S-4B1

Advances in the etiology, assessment and treatment of compulsive sexual behaviors

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Symposium summary: The symposium will address clinical aspects of compulsive sexual behaviors including etiological factors, assessment, and treatment. The first talk will report about findings concerning sexual motivation underlying compulsive sexual behaviors from a large cross-cultural survey. The second talk will be about the role of craving and self-regulation for the development of problematic pornography use. In the third talk the usefulness of sexual abstinence for diminishing sexual desire will be discussed on the basis of data from a sample of healthy men. The fourth talk will examine the feasibility of naltrexone in treating individuals with compulsive sexual behaviors showing that naltrexone may reduce the symptoms significantly. Finally, the fifth talk will report the results of two studies, which have examined the efficacy of group-administered and internet-administered cognitive-behavioral therapy for compulsive sexual behaviors. Both types of interventions are efficient in reducing the symptoms with a stability of three-to-six months.

Keywords*:* CSBD; Naltrexone, CBT, abstinence, cue reactivity

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S-4B2

Sexual motivations underlying compulsive sexual behavior, findings from a cross-cultural survey study

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Background: At the heart of the ongoing debate about the conceptualization of compulsive sexual behavior (CSB) is the question about the sexual motivations, as different models assume different motivations. *Aim:* The aim of the present study was to understand sexual motivations underlying CSB and their relation to the most prominent conceptualizations of compulsive sexual behavior (e.g., CSBD, hypersexuality, sex addiction). *Methods:* We used self-reported data from two large samples of Hungarian and German populations (N = 9814). The Sexual Motivation Scale (SexMS), a 24-item self-report measure based on self-determination theory, was used to assess a diverse set of sexual motivations. Compulsive sexual behavior was assessed with the 19-item Compulsive Sexual Behavior Disorder Scale (CSBD-19), that is based on the ICD-11 diagnostic guidelines of CSBD. We used structural equation modeling to examine the hypothesized associations between sexual motivations and compulsive sexual behavior and examined potential gender differences in these associations. *Results*: Amotivation had the strongest positive association with compulsive sexual behavior, but integrated, introjected, and intrinsic motivations were also positively related to it. Importantly, these associations did not differ for women and men, and between the two samples. *Clinical Translation:* Future research and treatment should also consider sexual motivations that are not listed among the ICD-11 guidelines for CSBD, including high levels of sexual interest, continuing the behavior despite having little satisfaction from it and coping with sex. *Conclusion:* The identified sexual motivations underlying compulsive sexual behavior are relevant for assessing and treating patients as motivations may be integrated into psychotherapeutic interventions.

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S-4B3

Craving and self-regulation as key mechanisms of problematic pornography use

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Introduction: Research on the problematic use of pornography (PPU) indicate that general self-regulation, craving, and specific pornography-related self-regulation contribute to the development of symptoms of PPU and diminished control over pornography use in a specific situation. Up to now, it remains unclear how these mechanisms act in concert. Based on the Interaction of Person-Affect-Cognition-Execution (I-PACE) model, it can be assumed that the effect of craving on symptom severity is mediated by pornography-specific self-regulation and that the general self-regulation moderates the mediation effect. *Method:* Overall 1107 individuals participated in an online survey. Questionnaires on symptom severity of PPU, general self-regulation abilities, craving, and pornography-specific self-regulation were assessed. *Results:* General self-regulation, craving, and pornography-specific self-regulation were identified as significant predictors of symptom severity. The effect of craving was partially mediated through pornography-specific self-regulation. No moderation effects of general self-regulation and craving as well as pornography-specific self-regulation could be identified. *Discussion:* In accordance with the I-PACE model, the results indicate that affective craving responses and general as well as pornography-specific self-regulation are central mechanisms of PPU. The results may point to an imbalance between the impulsive and reflective brain systems as proposed by dual process theories. Whereby in particular the impulsive system hijacks the control attempts of the reflective system; the general self-regulation ability might act as protective factor. More longitudinal studies as well as studies assessing situational factors are needed to fully understand which mechanisms are involved in actual moments of diminished control over pornography use and the development of PPU.

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S-4B4

The role of sexual abstinence in treating CSBD: A pilot study

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Background: In the treatment of Compulsive Sexual Behavior Disorder (CSBD), a phase of sexual abstinence is often suggested by practitioners. This is intended to re-regulate the patient's sexual system. However, there are no empirical studies as a basis for this recommendation. The aim of this study is to investigate the psychological effects of an abstinence phase of several weeks on the sexual system. *Method:* Eighteen healthy male subjects were observed during a sexual abstinence phase of at least three weeks. Before and after the abstinence period, cue reactivity to sexual cues was measured with a reaction time behavioral task (dot-probe task). Additional questionnaires for pre-post comparison and daily ambulatory assessments were used for further assessment. *Results:* While the craving for pornography and sexuality increased continuously during the first seven days, it decreased again afterwards and returned to its initial level. Pre-post comparisons of the dot-probe task and post-monitoring interviews showed that subjects responded quicker to sexual stimuli after the abstinence phase, but also developed coping strategies to better inhibit sexual impulses. Ambulatory assessment showed that participants had different levels of difficulty in maintaining abstinence. *Conclusions:* This study provides first findings that a period of sexual abstinence in men leads to a re-regulation of the sexual system and can be used in the therapy of CSBD. However, staying abstinent was challenging for most participants. Adequate coping strategies showed to support abstinence efforts and are recommended to be used under these circumstances.

S-4B5

Naltrexone in compulsive sexual behavior disorder: A feasibility study

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Background: Compulsive Sexual Behavior Disorder (CSBD) is a common disorder affecting different areas of life, although studies focusing on pharmacological treatment are sparse. Aim: to investigate whether the opioid receptor antagonist naltrexone is feasible, tolerable and can provide symptom reduction in CSBD. *Methods:* Twenty men aged 27—60 years (Mean = 38.8 years, SD= 10.3) with CSBD seeking treatment in an outpatient non-forensic clinic received four weeks of daily dose of Naltrexone 25—50 mg. Measurements were made

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before, during and four weeks after the treatment. *Outcomes:* The self-assessment Hypersexual Disorder: Current Assessment Scale (HD: CAS) score was the primary outcome measure and secondary outcomes were the Hypersexual Behavior Inventory (HBI) score, reported adverse effects, adherence to treatment and drop outs. *Results:* There were significant decrease on both HD: CAS and HBI scores during treatment with Naltrexone. The most reported side effects were fatigue (55%), nausea (30%), vertigo (30%) and abdominal pain (30%). However, there were no serious adverse effect leading to discontinuation of Naltrexone. *Clinical Implications:* Although side effects being common, Naltrexone seems to be feasible in the treatment of CSBD. Strengths & Limitations: Being the first non-forensic prospective trial on Naltrexone in CSBD, this study provides novel insights on a pharmacological intervention. However, due to the small sample size and the lack of control group conclusions of effectiveness should be interpreted with caution. *Conclusion:* Naltrexone is feasible, tolerable, and may reduce CSBD symptoms, nevertheless future studies should ensure a randomized controlled procedure to evaluate possible effectiveness.

S-4B6

Group- and Internet administrated cognitive behavioral therapy for hypersexual disorder in men

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Background: Hypersexual disorder (HD) is characterized as a loss of control over engagement in sexual behaviors, leading to distress and negative consequences. Cognitive behavioral therapy (CBT) may reduce symptoms of hypersexual behavior. The purpose with these studies was to investigate the efficacy of group- and Internet-administrated CBT on men diagnosed with HD. *Methods* Study I: Men with HD (n = 137) were randomized between 7 weeks of group-administered CBT (n=70) and a waitlist control receiving the intervention after 8 weeks (n = 67). Measurements were administered at pre-, mid-, and posttreatment, with follow-up after 3 and 6 months. Outcome measures were the Hypersexual Disorder: Current Assessment Scale (HD:CAS), the Sexual Compulsivity Scale (SCS) and Montgomery Åsberg Depression Rating Scale (MADRS-S). *Study II:* Men with HD (n=36), received 12 weeks of Internet CBT (ICBT). Measures were administered weekly with a follow-up three months after completion of treatment. Outcome measures were Hypersexual Behavior Inventory (HBI-19), SCS, HD:CAS, and Severity Selfrating Measures for Paraphilia Disorder (DSM-5). *Results Study I:* A significantly greater decrease in HD symptoms and sexual compulsivity, and greater improvements in psychiatric well-being, were found for the treatment condition compared with the waitlist. These effects remained stable at 3 and 6 months after treatment. *Study II:* Large significant decreases in HD symptoms and Sexual Compulsivity were found as well as moderate improvements on paraphilia symptoms. Effects remained stable three months after treatment *Conclusions:* These studies support the efficacy of group- and Internet administrated CBT as a treatment option for HD and concomitant paraphilia(s).

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S-4C1

Gambling and gambling disorder: From basic to applied science

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Symposium summary: Gambling is a widespread phenomenon among the population. While gambling is an entertaining leisure activity for most people, some develop harmful gambling behavior with adverse consequences and may fulfill diagnostic criteria of a gambling disorder (GD). There is an urgent need to understand the underlying processes of GD and to develop evidence-based prevention and intervention strategies. To move forward in research, more studies are needed that bridge the gap between basic science and applied science, i.e. lab-based studies on the processes underlying GD in non- or sub-clinical samples, and studies on clinical samples in gambling-related real-life situations. How can basic science inform prevention and intervention research? In this symposium, five different talks will present studies that aim to combine basic and applied research through different approaches. We will discuss the implications of basic science for applied science and vice versa.

Keywords: gambling disorder, online gambling, metacognition, decision-making, near-miss

S-4C2

Metacognition and the effect of incentive motivation in compulsive gambling and obsessive-compulsive disorder

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Background: Compulsivity is a typical phenotype amongst obsessive-compulsive disorder (OCD) and gambling disorder (GD). Deficiencies in metacognition, such as the inability to correctly estimate ones' performance via well-calibrated confidence judgments, could con-

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tribute to pathological decision-making. Earlier research has indeed suggested that OCD and GD patients reside at opposite ends of the confidence spectrum, with OCD patients exhibiting underconfidence, and GD patients exhibiting overconfidence. Recently, several studies established that motivational states (e.g., monetary incentives) influence metacognition, with gain (respectively loss) prospects increasing (respectively decreasing) confidence judgments. *Method:* We hypothesized GD's overconfidence to be exaggerated during gain prospects, while OCD's underconfidence to be worsened in loss context, which we expected to see represented in ventromedial prefrontal cortex (VMPFC) blood-oxygen-level-dependent activity. We tested those hypotheses in a task-based fMRI design. *Results:* Our initial analyses showed increased confidence levels for GD versus OCD patients and did show increased confidence in GD patients, specifically in gain context. Both effects could partly be explained by sex and IQ. Functional MRI analyses confirmed a central role for VMPFC in processing confidence and incentive motivation, but with no differences between the clinical samples. *Conclusions:* The present study represents the first attempt in investigating the joint neural basis of metacognitive and motivational processes in both GD and OCD, further study – e.g., looking into transdiagnostic variations of symptoms - might be more powerful in detecting clinically useful neurocognitive signatures of those processes than the present clinical case-control comparison.

S-4C3

The near-miss in online slot machine gambling: A pre-registered conceptual replication

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Background: Given the influence of gambling studies on public policy, the field must pay attention to replicability of findings. The effects of 'near-miss' outcomes are one of the most studied structural characteristics of gambling products. This study was designed as a conceptual replication of Clark L et al (2009 Neuron 61: 481-490) using an online slot machine game to test two pre-registered hypotheses: do near-misses, compared to full-miss outcomes, (1) increase motivational ratings, and (2) decrease ratings of pleasure? *Method:* This study was conducted with a crowdsourced sample (n = 169) who scored < 8 on the Problem Gambling Severity Index. An online deployment of a three-reel slot machine task delivered three possible outcomes: wins, near-misses, and full-misses. After each outcome, participants provided a 7-point Likert rating of pleasure associated with the outcome, and motivation to continue playing. *Results:* As a pre-registered hypothesis, we confirmed that participants reported near-misses as more motivating relative to full-misses ($p < 0.001$. $d = 0.55$). On the pleasure ratings, we also found a significant difference between near-misses and full misses (NM > FM), but in the opposite effect to the original study ($p < 0.001$, $d = 0.63$). *Conclusions:* Near-misses and full-misses are functionally identical outcomes, but our data suggests these events have differential psychological effects. The motivational effects of near-misses

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have implications for regulatory attention to these events within modern gambling products. However, the contrasting effect on pleasure ratings indicates some boundary conditions to the effects, which we will consider in future experiments.

S-4C4

Computational psychiatry in context – Real-life, but not virtual-reality gambling environments modulate decision-making in gambling disorder

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Background: Gambling disorder (GD) is characterized by maladaptive changes in decision-making, including increased temporal discounting and reduced reliance on model-based reinforcement learning. Exposure to real gambling environments and visual gambling cues has been suggested to impact decision-making in GD, constituting a potential mechanism underlying the maintenance of maladaptive behavior. *Method:* We examined the impact of gambling environment exposure on two key computational traits implicated in addiction, temporal discounting and model-based reinforcement learning. In study 1, n=30 participants with GD (≥ 3 DSM-V criteria) completed tasks both in a slot-machine casino and a "neutral" café environment. Study 2 then examined virtual reality (VR) gambling-related and neutral environments in n=30 gamblers and n=30 controls. Data were analyzed using combined decision-making drift diffusion models and hierarchical Bayesian estimation. *Results:* Study 1 replicated increased temporal discounting in GD participants in real-life gambling environments (Dixon et al., 2006). Extending these results, we observed a seemingly paradoxical improvement of model-based control during gambling environment exposure. Study 2 then replicated increased temporal discounting and reduced model-based control in GD compared to controls. However, virtual gambling environment exposure did not substantially impact decision parameters in GD. *Conclusions:* Results show that real-life gambling environments impact key computational markers of addiction. Here, improved model-based control during gambling environment exposure challenges aspects of habit theories of addiction, suggesting a complex interplay between context and choice in GD. Study 2 highlights that such effects do not necessarily replicate in VR. Challenges and opportunities of VR approaches in GD are discussed.

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S-4C5

Individual risk factors in online sports bettors

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Background: The main aim of the RIGAB study is to find individual, behavioural and cognitive differences between online sports bettors with and without gambling disorder (GD). One focus of the study is to characterize sports bettors with and without GD with regard to already established putative risk factors such as emotion regulation, since these factors have been investigated very little or not at all in online sports betting where research has mainly used behavioral tracking data. (Preregistration: https://osf.io/k6c23/). *Method:* The RIGAB study is a longitudinal study, consisting of three study parts. In this talk, we will focus on the initial online survey. For recruitment, we cooperated with an international provider of online sports betting. From the contacted customers (n = 6568), n = 613 (9.3 %) participated in our online survey with self-report questionnaires and their information were valid to be included in the analyses. Based on the information provided in the survey, we will group bettors as with and without GD and compare these groups concerning the following putative risk factors: quantity and frequency of substance use, impulsivity, difficulties in emotion regulation, comorbidities and stress. *Results:* We registered 7 hypotheses concerning putative individual risk factors and assume that these are more pronounced in players with GD, for instance that sports bettors with GD are more impulsive than sports bettors without GD. *Conclusions:* The results will contribute to the etiological model of GD in sports betting and might indicate prevention measures for early detection of bettors with a higher risk of developing GD.

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S-4C6

Risky gambling behaviour in online sports bettors – An analysis of transaction data

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Background: The main aim of the RIGAB study is to find behavioural and cognitive differences between online gamblers with and without gambling disorder (GD). One focus of our study are differences in gambling behaviour between these two groups of sports bettors. There is a vast pool of literature suggesting cognitive and behavioural differences, albeit none of these studies has yet linked survey data with transaction data. The study has been preregistered under https://osf.io/k6c23/ *Method:* The authors have received anonymised accumulated gambling transaction data from an international provider of online sports betting to recruit participants. Of the 6.568 online sports bettors that were invited to take part in the survey, 613 filled in our online survey and their information were valid to be included in the analyses. We then compared the behavioural transaction data between sports bettors with and without GD taking into account information provided in the survey. *Results:* We have preregistered 22 hypotheses concerning gambling behaviour and assume i.e., that online sports bettors with GD are multiplayers, play more frequently, at higher stakes, with a higher number of bets, and a higher variability of stakes and odds, place higher amounts of their net income as stakes, or deposit and withdraw more money. *Conclusions:* Depending on our results, it will be possible to suggest improved prevention measures for online sports betting or online gambling as a whole. These indicated measures can specifically target gambling behaviour of at risk gamblers.

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S-4D1

Current developments in research on problematic social networks use: Affective and cognitive mechanisms

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Symposium summary: Addictive behaviors are assumed to result from specific cognitive processes triggered by situational cues as well as individual predisposing factors. In addition, theoretical models outline the relevance of cognitive processes interacting with affective components such as cue-reactivity and craving as key mechanisms of an addictive behavior. Research from substance-use disorders and disorders due to addictive behaviors, e.g., gaming disorder and gambling disorder, already show that cognitive processing is especially biased when being confronted with addiction-related cues. Attentional biases as well as cue-reactivity and craving foster addictive behavior in terms of showing a specific behavior repeatedly despite experiencing negative consequences. This behavior has further been associated with increased risk-taking when making decisions. Researchers suggest that similar processes should be investigated in the problematic use of social-networking sites and online communication applications addressing the research question whether similar mechanisms are involved in this potential addictive behavior. The current symposium presents the results from empirical studies that investigated cue-reactivity and craving, attentional bias, and decision making in the context of problematic social-networks use. Additionally, findings on protective mechanisms such as temporary abstinence to reduce problematic engagement with social media are presented. The findings are discussed against the background of potential deficits that may impair affective and cognitive responses as well as inhibitory control in the development and maintenance of problematic social networks use.

Keywords: cue-reactivity, decision making, attentional bias, digital detox, social-networks use

S-4D2

Cue reactivity in individuals with problematic use of social media: an event-related potential study

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Background: It has been argued that similar to addictive behaviors, problematic use of social media (PSMU) is characterized by sensitized reward processing, craving, and cue-reactivity. However, no study to our knowledge has yet investigated the neural correlates of cue-reactivity in PSMU. The present study aims at investigating cue-reactivity to social media (i.e., Facebook)-related visual cues and craving for using Facebook in individuals identified as

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problematic vs. non-problematic Facebook users by the Problematic Facebook Use Scale. *Method:* The Event-Related Potentials (ERPs) were recorded during the passive viewing of Facebook-related, pleasant, unpleasant, and neutral pictures in 27 problematic and 26 non-problematic users. Moreover, craving for Facebook usage was assessed using a Likert scale. *Results:* Despite problematic users were more likely to endorse higher craving than non-problematic ones, Facebook-related cues elicited larger ERP positivity (400–600 ms) than neutral, and comparable to unpleasant stimuli, in all Facebook users. Only in problematic users we found larger positivity (600–800 ms) to pleasant than unpleasant cues and higher craving to be related with lower later positivity (800–1,000 ms) to pleasant and unpleasant cues. *Conclusion:* Regardless of whether Facebook usage is problematic or non-problematic, Facebook-related cues seem to be motivationally relevant stimuli that capture attentional resources in the earlier stages of "motivated" attentional allocation. Moreover, our results support the view that in higher-craving problematic users, reduced abilities to experience emotions would be the result of defective emotion regulation processes that allow craving states to capture more motivational/attentional resources at the expense of other emotional states.

S-4D3

Investigating the attentional bias hallmark of addictive behaviour in social media users

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Background. There is a growing debate within the literature as to whether there should be a move towards the classification of excessive social media use as a clinically defined addiction. One prominent characteristic of addictive behaviour is the presence of an attentional bias towards addiction related stimuli. In this study, we investigated whether an attentional bias to social media stimuli (platform icons) was present in a group of social media users. *Method.* 100 participants completed a selective attention task that required the detection of a target icon (camera/siri), presented within mock iPhone displays, while ignoring non-target distractor icons. On some trials, one of the non-target distractors was a social media icon (Facebook, Twitter, Instagram, Snapchat) paired with or without a red notification symbol. Our measure of attentional bias was the extent to which target RTs slowed in the presence of social media distractor icons. *Results.* Our findings did not provide evidence for a social media specific attentional bias. While there was a large range of individual differences in our measures of social media use, engagement, and 'addictive' severity, these were not associated with individual differences in the level of attentional capture by the social media icons. *Conclusions.* If excessive social media use is to be placed within traditional addiction frameworks, further research is required to assess 'addiction' related changes in users' attention.

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S-4D4

The interplay of cue-reactivity, craving, and decision making: Empirical findings regarding the development and maintenance of a problematic use of social networks

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Background: Problematic use of social networks is discussed as a disorder potentially belonging to the ICD-11 category "other specified disorder due to addictive behaviors". Cue reactivity, craving, and decision making are assumed to be relevant key mechanisms. The current study aimed at investigating if cue-induced craving and symptoms of social-networks-use disorder interfere with decision-making behavior. *Method:* Participants played the Iowa Gambling Task assessing decision making under ambiguous risk modified with social-networks-related cues either on the advantageous decks or on the disadvantageous decks (between-subjects design). Questionnaires before and after a cue-reactivity paradigm were used to assess cue reactivity and craving. Symptom severity of social-networks-use disorder was measured with a modified version of the short Internet Addiction Test. *Results:* Overall, decks with neutral cues were preferred to those with social-networks-related cues, even if it was disadvantageous. There was a significant interaction between decision-making performance and Iowa Gambling Task condition in predicting symptom severity. It shows that individuals who had a preference for decks with social-networks-related cues even if it was disadvantageous in the long-run had highest tendencies towards a problematic use of social networks. *Conclusion:* The results highlight the relevance of cue reactivity, decision making, and their interaction as potential mechanisms explaining problematic social-networks use. Further empirical findings on the ability to make advantageous decision are considered. The findings demonstrate similarities with other addictive behaviors and substance-use disorders.

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S-4D5

Decision making under risk in problematic social-networks-use and other specific Internet-use disorders

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Background: Addictive behaviors such as gaming disorder are associated with impaired decision-making performance. Some studies report similar results for problematic social-networks use, however, findings are mixed. We investigated differences between individuals with problematic social-networks use and non-problematic users regarding decision-making performance, executive functions, impulsivity, and other traits. *Method:* Data were collected in Germany and Spain. We used the Cards and Lottery Task (CLT) measuring decision making under risk in situations with conflicting short- and long-term consequences, the Modified Card Sorting Test (MCST), and surveys assessing facets of for example, trait impulsivity, and psychopathology. Additionally, we screened for other potentially problematic Internet-use behaviors including gaming and online buying-shopping. *Results:* Individuals with a risky use of social networks showed impairments in executive functions, heightened impulsivity, and higher depression and anxiety symptoms as compared to non-problematic users. Decision-making performance did not differ between the two groups. Similar results emerge when looking at (aggregated) other specific Internet-use disorders. *Conclusion:* The results underline the importance of executive functions and impulsivity in problematic social-networks use. The findings indicate that deficits in attention-related domains can be considered risk factors for developing specific Internet-use disorders. The general decision-making tendency to prefer short-term rewards by neglecting long-term risks does not appear to be primarily relevant. The role of specific subcomponents of decision-making and executive functions should be considered in more detail.

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S-4E1

Perseverative cognitive focus and difficulties in reflective functioning in work addiction: Findings from a nationally representative study

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Work addiction is a behavioral addiction characterized by obsessive overwork that results in physical, mental, and social disturbances. Although the personality correlates of work addiction have already been investigated thoroughly, we still have poor knowledge of the cognitive factors of work addiction. Since individuals with work addiction show obsessive patterns, rigid thinking, and negative affects we have presumed that perseverative cognitive focus (rumination) and difficulties in reflective functioning (mentalizing) would predict work addiction. Our aim was to explore the contribution of cognitive factors to work addiction, in addition to personality and health-related indicators. The study was carried out on a nationally representative sample of the Hungarian adult population (N=1385). In addition to sociodemographic variables, the following measurements were applied: Bergen Work Addiction Scale, Barratt Impulsiveness Scale, Brief Sensation Seeking Scale, Well-Being Inventory, Penn-State Worry Questionnaire, Patient Health Questionnaire, Ruminative Response Scale, and Reflective Functioning Questionnaire. 7% of the adult population currently having a job has been classified to be at-risk for work addiction. Binary logistic regression analysis showed that somatic symptoms, sensation seeking, uncertainty about mental states, and rumination predicted work addiction. The prevalence of work addiction is the same in Hungary as in Norway (7%), however, much less than in South Korea (39%). Our results highlight that individuals affected by work addiction show difficulties in controlling negative thinking and in mentalizing, therefore, more future studies should investigate the cognitive mechanisms behind work addiction. *Funding:* The study was supported by the Hungarian National Research, Development, and Innovation Office (FK134807, KKP126835).

Keywords: work addiction, rumination, mentalization, nationally representative, epidemiology

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S-4E2

Women and work addiction: Work motivations

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Background and aims: Existing literature of work addiction and gender linkages is limited theoretically and empirically by not studying a wider range of gender-diverse samples in specified contexts. Studies have shown that women progress in the addiction faster, they have more severe withdrawal symptoms, and their mental health is more at risk. The aim of the current study was to explore and analyse the associations of work motivations in women's life with high risk of work addiction in Hungary. *Methods:* In our previous study, applying a valid work addiction measure, we have identified a group of individuals who showed a high risk of work addiction and we asked them to participate in the current study. Finally, 14 women have been asked by a semi-structured interview. Topics were: career orientation, working habits, work motivations, experiences of work addiction, and physical and mental health. The texts of the interviews were analysed by qualitative content analysis. We applied the six steps of thematic analysis. *Results:* Women with a high risk of work addiction have reported intrinsic motivations for the work and the feedback was associated with the feeling of competency and the stability of their self-esteem. They considered their work as passion thus enhancing the involvement in it. They were more sensitive to changes in their work life. *Conclusion:* Our results have indicated that women work motivations with a high risk of work addiction in Hungary are mainly intrinsic. Considering our results women work addiction can have different consequences on their mental health.

Keywords: women, gender, work addiction, work motivations

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S-4E3

Teaching Addiction – Addiction with benefits to the individual & the society

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Teaching Addiction is an innovative area of research, categorized in the field of behavioral addictions and hasn't been studied so far in the academic literature. While aspects of work addiction and employee satisfaction in the workplace have been largely studied in an economic-business context, the issue of teaching addiction hasn't yet been explored in the academic field. The study was conducted using a sample of 162 teachers and lecturers who teach in elementary schools, middle-schools, high-schools and the academia in Israel. For the purpose of the study, an original quantitative questionnaire was developed and validated. The questionnaire incorporates demographic characteristics; aspects regarding the level of investment and satisfaction of the teacher and lecturer; and an assessment of the extent of the teacher's self-injury in the framework of teaching. The results indicate a significant positive relationship between the degree of the teacher's investment in the teaching profession and the degree of harm to himself and his personal life (Pearson correlation (161) =0.599, $p<0.001$). There was also a significant difference in the level of injury between teachers depending on the different levels of investment in teaching (Chi-Square (4) = 33.696, $p <0.001$). The personal and professional characteristics that addicted teachers and lecturers share may serve as milestones for reference to the teaching professions, which should be taken into account in the professional development of teachers in the education system and as a tool for developing self-awareness of teaching investment.

Keywords: Teaching-Addiction, education, beneficial-effect, school, academy

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S-4F1

Behavioral addictions in young people and adolescents

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Symposium summary: In recent years, there has been an increase in the prevalence of gambling addiction at all ages, being of special importance in young people and adolescents. The sports betting sector, in its online mode, increased its gaming margin. On the other hand, treatment centers warn of an increase in profiles of multiproblematic players. This symposium tries to delve into the factors of cognitive emotional vulnerability associated with gambling disorder and compulsive buying in order to know some of the predictive, protective and predisposing factors that serve to establish effective prevention programs. It will also include analysis according to sex and gender. Therefore, studies of variables of emotional and cognitive processes have been chosen, as well as underlying psychological variables that could be at the base and be explanatory of the processing difficulties. Likewise, variables of comorbid dysfunctional symptomatology of both emotional disorders and other addictive behaviors have been included.

Keywords: problematic gambling, compulsive buying, emotional dependence, adolescence, women

S-4F2

Compulsive buying, emotional dependence and attachment in adolescents

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Compulsive buying, despite not being included in the DSM-5 and ICD-11 manuals as a type of non-substance addiction, is considered a behavioural addiction by several experts. This problem has been linked to impulsivity, which is related to emotional dependence and attachment styles. Differences in the prevalence of compulsive buying between men and women have generated much interest, but findings do not always point in the same direction. Aims: this study aims to analyse the differences in attachment, emotional dependence, impulsivity and compulsive buying between men and women; to analyse the model by which all these

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variables are related; and to test whether or not this model is different for men and women. *Method:* a non-clinical sample of 1,500 adolescents, half male and half female, living in South America was collected. After informed consent was given to the parents and/or legal guardians of the adolescents, the participants filled in the questionnaires in paper format. *Results:* the model initially proposed was confirmed. Despite finding differences between males and females in terms of levels of emotional dependence, impulsivity, compulsive buying and attachment, the way these variables interact does not change depending on gender. *Conclusions:* these results are very useful to implement better treatments aimed at mitigating or coping with compulsive buying, as well as to prevent this problem.

S-4F3

Adolescents watching sport, drinking alcohol, eating junk food, seeing betting ads, and gambling: The aggregate risk of in-play betting

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Background: The penetration of in-play betting forms (i.e., placing bets during a sport event) has drawn the researchers' interest concerning its negative impact on public health. In-play betting is believed to be a more impulsive, less planned way of gambling, and therefore, one involving greater risks. The present study examined the association between in-play betting and problem gambling (PG). In particular, the paper studied: (i) how motives for consuming sport could translate into PG; (ii) whether watching live sport content was associated with PG; (iii) if other risk behaviours simultaneous to in-play betting and sport consumption such as drinking alcohol and eating junk food were associated with PG; (iv) if PG severity was associated with a greater knowledge of betting brands and similarity to story characters usually portrayed in live sport broadcasting. *Method:* A sample comprising 659 young sports bettors from Spain was collected. An online survey questionnaire was designed. *Results:* The study found that compared to participants not engaging in in-play betting, in-play bettors reported (i) higher PG severity, (ii) higher sport watching involvement, (iii) higher consumption of sport to escape from everyday preoccupations, (iv) higher consumption of junk food and/or alcohol while watching sport, (v) greater knowledge of betting brands, (vi) felt more similar to the story characters depicted in advertisements.*Conclusion:* In-play betting is an instantaneous form of gambling that seems to contribute on its own, as a structural characteristic, to creating a riskier gambling environment that sits at the intersection of sport fandom and gambling.

Keywords: in-play betting, gambling, advertising

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S-4F4

Problematic gambling in youth and adolescents

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University of Deusto

Background: This study explores the role of attachment and alexithymia in gambling disorder. The aim of the present study was to explore the differences between problem and non-problem gamblers in severity of gambling, spending, video gaming, alcohol and drug use, attachment and alexithymia, as well as the interaction between these variables. *Method:* The sample consisted of youth and adolescent samples and the groups were divided according to SOGS-RA scores. *Results:* Some of the main findings, among others, have shown that problem gamblers scored significantly higher on all substance and non-substance addictive behaviours and alexithymia; as well as significantly lower scores on the mother and father attachment scales. *Conclusion:* This study showed that adolescent and young adult problem gamblers show higher levels of comorbid addictions than non-problem gamblers, as well as higher levels of alexithymia and poorer parental attachment.

S-4F5

Addictive behaviours in adolescent women

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Background: A growing body of research seeks to understand the aetiology and risk factors associated with addictive behaviours in adolescents, but research examining the profile of adolescent women is extremely limited. The main objective of this study was to analyse the relationship between gambling disorder, comorbid addictive behaviours (drugs, spending, alcohol and video games), positive and negative affect, attachment, and gambling motives (social, enhancement and coping) in female adolescents with- and without- gambling problems. *Method:* The sample was composed of young women and adolescents, who were divided into two groups according to the score obtained in the SOGS-RA. The results revealed that women with gambling problems have higher scores in the aforementioned variables compared to those who do not show gambling problems. Furthermore, analyses showed that the predictive value of the variables varies according to each addiction. *Conclusion:* Consequently, the need for integrated health- and social- care programmes are suggested in terms of age and gender.

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S-4F6

Attachment, trauma and behavioural addictions in a young clinical sample

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Background: Difficulties in emotion regulation (ER) have been proposed as a transdiagnostic risk factor of a wide range of mental health disorders, among these behavioural addictions. However, these impairments in ER are usually a consequence of traumatic experiences previously lived throughout life. The main experiences that configure the way in which the person relates to their internal and external word depends on the experiences lived during childhood. In this sense, insecure attachment and trauma are closely related with the onset and the maintenance of addictions. *Method:* The aim of our study was to explore the prevalence of insecure attachment and traumatic events in a young clinical sample with gambling disorder. *Results:* Results could be in line with the previous literature in which insecure attachments as well as trauma are more prevalent in this population compared to general population. *Conclusion:* Furthermore, these results could be useful to design treatment approaches that include not only classical psychotherapeutic interventions based on top-down processing but also psychotherapeutic interventions based on bottom-up processing.

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S-4G1

Recovery from addictive behaviors

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Symposium summary: Historically addictive behaviors were studied through the lens of illness and pathology, while recovery and the factors that lead to and promote it received much less attention. The current session will shed light on recovery from addictive behaviors from several points of view. The first will present a scoping review probing the state of the art on recovery from gaming disorder in the empirical literature. Specifically, it looks at how this concept is defined and how it is measured in gaming studies. The second presentation explores the role of mothering as a factor that motivates recovery from gambling disorder in a sample of 211 women (mothers and non-mothers) who received cognitive-behavioral therapy in a hospital clinic in Barcelona. The third presentation introduces a new scale that measures recovery capital in gambling disorder. The fourth presentation explores the views of 133 individuals diagnosed as having a life-time gambling disorder (recovered and non-recovered) on the importance of gender in the recovery process.

Keywords: recovery, addictive behaviors, treatment

S-4G2

What do we know about recovery from gaming disorder? A scoping review

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Background and aims: Recovery from mental health disorders is a standard organizing paradigm underlying mental health care. Classic definitions of recovery relate to it as a reduction in symptoms whereas current definitions see it as a process in which individuals improve their health and wellness and other life domains. The inclusion of gaming disorder (GD) in the 11th International Classification of Diseases in 2019 prompted growing interest in GD. However, relatively little is known about recovery from GD, and there is scant literature describing or assessing its course. This scoping review aims to explore the state of the art on recovery in GD (e.g., types of studies, recovery definitions and measurements, nature of the findings). *Methods*: The literature on GD was searched and critically reviewed according to PRISMA guidelines. *Results:* A total of 63 out of 632 studies met the inclusion criteria. The findings showed that most studies were conducted in Asian countries, using quantita-

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tive methods in the past four years. Recovery is measured mainly by symptom reduction/improvement on various scales (e.g., IGD, YIAS, GASIAT). The majority of these studies discuss treatment methods to improve clinical symptoms. *Conclusion:* Most studies do not address recovery from GD directly and tend to focus on mediating maladaptive gaming. Researchers should reach a consensus on the way recovery is defined and measured.

S-4G3

The Holistic Recovery Capital Scale

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Background and aims: Recovery capital is a conceptual framework covering the positive resources and obstacles to recovery. To date, no scale has measured both positive and negative RC items in the gambling field. Based on the RC conceptual framework adapted to gambling disorder a The Holistic Recovery Capital in Gambling Disorder (HRC-GD) scale was developed and validated. *Method:* One hundred and sixty four individuals with a lifetime DSM-5 GD (n=164) completed the 40-item HRC-GD scale, the DSM-5 gambling disorder diagnostic criteria, a Patient Health Questionnaire (PHQ-4) measuring depression and anxiety, and a brief measure of subjective happiness. *Results:* Item analysis resulted in over half of the items being eliminated due to skewness, kurtosis, and poor inter-item correlations, while the remaining positive and negative recovery items were then subjected to a principal component analysis (Oblimin rotation) to be further refined into a unidimensional scale. The HRC-GD demonstrated good internal consistency as well as construct and criterion validity. Specifically, the HRC-GD scale was significantly negatively related with measures of psychopathology and significantly positively associated with recovery status from gambling disorder. *Conclusions:* This unidimensional scale presents a holistic perspective to measure recovery capital in gambling disorder and may enable therapists and stakeholders to better support individuals with CSBD throughout recovery.

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S-4G4

Does mothering constitute a protective factor for recovery?

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Background and aims: Being a mother is a key gender role. Women with a gambling disorder (GD) suffer from dual social stigma as a gambler and as a woman who has betrayed her traditional gender role as a mother. In trying to overcome addictive disorders women may avoid applying for the treatment out of shame and the fear of losing custody of their children. On the other hand, children may be a powerful motivator on the road to recovery. This longitudinal study had two aims: (1) compare the sociodemographic and clinical profile of women with GD who are mothers with those who are childless; (2) determine whether motherhood has a positive or negative impact on the treatment response of these women, by assessing dropout, relapse, and therapy compliance rates. *Methods:* The sample was composed of 211 women with a diagnosis of GD (n=146 mothers) who received cognitive-behavioral therapy for 16 weeks. *Results:* The group of mothers reported older age and later age of onset of GD. Moreover, this group showed better CBT outcomes, specifically lower risk of relapse, and less money spent during relapses. Structural Equation Modeling (SEM) showed an inverse relationship between motherhood and risk of relapse. *Conclusions:* Being a mother is a motivating factor that may enhance treatment and recovery. Treatment providers should emphasize this role during therapy and engage in gender-sensitive therapy.

S-4G5

Does gender matter in recovery from gambling disorder? – Perspectives of Recovered Gamblers

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Background and aims: Gender is an important component of the recovery process given the different challenges faced by each gender. This study explored whether gender affiliation is perceived by men and women diagnosed as having a life-time gambling disorder as a factor that contributes or hinders their recovery process, and which recovery domains are perceived as assets or liabilities in terms of gender. *Methods*: Face to face interviews were conducted

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with 133 individuals (39 women) recovered and non-recovered from gambling disorder. The participants were asked to describe the factors that either helped or hindered their recovery as related to them as males or females. *Results*: Content analyses (using MAXQDA software) revealed that 41.42% of the participants perceived recovery as an individual but genderless process. Slightly more than half (58.58%) thought that the fact that they are women or men made their recovery process different (easier or more difficult) from the other gender. Four main categories emerged: stereotyped gender characteristics, traditional gender roles, Gamblers Anonymous as a patriarchal arena, and having sex for money to be able to gamble. Conclusions: The findings reflect a broad social discourse internalized by the participants which is manifested in the recovery process. The results expose the complexity of recovery when gender is added to the equation, and point to the need for treatment providers to develop gender-sensitive programs for both men and women.

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S-5A1

Women and Behavioural Addiction – New paths in research and treatment

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Symposium summary: It becomes more and more obvious that a gendered approach to research, prevention and treatment is highly relevant to gain a better understanding of and be more responsive to female-specific aspects of behavioural addiction. Literature and studies on Women and Gambling Disorder and other Behavioural Addiction are scarce, both in Europe and all over the world. Moreover, the existing data are not specific to women but inferred from mostly male samples. Nevertheless, more and more women are affected by pathological gambling and other non-substance related addictions. Obviously, women have a crucial role in family and society, and their gambling or other addictive behaviours, which are often underestimated, may have a deep impact on their social and personal life. One key issue is that women often experience great difficulty in finding appropriate treatment services. Most health clinics are not "female friendly", and treatment programs very rarely offer female-specific treatment approaches. In 2020 a pandemic struck all over the world. It deeply affected our lives and existence, our physical and mental health, in many ways. B.A. played an important role in women's life during the various COVID-19 lockdowns. Women paid high costs in this period and taking care of their health is now even more important. It's crucial to learn from your experiences as researchers and clinicians and to gather data from all over the world to enrich our shared understanding of these issues, to compare, discuss and improve research and treatment for the women on whose behalf we are working on.

Keywords: gender, female, behavioral addiction, treatment, research

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S-5A2

Prevention for female users: Exploring gender issues of online addictions

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Internet use-related addiction is increasingly being recognised on a European scale due to the inclusion of Internet Gaming Disorder (IGD) in the appendix of the fifth Diagnostic and Statistical Manual of Mental Disorders in 2013, and the inclusion of Gaming Disorder in the eleventh International Classification of Diseases in 2018. However, findings on the extent of these current problems extracted by reviews, one inside the European Union (EU) and the other outside the EU, support some insight about female online uses, a target to which not much attention has been paid. The authors, therefore, have reviewed scientific and grey literature regarding women online uses worldwide and discuss early detection, diagnosis, treatment, and prevention in paying respect to gender issues.

S-5A3

Risk factors associated with gambling and gaming addiction in girls

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Introduction: The existence of gender differences in gambling and videogaming has been consistently reported (Baggio et al., 2018). Gender differences have also been found in emotional experience and management and relational links associated with greater severity of addictive behaviors (Sancho et al., 2019). These factors may constitute significant predictors of gambling and videogaming in adolescent (Estevez et al., 2017). The aim of this study was to analyze gender differences in risk factors associated with gambling and gaming addiction. *Method:* 1208 adolescents participated in this study. Screening measures for at-risk gambling and gaming, affective states, alexithymia, emotion regulation, resilience, stressful life events and, finally, attachment to parents and friends. *Results:* Female participants did not show any association between the gambling and the psychological measures. However, they showed higher scores at the gaming associated with higher catastrophizing strategy in the emotion regulation questionnaire, lower maternal attachment, lower resilience, and higher difficulty at describing feelings in the alexithymia scale. *Conclusions:* These results suggest the existence of gender differences in the risk factors associated with addictive behaviors.

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S-5A4

Family Life Space in a pilot gender study: Shadows and lights in female gambling experience

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Research evidence shows that gambling represents a way for women to express sufferings related to dysfunctional relationships within the family as well as the deep effect of lack of family on women's demand for treatment, retention and outcome (Brandt, Wöhr, Prever,2014). The aim of this study is to explore how gambling can represent an active subject within the system (Prever&Locati,2017) and to evaluate the effectiveness of the "Family Life Space" as a tool to investigate both family dynamics and the role of gambling, to improve clinical assessment and treatment. The present pilot study includes four Italian women gamblers joining Azzardo&Donne group and two of their significant relatives. The FLS test (Mostwin,1974) was administered with clinical interview. Circular questions were crucial steps of therapeutic process and enabled the presentification of third party when the family member couldn't be present (Boscolo&Bertrando,1996). Results indicate that FLS is effective to describe communication and facilitate interaction among family members. In particular, the results highlighted: a) how difficult it is for women to have support and b) confirm FLS as prediction tool to support women seeking for help in addition and to evaluate adherence to treatment. Study results show clearly where Gambling is placed within the family and how it affects relationships, evolving over the time. Study limitation is mainly related to qualitative case investigation, not representative for the entire female gambling population. Nevertheless, according to literature, this confirms the value of deep interviews for a better understanding of women shadows and light in gambling experience.

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S-5A5

Women, Eating Disorders, Gambling Disorder and Food Addiction: Exploring their relationship

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Introduction: The food addiction (FA) concept has been explored as a potential risk factor in the development and prognosis of mental health conditions, including eating disorders (ED), obesity (OBE) and behavioral addictions such as gambling disorder (GD). Objectives: a) To analyze the differences in clinical presentation of patients with ED, OBE, GD and FA comorbidity when assessing by different variables such as gender; b) To provide a better phenotypic characterization of the FA construct by conducting a clustering analysis of FA in two conditions (ED and OBE). Method: The clinical sample included patients diagnosed with these mental disorders attending a specialized eating disorders and behavioral addictions units. Results: A worse psychopathological state was found in patients with FA, who obtained higher scores in harm avoidance and lower in self-directness when assessing personality traits. Patients with FA comorbidity were characterized by having a higher BMI in both genders. Moreover, among women with FA a longer GD duration was found. Three clusters of FA participants were identified. Cluster 1 (dysfunctional) was characterized by the highest ED severity and emotional distress, and more dysfunctional personality traits. Cluster 2 (moderate) showed moderate levels of ED symptomatology. Finally, cluster 3 (adaptive) was characterized by low levels of ED symptomatology, and more functional personality traits. Conclusion: The assessment of FA condition in patients with several mental disorders may be helpful to optimize preventive and therapeutic approaches. Future studies should address whether these three food addiction phenotypes are related to prognosis and therapy outcome.

S-5A6

Buying-shopping disorder – a female-specific mental health problem?

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Background: The key features of compulsive buying-shopping disorder (CBSD) are the diminished control over buying/shopping of consumer goods that are not needed, resulting in substantial negative consequences such as clinically significant distress and impairment in important areas of functioning (e.g., financial problems, familial conflicts, fraud). Population-based studies suggest that about 5% of adults are at-risk for BSD, whereas the majority of surveys have found that there are higher prevalence rates among women. Treatment-

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seeking samples with BSD consistently comprise more female than male patients. The talk will be addressing phenomenological aspects and underlying mechanisms associated with BSD in women. *Methods:* A sample of 90 female patients was investigated by using clinical interviews to assess BSD. Standardized questionnaires were used to assess symptom severity of BSD and comorbid mental disorders, e.g., anxiety, depressive, somatoform and hoarding disorder. *Results:* The "mixed" form of buying/shopping, which includes offline and online buying/shopping, was the most common CBSD subtype in the present female sample. Clothing and cosmetics were reported as the preferred product categories. About one fourth of the sample met the questionnaire threshold for major depression, and more than half of the sample met the thresholds for hoarding disorder, somatoform disorder, or generalized anxiety disorder. *Conclusions:* The preferred product categories are in line with other studies. The findings confirm previous reports concerning the comorbidity of CBSD with other mental disorders, indicating a high level of distress associated with BSD in women.

S-5A7

Identifying patterns of sexual functioning of women seeking treatment for compulsive sexual behavior

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Background: Despite the body of research regarding compulsive sexual behavior (CSB), there are little data on these behaviors among women. The current study aims to gather knowledge about the frequency of various forms of CSB among women, and their broader clinical picture (e.g., psychological role of certain behaviors, impact on family or romantic relationship and sexual functioning). *Methods:* Qualitative semi-structured interviews were undertaken with 25 Polish women (aged 22-44) seeking treatment for CSB. Self-reported instruments measuring CBS symptoms, anxiety, depression, and impulsivity, were also performed. *Results:* The most common problematic sexual behavior was engaging in casual sex, following by masturbation, preoccupation with sexual thoughts, and pornography use. 15 out of 25 women (60%) reported the occurrence of pornography and masturbation binges. In most cases, engaging in sexual activity was associated with excitement, high sexual arousal, and "disconnection" from reality. Women reported engaging in sexual behavior aimed at gaining acceptance, closeness, and validation. A significant proportion of women were exposed to negative life events in the past, such as separation of parents, family conflicts, physical, emotional, or/and sexual abuse. Sexual activity often occurred after the consumption of alcohol or other psychoactive substances. *Conclusions:* Our results will inform future studies on interventions targeting women with CSB by addressing individual and cultural factors experienced by with women seeking treatment for CSB.

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S-5A8

The female gamer concept: Insights from a qualitative exploration of female gamers from different countries

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Within gaming culture, female gamers have historically been excluded, objectified and stigmatised. Given their increasing presence in popular online games and some engaging in excessive and problematic play, it is surprising that research including female gamer samples is scarce. There is limited knowledge available as to who they are, how, and why they play. In order to fill this gap in knowledge, the present study aimed to explore the female gamer concept from an international perspective using a qualitative interview methodology. The sample for this study were recruited by an invite to interview using contact information they left at the end of a related survey. To take part in both studies, participants needed to play video games, be able to communicate in English and identify as a woman. Participants were 20 women, ranging in age from 21 to 39 years (M=26.06, SD=4.63). Eighty percent (n=16) were from Europe, primarily the U.K. (n=14), Spain (n=1), Norway (n=1), the remaining number were from the USA (n=3) and Canada (n=1). Fifty percent of participants selected to take part in a written interview. After transcription and full anonymization of all interviews was complete, thematic analysis was utilised to analyse the data following the guidelines offered by Braun and Clarke (2006). Results revealed the following themes: (i) "gamer" identity, (ii) social skills, (iii) escape, (iv) other considerations regarding gender. Implications and future directions are discussed.

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S-5B1

Biological mechanisms underlying problematic pornography use and compulsive sexual behaviors

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Symposium summary: The symposium will address biological and electrophysiological correlates of problematic pornography use and compulsive sexual behaviors. The first talk will examine epigenetic aspects of compulsive sexual behaviors using genome wide methylation pattern analysis and will report indicators of genetic variations, which are likely involved in oxytocin signaling pathways. Oxytocin will also be addressed in the second talk, which will report a hyperactive oxytocin system in men with compulsive sexual behavior disorder, which can be reduced in the course of cognitive behavioral therapy. The third talk will show a dysregulation of the hypothalamus-pituitarygonadal-axis with higher levels of the luteinizing hormone in men with compulsive sexual behaviors but no differences in the levels of testosterone. The fourth talk will present a study on electrophysiological correlates of problematic pornography use. After the experimental induction of negative mood, individuals with a tendency towards problematic pornography use show higher late positive potential amplitudes in a cue-reactivity task indicating an enhanced attention to pornographic stimuli. In summary, the talks of this symposium will demonstrate that biological and electrophysiological mechanisms are likely involved in compulsive sexual behaviors and problematic pornography use, which may be targeted by clinical interventions.

Keywords*:* genetics, oxytocin, pornography, compulsive sexual behavior disorder

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S-5B2

Hypermethylation-associated downregulation of microRNA-4456 in hypersexual disorder with putative influence on oxytocin signalling: A DNA methylation analysis of miRNA genes

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Background: Hypersexual disorder (HD) (DSM-5 proposal) and the Compulsive Sexual Behavior Disorder included as an impulse-control disorder in ICD-11 incorporate impulsivity, compulsivity, sexual desire dysregulation and sexual addiction. No previous study investigated HD in a methylation analysis limited to microRNA (miRNA) associated CpG-sites. *Methods:* The genome wide methylation pattern was measured in whole blood from 60 subjects with HD and 33 healthy volunteers using the Illumina EPIC BeadChip. 8,852 miRNA associated CpG-sites were investigated in multiple linear regression analyses of methylation M-values to a binary independent variable of disease state (HD or healthy volunteer), adjusting for optimally determined covariates. Expression levels of candidate miRNAs were investigated in the same individuals for differential expression analysis. Candidate methylation loci were further studied for an association with alcohol dependence in an independent cohort of 107 subjects. *Results:* Two CpG-sites were borderline significant in HD - cg18222192 (MIR708)($p < 10E-05$,pFDR = 5.81E-02) and cg01299774 (MIR4456)($p < 10E-06$, pFDR = 5.81E-02). MIR4456 was significantly lower expressed in HD in univariate ($p < 0.0001$) and multivariate ($p < 0.05$) analyses. Cg01299774 methylation levels were inversely correlated with expression levels of MIR4456 ($p < 0.01$) and were also differentially methylated in alcohol dependence ($p = 0.026$). Gene target prediction and pathway analysis revealed that MIR4456 putatively targets genes expressed in brain involved in major neuronal molecular mechanisms thought to be relevant for HD, e.g., the oxytocin signalling pathway. *Conclusions:* these findings implicate a potential contribution of MIR4456 in the pathophysiology of HD by putatively influencing oxytocin signalling.

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S-5B3

High plasma oxytocin levels in men with hypersexual disorder

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Background: Hypersexual disorder (HD) integrates pathophysiological aspects such as sexual desire deregulation, sexual addiction, impulsivity and compulsivity (DSM-5 proposal). Compulsive Sexual Behavior Disorder is included as an impulse-control disorder in ICD-11. Recent study showed a potential contribution of microRNA4456 in the pathophysiology of HD by putatively influencing oxytocin signalling. No studies have assessed OXT levels in patients with HD. Whether CBT treatment for HD symptoms has an effect on OXT levels has not been investigated. *Methods:* We examined plasma OXT levels in 64 male patients with HD and 38 male age-matched healthy volunteers. Further, we examined correlations between plasma OXT levels and dimensional symptoms of HD using the rating scales measuring hypersexual behaviour: Hypersexual disorder screening inventory (HDSI) and Hypersexual Disorder: Current Assessment Scale (HD: CAS). A part of the patients (N=30) completed the manual-based group-administered CBT program for HD and had a secondary measurement of OXT at post-treatment. OXT was measured with Radioimmunoassay. *Results:* Patients with HD had significantly higher OXT (Mean 31.0 ± SD 9.9 pM) levels compared to healthy volunteers (Mean 16.9 ± SD 3.9 pM) ($p < 0.001$). Patients who completed CBT treatment had significant reduction of OXT levels from pre-treatment (30.5±10.1pM) to post-treatment (20.2±8.0pM) ($p < 0.001$). Patients with HD had a significant positive correlation of their changes in HD: CAS with plasma oxytocin level before and after CBT($r=0.388$, p value= 0.0344) *Conclusions:* The results suggest hyperactive oxytonergic system in male patients with hypersexual disorder. CBT group therapy may have effect on hyperactive oxytonergic system.

S-5B4

The impact of negative mood on event-related potentials when viewing pornographic pictures

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Justus-Liebig Universität Gießen

Background: Pornography is often used to reduce negative affect. Experimental studies have shown that both the craving for drugs and the consumption of drugs are increased during negative affect. The aim of this study was to investigate whether healthy participants with

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negative affect show alterations in cue reactivity (operationalized as event-related potentials) to pornographic stimuli. *Method:* In this ongoing study, 46 men have been examined to date. Negative feedback on a performance task was used to induce negative affect in the experimental group (EG, n=25) while the control group (n=21) received a neutral feedback. Afterwards, the participants performed a cue reactivity paradigm by looking at pornographic and neutral pictures. Meanwhile, event-related potentials were recorded. The tendency towards pornography addiction was measured with the short Internet Addiction Test adapted to online sexual activities. *Results:* The EG reported a more negative affect after the performance task. In participants reporting a high tendency towards pornography addiction, the EG showed higher late positive potential (LPP) amplitudes to pornographic stimuli and lower LPP amplitudes to neutral stimuli. This effect was not seen in participants with no tendency towards pornography addiction. *Conclusions:* In this experimental study, negative mood in participants with a high tendency towards pornography addiction was accompanied by higher LPP amplitudes indicating an enhanced attention to pornographic stimuli. Identifying the neuropsychological mechanisms underlying addictive pornography consumption will help to develop effective tailored interventions for those suffering from compulsive sexual behavior disorder (CSBD).

S-5B5

Higher LH plasma levels but normal testosterone in men with hypersexual disorder

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Background: Hypersexual disorder as suggested to be included in the DSM-5 integrates aspects of sexual desire deregulation, impulsivity and compulsivity. However, it is unknown how it affects gonadal activity and the function of Hypothalamus Pituitary Gonadal (HPG) axis. Aim: The aim of this study was to investigate testosterone and luteinizing hormone (LH) plasma levels in hypersexual men compared to healthy controls. *Methods:* Basal morning plasma levels of testosterone, LH and Sex Hormone-Binding Globulin (SHBG) were assessed in 67 hypersexual men (mean age 39.2) compared to 39 age matched healthy controls (mean age 37.5). The Sexual Compulsivity scale (SCS) and the Hypersexual disorder current assessment scale (HD:CAS) were used for assessing hypersexual behavior, the Montgomery-Åsberg Depression Scale-self rating (MADRS-S) for depression severity and the Childhood Trauma Questionnaire (CTQ) for assessing history of childhood adversity. *Results:* LH plasma levels were significantly higher in hypersexual patients compared to healthy volunteers. No significant differences in plasma testosterone, FSH, prolactin and SHBG levels were found between the groups *Conclusions:* Subtle dysregulation of the HPG axis, with increased LH plasma levels but no difference in testosterone levels may be present in hypersexual men.

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S-5C1

Broadening our horizons: Exploring sports betting behaviors, gambling motives, barriers to care for help seeking, and cultural considerations for diverse populations

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Symposium summary: Sports betting continues to grow in popularity in the United States and around the world, due to recent legal changes and technological advances that have increased access for millions of players around the world. Despite the popularity and frequency of sports betting and gambling more generally, gaps remain around the frequency of sports betting and other gambling behaviors among gender and ethnically diverse groups; barriers to help seeking for those wishing to reduce or abstain from problematic gambling remain poorly understood. The present symposium presents innovative work on these topics employing a range of methodologies to address knowledge gaps. Repairer Etuk will present results from a systematic review that examines whether sports betting behaviors differ among and between sports bettors in different countries. Jennifer Grant will present results from a United States sample to identify motives for help seeking among individuals wishing to reduce their gambling behaviors. Shanti James will report findings from a systematic review study that examines problem gambling in women. Christopher Floyd will present United States data that examines the interaction between socio-economic status and gambling motives—particularly financial motives—in predicting problem gambling behaviors. Joshua Grubbs will present United States data that evaluates the relationships between motivations for sports betting behaviors, gambling related cognitions, and problem gambling symptoms. Collectively, these works present innovative research employing a variety of methods to explore sports betting/wagering and other gambling behaviors, gambling motives, psychopathology, and barriers for help seeking, particularly as it relates to women and diverse cultural populations.

Keywords: gambling, sports betting, women, help seeking, gambling motives

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S-5C2

Sports betting around the world: A systematic review

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Background and aims: This systematic review assessed whether sports betting behaviors differ among and between sports bettors in different countries, evaluates psychosocial problems related to sports betting behaviors and how problems may differ by country, and summarizes the current regulatory guidelines for sports betting in different countries. *Methods:* We followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines and included peer reviewed articles from PubMed and PsycINFO for this systematic review. Studies on sports betting behavior were included if they were: (1) published in English or Chinese and (2) published between January 1, 2010, and September 12th, 2021. Regulatory information was also gathered by examining peer-reviewed articles, legal acts, and relevant websites. *Results:* Marketing and promotion of sports betting may be more prominent for sports betting in Australia and the United Kingdom. Psychosocial problems do not appear to differ greatly by country, and generally sports betting appears to be associated with high levels of problem gambling. Countries frequently differ in their regulatory frameworks for sports betting, including restrictions on access and the types of sports betting they allow. Discussion and Conclusions: Currently, sports betting is easy to access, normalized, and contains many attractive features for sports bettors. Psychoeducation about the potential risks of sports betting and encouragement of responsible gaming strategies (e.g., limit setting) could help lessen risky sports-betting behaviors, though cross-cultural adaptions of responsible gaming strategies should be explored.

S-5C3

Why get help? Anticipated reasons for future help-seeking for addictive behavior in a U.S. nationally representative sample of adults

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[2]University of Nevada, Las Vegas

Background: Prior research surrounding help-seeking for gambling problems has focused on motives for engagement or abstinence and barriers to treatment in those with Gambling Disorder or seeking help. In contrast, little is known about what those who engage in gambling look for as warning signs in themselves that they need treatment in the future. *Method:* In March, 2022, a weighted, nationally representative sample of adults (N = 2,500) and a sample of adults who have recently bet on sports (N = 1,500) in the United States will be

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collected. Alongside a variety of measures of gambling behavior, motives, and problems, we will assess the factors that might lead a non-problematic gambler to seek help for gambling in the future using quantitative and qualitative methods. Specifically, we will investigate what reasons motivate individuals to seek professional help in reducing their gambling behaviors if problems occur. *Results:* Using a variety of statistical methods, the present work will examine how a sample of largely non-problematic gamblers evaluate their own behaviors and likelihood to seek out help in the future. *Conclusions:* The results of the present work will allow us to draw inferences about the types of warning signs that members of the public might use to determine if and when they seek help for addictive behavior patterns. From these findings, we will seek to draw inferences regarding the processes that people engage in when evaluating their own behaviors and discuss potential implications for future public education campaigns around addictive behaviors.

S-5C4

Problem gambling in women: A systematic review and call for research

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Bowling Green State University

Background: Gambling disorder remains the most researched of the behavioral addictions, with hundreds of studies on the topic having been published over the past 50 years. However, despite its status as the best-understood of the behavioral addictions, there are still noticeable deficits in our current understanding of gambling-related problems, particularly in understudied populations. The purpose of the present work is to systematically address one such deficit: gambling in women. *Method:* A systematic review of gambling behaviors in women, with a focus on gambling related motives, beliefs/cognitions, problem gambling symptoms, and gambling related outcomes was conducted. Key word searches will be conducted using a variety of databases (e.g., PubMed, Psyc Info, Academic Search Complete). Results that report quantitative analysis of gender differences or effects in gambling related cognitions, motives, situations, or problems will be retained for the final review. *Results:* Preliminary key-word searches revealed over 1,500 works for further review. Using specified exclusion criteria, early results suggest a sizeable portion of papers that empirically examined differences between men and women in key clinically relevant gambling related outcomes. These results will be compiled, synthesized, and summarized to reveal established findings regarding gambling behaviors in women and clear deficits in our current understanding. *Conclusions:* Present results suggest that gambling among women, though widely researched, has been poorly synthesized; and unique gender-related associates of gambling disorder and problem gambling behaviors have not yet been adequately studied in current literature. There remains a need for a more systematic evaluation of gambling behaviors in women.

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S-5C5

Means, Motives, and Opportunities: Examining interactions between gambling motives, socio-economic status, and gambling outcomes

CHRISTOPHER G FLOYD[1], SHANE W KRAUS[2], JOSHUA B GRUBBS[1]

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Background: Research regarding how socio-economic status (SES) interacts with motivations for gambling is scarce. Given the association between SES and problematic gambling, it is worth examining how the interrelationships between gambling motives and SES impact gambling frequency and severity, and how SES interacts with motives to predict more concerning outcomes. *Method:* In March, 2022, a weighted, nationally representative sample of adults in the United States will be collected (N = 2,500), as well as a sample of adults in the U.S. who have recently bet on sports (N = 1,500). Household income will be assessed, alongside a range of other socio-demographic variables. Gambling motives will be measured by the Gambling Motives Questionnaire-Financial. Gambling outcomes will be measured both in terms of frequency and problems (as measured by the Problem Gambling Severity Index). *Results:* The present work will evaluate the interaction between SES and gambling motives—particularly financial motives—in predicting problem gambling behaviors. Specifically, we will seek to test whether or not financial motives for gambling are more prevalent among lower-income individuals and if financial motives for gambling predict greater levels of gambling related problems among lower-income individuals. *Conclusions:* The results of the present work will allow us to draw inferences about the risks that gambling motives might play for future gambling problems, particularly as those motives interact with other demographic factors (e.g., gender, race/ethnicity). Collectively, these findings will help to identify clear risk factors for and comorbidities of problem gambling behavior.

S5C6

Sports wagering in the U.S.: Results from a recent nationally representative sample

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Background: Sports wagering is a common recreational activity in the United States, with recent legal changes and technological advances likely leading to increases in that popularity. Even so, despite this popularity, among gambling behaviors, sports wagering remains poorly understood by the mental health community. The present work seeks to address this deficit in current literature by examining sports wagering in a population-level sample recruited from the United States. *Method:* In March, 2022, a weighted, nationally representative sample of adults in the United States will be collected (N = 2,500) and a national sample of sports-wa-

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gering individuals will also be collected (N = 1,500). Sports wagering behaviors will be assessed using a variety of measures. We will particularly focus on application-and-web-based sports-wagering behaviors, including fantasy sports play. Motivations for gambling behavior, gambling related cognitions, and problem gambling symptoms will also be assessed. *Results:* Data will be analyzed using a variety of statistical techniques to determine how, when, and why participants are likely to report sports-wagering and the specific behaviors they report. We will also analyze the environmental factors that lead participants to engage in sports wagering and any indicators that demonstrate sports wagering might lead to problematic behaviors *Conclusions:* The results of the present work will allow us to draw inferences about the prevalence of sports-wagering in the United States and identify clear risk and protective factors for problematic play, as well as comorbidities of such problematic play.

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S-5D1

Prevention and treatment of internet-related problems

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Symposium summary: Digital media use has become an integral part of young people's daily lives. Besides its evident benefits, digital media can also have serious disadvantages and may – when used excessively - increase the risk of problematic gaming and problematic use of social media/ smartphone. In this symposium we will present our latest findings on the prevention and treatment of these internet-related disorders in youths. The first presentation will address the influence of social (parents and peers) and individual factors on the development of risky and problematic social media use in adolescents. In the second presentation, we will further elaborate on parental behaviors, i.e., general and internet-specific parenting practices, that may help to prevent adolescents' risky and problematic social media use. In the third presentation, we will present the results of a Clustered Randomized Trial to test the effectiveness of an online intervention to reduce young adults' problematic smartphone use. The two final presentations will focus on prevention and treatment of problematic gaming. First, data will be presented on the interplay between in-game rewards and personal vulnerabilities in relation to adolescents' problematic gaming. Then, in the last presentation, treatment registry data from youths who received addiction treatment for problematic gaming will be evaluated to obtain more insight into clinical characteristics that may warrant specific treatment strategies. This symposium will provide a comprehensive overview of the challenges adolescents face with digital media use and will provide leverage points for adolescents, parents and addiction care professionals to prevent and treat problematic digital media use.

Keywords: problematic gaming, problematic social media use, prevention, treatment

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S-5D2

The influence of parents and peers on adolescents' problematic social media use revealed

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Utrecht University, Interdisciplinary Social Sciences: Youth Studies, Utrecht, the Netherlands

Background: Nowadays, parents, caretakers, teachers and researchers have an increasing interest in the development and consequences of problematic social media use, especially among adolescents. A growing body of research investigates factors that may influence the development of problematic social media use. This study examined the role of the broader context of parental (time spent with parents and family support) and peer (peer support and peer pressure) and individual factors (perceived self- control) in the development of an individual's risky and problematic social media use (ref=normative), and the moderating role of self-control in a longitudinal design. *Method:* Adolescents (N= 1384) aged 11 to 19 years (Mage= 14.1, SD= 1.03) were included and completed a self-report questionnaire twice (6-month interval). *Results:* A Multinomial Logistic Regression showed that parent and peer factors predicted risky social media use, but not problematic use of social media. Adolescents' level of self-control did not modify these relationships. However, lower self-control did increase the odds of developing risky or problematic social media use. *Conclusions:* This study has demonstrated that general parent and peer factors can help to prevent risky social media use, but not problematic use of social media. For the latter, the individual factor self-control, however, seems to play a role.

Keywords*:* Problematic social media use, adolescence, time spent with parents, family support, peer support, peer pressure and self-control.

S-5D3

Rules, role models or overall climate at home? Relative associations of different family aspects with adolescents' problematic social media use

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Utrecht University, Interdisciplinary Social Sciences: Youth Studies, Utrecht, the Netherlands

Background: This study aimed to enhance knowledge on which aspects of the family context are most important in relation to adolescents' at-risk/problematic social media use (SMU). Therefore, we examined the relative contribution to adolescents' at-risk/problematic SMU of general and Internet-specific family factors related to three different family (sub)systems: parent-child (Internet-specific rule-setting, reactive restrictions towards Internet use, co-use, adolescents' involvement in rule-setting and positive parenting), parent (parental screen time, phubbing, stress, anxiety and depression) and family (family functioning, family intactness and SES) (sub)system. Method: Questionnaire data came from 403 adolescents (M = 13.51,

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SD = 2.15) and 396 parents (M = 46.59, SD = 5.29) who participated in wave 1 of the Dutch 'Digital Family project'. *Results:* Logistic regression analyses showed that only factors related to the parent-child subsystem remained significant in predicting at risk/problematic SMU when examining predictors related to the parent-child, parent and family (sub)system simultaneously. Specifically, general and Internet-specific parenting practices contributed to the prediction of adolescents' at-risk/problematic SMU above and beyond each other. Positive parenting and Internet-specific rule-setting seem protective, while parental reactive restrictions towards Internet use could be a risk factor. *Conclusion:* The results suggest that parental behaviors directed towards the child should be a focus of attention in research on prevention of adolescents' problematic SMU. In addition, our findings highlight the importance of untangling restrictive mediation (impulsive, in the moment, attempts to limit SMU versus communicating clear rules in advance) when examining its effects.

Keywords*:* adolescent problematic social media use, family context, parent-child subsystem, parent subsystem, family system

S-5D4

How effective is the online intervention 'Master your Smartphone' in preventing problematic smartphone use among students?

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Background: Although there is increasing evidence for the negative impact of problematic smartphone use on students' academic achievements, there are hardly any intervention programs aiming at the prevention of problematic smartphone use among students. The online intervention 'Master your smartphone', developed by Utrecht University, aims to reduce problematic smartphone use and smartphone use that is interfering with academic tasks in university students. Method: A Clustered Randomized Trial was conducted to investigate if the online module is effective in reducing problematic smartphone use and smartphone use during academic tasks. Twelve classes of first-year university students (N = 248; M = 18.8, SD = 1.41) were randomly assigned to either the experimental or the control condition. In the experimental condition, students followed the intervention module 'Master your smartphone', in the control condition students followed a general time management module. Data were collected at three time points, 1 month before the intervention (pre-test), during the intervention, and 3 months after the intervention (post-test). Results: The intervention was effective in decreasing symptoms of problematic smartphone use among students, but there was no evidence that the intervention limited smartphone use during academic tasks. Additional analyses indicated that the impact of the intervention on symptoms of problematic use was moderated by treatment integrity, i.e., students who scored higher on intervention

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responsiveness were more likely to benefit from the intervention than students who scored low. Conclusion: The online intervention 'Master your smartphone' seems an effective tool to prevent smartphone addiction symptoms in students.

Keywords*:* Smartphone addiction, online module, intervention, prevention

S-5D5

Problematic gaming in young adolescence: The role of in-game rewards and individual vulnerabilities

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Background: Rewarding characteristics in games may amplify the transition from recreational to more problematic gaming behavior. This research explored the association between typical rewarding game elements and adolescents' problematic gaming behaviors and evaluated the interacting nature of individual vulnerabilities within this relationship. *Method:* In a two-cohort-design the impact of rewarding elements (e.g., random rewards, contingencies rewards, social rewards, and meta-achievements) on adolescents' problematic gaming was investigated. Participants were 2708 (53.9% male, mean age 13.9 SD=1.20) and 2073 secondary school students in respectively in the first and second cohort (52.1% male, mean age 14.3 SD=1.49). *Results:* Results revealed that random rewards, social rewards, and contingencies rewards, were predictors of adolescents' problematic gaming in both cohorts. Games including such type of rewards increased the risk for problematic game play. Regarding interactions with individual vulnerabilities, results indicated that for adolescents with attention deficit hyperactivity symptoms, the impact of contingencies rewards on problematic gaming behavior was amplified, while for adolescents with social problems the impact of social rewards on problematic gaming was amplified. *Conclusion:* The findings illustrate that certain rewarding elements in games can increase problematic gaming behavior, particularly among adolescents with individual vulnerabilities. Prevention strategies can benefit from integrating this knowledge in education and intervention strategies may be tailored towards those with attention-deficit hyperactivity symptoms and social problems as these adolescents are at the greatest risk for being affected by the rewarding elements in games.

Keywords*:* Problematic Gaming, Game Rewards, ADHD, Social Competence, Adolescents

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S-5D6

Problematic gamers in youth addiction treatment: Clinical characteristics, diagnosis and problem recognition

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Background: In the past decade, Dutch addiction care facilities have witnessed an increased treatment demand for problematic gaming, particularly among adolescents and young adults. In this presentation we will examine characteristics of youths who received addiction treatment for problematic gaming. *Method:* We analysed treatment registry data of a youth addiction treatment facility in the Netherlands. Data about clinical characteristics were obtained from 701 patients (12-22 years). *Results:* For 129 patients gaming was the primary problem for entering treatment. Most patients were male and relatively young. About 63% met criteria for Internet Gaming Disorder (IGD) and the mean quantity-frequency of gaming was 22 days (SD= 9.0) and 5 hours p/day (SD=3.0). Therapists indicated that 45% of these patients did not regard their gaming as problematic. This lack of problem recognition was higher in gamers than in patients with other types of addictions. Except for signs of autism spectrum disorder, education problems, and bullying victimisation, problematic gamers generally showed less comorbid problems than patients with other addictions. *Conclusion:* A considerable proportion of problematic gamers in youth addiction treatment do not meet criteria for IGD and do not regard their gaming as problematic. Problematic gamers generally showed less psychiatric comorbidity than patients with other types of addictions. However, autism spectrum disorder, education problems and bullying victimisation were more prevalent in this patient group.

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S-5E1

Frequencies and predictors of problematic online behaviours in an Australian sample

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Background: This study aimed to ascertain the frequencies and predictors of several problematic online behaviours (POBs) in an Australian community sample. *Method:* The survey was administered to 1626 Australians aged 16 to 60. Participants were asked to complete the instruments assessing levels of anxiety, depression and attention deficit/hyperactivity disorder (ADHD), as well as 6 POBs: gaming, cyberchondria, cybersex, online shopping, use of social networking sites and gambling. Each POB was presumed to be present based on the scores on the corresponding self-report instrument and at least one self-reported indicator of interference with functioning. Generalized Linear Models analyses were used to ascertain the predictors of each POB. *Results:* The most common POB in the total sample was shopping (12.2%), followed by gambling (11.4%), use of social networking sites (6.0%), cybersex (5.3%), gaming (5.2%) and cyberchondria (4.1%). Except for cyberchondria, the rates of all POBs were the highest in the age group 27-36. The intensity of ADHD symptoms predicted all POBs, male gender predicted problematic online gaming and cybersex and younger age was a significant predictor of all POBs except for problematic cybersex and online gambling. Other demographic variables predicted only some POBs, whereas levels of anxiety and depression predicted no POB. *Conclusions:* The frequencies of the specific POBs in the community appear to vary markedly between different age groups. Although the direction of causality, if any, cannot be inferred, a strong relationship between ADHD symptoms and all POBs may reflect a role of online environments in soothing ADHD-related distress.

Keywords: problematic online behaviours, problematic Internet use, ADHD, community

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S-5E2

The psychiatric comorbidity of gaming disorder and hazardous gaming based on ICD-11

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Aim: Psychiatric comorbidity is an essential issue in treating individuals with gaming disorder (GD). However, the prevalence of psychiatric comorbidity in gaming disorder by ICD-11 criteria had not been well established. This presentation aimed to evaluate the psychiatric comorbidity of GD or hazardous gaming (HG) according to ICD-11 criteria. *Methods*: We recruited participants with GD, HG, and controls according to the diagnostic criteria of ICD-11. A total of 60 participants with IGD, 45 ones with HG, and 120 controls were recruited in the diagnostic interviewing study. Attention-deficit/ hyperactivity disorder (ADHD), depressive disorder, generalized anxiety disorder (GAD), and social anxiety disorder (SAD) were diagnosed by psychiatrist based DSM-5 criteria and MINI. *Results*: The chi-square analysis demonstrated that the GD group had a higher comorbid rate of ADHD, GAD, depressive disorder, and SAD than controls. ADHD and depressive disorder were the most associated comorbid disorder based on logistic regression. On the other hand, HG had a higher comorbid rate of ADHD and GAD than controls. ADHD was the most associated comorbid disorder of HG. *Conclusion:* This presenting study demonstrated that ADHD, depressive disorder, GAD, and SAD are associated with GD based on ICD-11 criteria. Further, the HG was associated with GAD and ADHD. This study suggested that psychiatric comorbidity, particularly ADHD and depressive disorder, should be well assessed and intervened among individuals with GD or HG.

Keywords: IGD, HG, ADHD, GAD, SAD, depressive disorder

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S-5E3

Common predictors of problematic gaming, social media, and pornography use

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Introduction: Problematic gaming, social media, and pornography use have all been conceptualized as potential behavioral addictions, sharing similar etiological and neurological mechanisms. Nevertheless, majority of the research to date has investigated these behaviors separately or explored their co-occurrence. The present study aimed to investigate how an identical set of predictors relates to each problematic behavior, exploring the similarities and differences between them. *Methods:* Data was collected during the first wave of the COVID-19 pandemic with an online survey among a convenience sample of Hungarians. Three linear regression models with the three different problematic behaviors as outcomes were conducted (problematic social media use/pornography use/gaming N = 332/396/217; gender = 62.2/66.0/69.9% males; mean age = 38.6/39.9/37.6 years; SD = 10.7/11.0/10.0). *Results:* Findings revealed that depression symptoms were significantly and positively related to all three problem behaviors. Problematic pornography use was associated with male gender, while problematic social media use was associated with female gender. Time spent on each activity was positively correlated with the problematic use of the same activity. Remarkably, playing time was also positively associated with problematic social media use and problematic pornography use. Moreover, loneliness was significantly and positively associated with problematic pornography use. *Conclusion:* The results indicate that problematic gamers, social media, and pornography users all may experience depression symptoms and that excessive use may result in adverse consequences in all these activities. The current findings extend the knowledge regarding the psychological features of problematic use of games, pornography, and social media, highlighting the need to focus on their common underlying etiological processes.

Keywords: problematic gaming, problematic social media use, problematic pornography use

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S-5E4

Problematic gaming is associated with frequent substance use: A survey among Italian young adults

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Background: problematic gaming is an emerging condition within the field of behavioural addictions. Problematic gaming has been demonstrated to be highly comorbid with many other mental disorders. Among these, substance use has been associated with problematic gaming, and there are underlying similarities between behavioural addictions and substance use disorders (SUDs). The aim of the present study was to investigate the association between problematic gaming and substance use among young adults drawn from the general Italian population. Psychopathological correlates of problematic gaming were also explored. *Methods:* lifetime substance use, type of substances consumed, and frequency of use were investigated through an online survey in a sample of 913 adults aged 18-40 years. Problematic gaming was assessed using the ten-item Internet Gaming Disorder Test (IGDT-10). Psychopathology was assessed using the Revised 90-item Symptom Checklist (SCL-90-R). *Results:* problematic gaming prevalence rate was 4.4%. Problematic gamers scored higher on all dimensions of psychopathology, confirming the association between problematic gaming and psychiatric distress. Regarding substance use, problematic gamers were more commonly polysubstance users and more commonly made use of psychodysleptic substances. Problematic gamers were frequent substance users more commonly than non-problematic gamers, and 32.5% of problematic gamers used or had used psychoactive substances often or everyday throughout their lives.*Conclusions:* The findings reinforce the concept of a common neurobiological vulnerability for both problematic gaming and substance use. There is the need for more research to examine the phenomenology of problematic gaming and its interplay with substance use to help develop effective interventions and prevention strategies.

Keywords: problematic gaming, substance use, addiction, psychopathology, psychoactive substances

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S-5E5

Common networks predicting craving for cocaine use and gambling

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Background: Craving, typically characterized by intense and urgent desires to engage in behaviors often with addictive potential, is one core characteristic of addictive behaviors. Multiple studies implicate executive control, reward, and salience as involved in craving in both behavioral and substance addictions. However, no prior study has identified common neural networks that reliably predict craving across addictive behaviors, which was the aim of the present study. *Method:* We used functional magnetic resonance imaging (fMRI) and connectome based predictive modeling (CPM) in a sample of individuals with cocaine-use disorder and gambling disorder. CPM is a data-driven method for generating brain-behavioral models from functional connectivity data. During fMRI participants saw videos depicting cocaine and gambling scenarios to induce craving. Networks were identified that: (1) differ between groups; and, (2) statistically predict craving across both addictive behaviors. *Results:* Groups differed in connectivity within visual cortices and between visual and visual association cortices. Despite these group differences, a common network predicting craving was identified. The networks demonstrated decreased connectivity of the fronto-parietal network with the visual association cortex and default mode network. Furthermore, decreased connectivity between the motor cortex and salience network as well as between the motor cortex and visual association network also predicted craving. *Conclusions:* This is the first identification of a common network predicting craving across substance and behavioral addictions. The identified networks overlapped with previously identified networks predicting cocaine abstinence (albeit in different directionalities), raising the possibility that similar networks linked to craving may be targeted for promoting abstinence.

Keywords: neural networks, craving, gambling disorder

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S-5F1

How coping styles, cognitive distortions, and attachment predict problem gambling among adolescents and young adults?

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Background and aims: Recent research suggests that youth problem gambling is associated with several factors, but little is known how these factors might influence or interact each other in predicting this behavior. Consequently, this is the first study to examine the mediation effect of coping styles in the relationship between attachment to parental figures and problem gambling. *Methods:* A total of 988 adolescents and emerging adults were recruited to participate. The first set of analyses tested the adequacy of a model comprising biological, cognitive, and family variables in predicting youth problem gambling. The second set of analyses explored the relationship between family and individual variables in problem gambling behavior. *Results:* The results of the first set of analyses demonstrated that the individual factors of gender, cognitive distortions, and coping styles showed a significant predictive effect on youth problematic gambling, and the family factors of attachment and family structure did not reveal a significant influence on this behavior. The results of the second set of analyses demonstrated that the attachment dimension of angry distress exerted a more indirect influence on problematic gambling, through emotion-focused coping style. Discussion: This study revealed that some family variables can have a more indirect effect on youth gambling behavior and provided some insights in how some factors interact in predicting problem gambling. *Conclusion:* These findings suggest that youth gambling is a multifaceted phenomenon, and that the indirect effects of family variables are important in estimating the complex social forces that might influence adolescent decisions to gamble.

Keywords: youth gambling, coping styles, attachment

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S-5F2

How gambling motives are associated with socio-demographics and gambling behavior – A Finnish population study

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Background: The aims were to examine how socio-demographics and gambling behavior relate to both primary and additional gambling motives, and whether the gambling motives change during a one-year-period. Methods: The Finnish Gambling Harms Survey data was used. Gambling motives were measured with a categorical question. Gambling severity was measured using the Problem and Pathological Gambling Measure (PPGM). Using the first-wave data including only past-year gamblers (n=5,684), five logistic regression models were utilized to explore the associations of gambling motives with socio-demographics and gambling behavior. The stability of gambling motives was assessed with McNemar's test using longitudinal data (n=2,078). *Results:* Gambling for positive feeling was associated with younger age, high income, high gambling involvement and at-risk gambling. Monetary motive was associated with female gender, high gambling involvement, online or mixed-mode and at-risk gambling. Supporting worthy causes was associated with older age, monthly and weekly gambling, and land-based gambling. Socializing was associated with younger age and gambling occasionally on land-based venues with multiple game types. Finally, the motive to escape was intensified among 25–34-year-olds, homemakers, and those with high gambling involvement and at-risk or problem gambling. Gambling motives remained relatively stable for one year. *Discussion & conclusions:* Gender and age profiles varied in different motives. Positive feeling, socializing and escape motive was heightened among younger respondents while supporting worthy causes was heightened among the oldest. Women gambled for money more often than men. Escape motive was associated with problem gambling. Longer follow-up is needed to confirm the longitudinal results.

Keywords: gambling motives, gambling behavior, population study

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S-5F3

Motivation to gamble, boredom proneness and the severity of gambling problems as predictors of online gambling beginning during the COVID-19 pandemics among gamblers: Results of a longitudinal study in Poland

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The present study aimed to look for predictors of gamblers' engaging in online gambling during the COVID-19 epidemic. Motivation to gamble, boredom proneness and the severity of gambling problems were treated as potential predictors. Polish offline gamblers (N = 610) were studied employing an online survey. Changes in online and offline gambling trajectory during the epidemic and the severity of gambling problems were assessed in 3 waves of the longitudinal study. Gamblers who started playing online during the outbreak had a lower coping, enhancement, and social motivation to gamble as well as lower severity of gambling problems than pre-pandemic online gamblers. However, they were more prone to boredom and were driven by higher financial and social gambling motives than players who had not started playing online during the epidemic.

Keywords: online gambling, gambling, motivation to gamble, boredom proneness, problem gambling, COVID-19 pandemics

S-5F4

Gambling among young people? How does religion and religiosity play a role?

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Background: Religion can provide core guidelines for individuals to find a course in their lives, and has a central role in human behavior (e.g., believers will cope with stress and uncertainty better). Furthermore, a growing body of research indicated that religion holds a protective effect on diverse risky behaviors among young people. However, very little is known about the effect of religion in gambling, especially in youth problem gambling. A strong moral belief regarding gambling may prevent adolescents and young adults to engage in problematic gambling. Nevertheless, some evidence suggests that religion might have an influence on gambling cognitive distortions (e.g., religious beliefs influence the conceptions

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of chance and encourage the development of certain views about luck), which may contribute to an increase in gambling participation. The present study aimed to further our knowledge of the different effects that religion can have on gambling behaviour, in two different cultural contexts (i.e., Portugal and England). *Methods:* A sample composed by Portuguese and English youth were recruited. *Results:* Firstly, this study showed that the Portuguese youth was more religious than their English counterparts, with a greater affiliation to the Catholic religion. Moreover, religiosity reduced the engagement in gambling behaviour in both samples. Further mediation analyses were also conducted to analyse the role of religiosity on cognitive distortions. *Conclusion:* This study suggests that religion can have a protective role on gambling behaviours, however it warrants the need for further research that explores the interactive role of religion and cognitive distortions.

Keywords: religion, religiosity, youth gambling

S-5F5

Psychiatric comorbidity and economic hardship as risk factors for intentional self-harm in gambling disorder—A nationwide register study

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Background: There is an increased risk of suicidality in gambling disorder (GD) and economic hardship is common in the population. This study aims to explore the risk of intentional self-harm in GD utilizing social welfare payment (SWP) as a proxy for economic hardship and exploring how economic hardship, gender, criminality, socioeconomic-, and psychiatric risk factors might contribute to intentional self-harm in GD. *Methods:* This is a nationwide register-based study of 848 individuals diagnosed with GD in the Swedish healthcare system during the years of 2011–2014. Pearson's Chi-square analyses were carried out for comparisons regarding psychiatric comorbidity and intentional self-harm with regards to gender and SWPs. Cox regression were utilized to analyse risk factors for intentional self-harm. *Results:* A large part of the study population received SWPs and psychiatric disorders were more common in these individuals ($p < 0.001$). Conviction for crime in general ($p < 0.001$) as well as intentional self-harm ($p = 0.025$) were also more common amongst recipients of SWPs. In the stepwise regression, substance-related diagnoses as well as anxiety, depressive, and personality disorders remained risk factors for intentional self-harm and no significant results

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were found with regards to gender, criminal history, or SWPs. *Conclusions:* SWP was common among GD patients and intentional self-harm was more common amongst recipients. SWP were however not a significant risk factor for intentional self-harm. In accordance with previous studies, comorbid psychiatric disorders such as anxiety, depression, substance use, and personality disorders increased the risk of intentional self-harm.

Keywords: gambling disorder (GD), suicide attempt, self-harm, social welfare payments, comorbidity

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S-5G1

Psychosocial risk factors of technostress among Generation Z: The mediation of internet addiction

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The expansion and ubiquity of information and communication technology increase stress among individuals. Academic research, popular media, and anecdotes advocate working professionals relate to technostress. Some researchers examine the prevalence of technostress among students. The current study explores the relationships between psychosocial factors related to technology use (fear of missing out, loneliness, social anxiety, and social comparison) and technostress and the mediating role of internet addiction among generation Z. A sample of 794 university students participated in the study. They are regular ICT users. The researcher uses a multistage cluster sampling technique to recruit students from two (2) large public universities in South Punjab, Pakistan. The researcher chooses valid and reliable instruments from the previous studies. The measurements encompass the Fear of Missing Out Scale, Three-Item Loneliness Scale, Mini - Social Phobia Inventory, Scale for Social Comparison Orientation, Problematic Internet Use Questionnaire, and Technostress Questionnaire. It measures fear of missing out, loneliness, social anxiety, social comparison, internet addiction, and technostress. The results show psychosocial factors, directly and indirectly, induce technostress, and internet addiction serves as a mediator. Fear of missing out, loneliness, and social anxiety induce technostress. Internet addiction partially mediated the relationship between fear of missing out, loneliness, and technostress and fully mediated the relationships between social comparison and technostress. However, internet addiction does not mediate the relationship between social anxiety and technostress. Technostress is evident among students. The current study contributes theoretical implications and relevant management in reducing dependence and technostress among internet users.

Keywords: FOMO, loneliness, social anxiety/phobia, social comparison

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S-5G2

Criminology and gambling: A qualitative investigation of neutralization techniques

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Connecting criminology and gambling can reveal multiple aspects a) interests of criminal organizations in the realm of gambling (e.g., management of illegal gaming and development of gambling activities aiming at 'launder dirty money'); b) an increased chance in committing or participate in crimes, like robbery, kidnapping and extorsion, when the gambler can be described as pathologic/problematic. Pathologic gamers tend to get involved in criminal organizations in the way they are subjects which can be easily and inexpensively recruited; c) high legal exposure of gamblers and their families (e.g., judicial proceedings for embezzlement, misappropriation, contract and employment infringements); d) pathologic gamblers present a personal vulnerability, from which other take advantage of, and an ability to trigger victimization's processes within the familiar circle (usury and over indebtedness); e) difficulty in concretely evaluate criminal imputability and its social threat. Within this study the authors employ qualitative methodologies to investigate the main "neutralization's techniques" (Sykes,Matza,1957) of individuals affected by gambling disorder, such as: 1) denial of responsibility; 2) minimizing of damage; 3) crime's self-denial; 4) condemnation of who is condemning; 5) calling higher ideals; 6) deprecation of their behaviors' significance; 7) moral justificationism; 8) feeling of being victim of external predicaments.

Keywords: criminology, gambling

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S-5G3

#MeTooLittle: Social rejection affects addictive behaviors associated with mobile phone use

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Background and aims: Social rejection has been previously associated with an increase in negative affect, distress, and aggression. Few studies have shown that social rejection is related to increased alcohol use. No studies to date have examined the effects of social exclusion on behavioral addictions. The current studies examined the effects of social exclusion on implicit biases towards mobile phones and mobile-phone seeking behaviors. *Methods:* In study 1, participants (N=40) were randomly assigned to be primed with social acceptance or social rejection of phone use. Then we examined attentional bias using the visual-probe task. In study 2, participants (N=33) completed a short game of Cyberball and were randomly assigned either to be rejected or accepted in the virtual ball-toss game, while having their phone taken away or not. Following the manipulation, participants' mobile phones were placed on the table, then we measured the time passed until they reached for their phone to use. *Results:* Study 1 showed greater attentional bias towards mobile phones when primed with social acceptance as compared with social rejection. Study 2, showed a significant interaction between social rejection/acceptance and phone removal, such that rejected participants that had their phone with them during the experiment, took less time to reach for their phones as compared to those that were accepted. No significant effects were found among participants that got their phones taken away. *Conclusions:* social rejection seems to affect addictive behaviors related to mobile phone use, however, these effects are context-dependent. Theoretical implications are discussed.

Keywords: mobile phone addiction, social rejection, addictive behaviors

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S-5G4

Factors of outlook rejuvenation addiction in women

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Background and aims: Unwanted signs of aging cause appearance concerns and stress in middle-aged women (Rumsey & Harcourt, 2014; Trekels & Eggermont, 2017; Labunskaya, 2018). To cope with stress of negative self-perception women try to use caring manipulations. Midlife women affected by appearance concerns form the outlook rejuvenation addiction. The study is identifying its factors. *Methods:* The sample – 52 women (aged 40–60) concerning outlook age changes. They undergo rejuvenation facial-body procedures in the aesthetic medicine centre. Interview and customers` statistical analysis are used to confirm addictive behavior in a longitudinal study. *Results:* Statistics show continuance and regularity in undergoing manipulations to transform appearance – the willing to improve a face (get rid of wrinkles), skin elasticity, face and body contours, etc. 40% of women visit the centre for more than 12 years, the frequency says that 48% (25 women) use aesthetic services (not surgical) from 4-5 to 11 times a month becoming their addicts. Among the factors of behavioral addiction there are self-appearance discontent, high level of outlook significance and value in studied women (in a control group members place less emphasis on the importance of physical appearance); stress and discomfort caused by loss of attractiveness with age, by their subjective evaluation. Regular undergoing of aesthetic services to look younger is women`s coping to reduce stress and fear of the future, to develop better interpersonal relationships, to improve the emotional background - the emergence of positive emotions, a sense of security and satisfaction. *Funding:* The study is supported by RFBR, 18-013-01005

Keywords: female outlook, age changes, addiction as coping

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S-5G5

State boredom and behavioral addictions: Evidence of psychometric adequacy for the Short Form of the Multidimensional State Boredom Scale with young adults

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The hypothesis that State boredom (SB) – the experience of boredom in the moment – can be considered as one of the risk factors for engaging in addictive behaviors has been further supported by the studies conducted during the COVID-19 related lockdown. Moreover, the issue of gender-related differences and similarities in SB is in debate. However, to deeply assess SB, it is fundamental having sound measurement instruments. One of the mostly used and brief instruments employed internationally to assess SB is the Short Form of the Multidimensional State Boredom Scale (MSBS-SF), but evidence regarding its psychometric properties among young adults, who are particularly at-risk for the development of behavioral addictions, is lacking. In particular, the functioning of the scale across genders is unknown in this age group. As a result, we used item response theory (IRT) to investigate psychometric functioning, with a specific focus on gender invariance, of the MSBS-SF among young adults. Eight hundred and twenty five Italian young adults (73% female; Mage = 25.61, SD = 4.53) were recruited. A confirmatory factor analysis demonstrated the unidimensionality of the scale, and IRT analyses indicated that the scale was sufficiently informative. Differential item functioning (DIF) across genders showed that items had an equivalent functioning across male and female respondents. Additionally, significant and positive relationships with hypersexual behavior were found. Overall, this study offers evidence that the MSBS-SF is a valuable and useful scale for measuring SB among male and female young adults.

Keywords: state boredom, MSBS-SF, item response theory, hypersexuality, young adults

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S-6A1

The psychopathology of compulsive online searches for health information and the relationship between cyberchondria and hypochondriasis

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Background: The aim of this presentation is to re-examine the relationship between cyberchondria and hypochondriasis. *Method:* Literature review and conceptual synthesis. *Results:* The notion of hypochondriasis has always presented challenges. Its position between the psychological and somatic domains has been puzzling and it never sat comfortably among other neuroses at the time when the concept of neurosis was in vogue. More recently, hypochondriasis was expelled from DSM-5 and replaced by two presumably distinct diagnostic categories, while ICD-11 has retained hypochondriasis as one of the obsessive-compulsive and related disorders. Cyberchondria has been defined in two distinct ways: 1) as repeated and/or excessive online health searches associated with increasing levels of health anxiety and 2) as a syndrome that encompasses repetitious and time-consuming online health searches, negative emotional states or distress associated with these searches, the consequent interruption of other activities and consultation of a physician as a result of increased anxiety. Recent studies suggest that cyberchondria may be related to both hypochondriasis/health anxiety and problematic Internet use (PIU) and that one of its key features is compulsivity – persistence of online health searches despite their negative consequences. *Conclusions:* A suggestion that cyberchondria is just a 21st century counterpart to hypochondriasis is simplistic. Although there is a substantial overlap between the two constructs, cyberchondria is more closely related to hypochondriasis/health anxiety and the associated reassurance-seeking behaviour in some clinical scenarios, whereas in others it may be better conceptualised as a form of PIU. These different aspects of cyberchondria have important treatment implications.

Keywords: hypochondriasis, cyberchondria, online health searches, problematic Internet use, compulsivity

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S-6A2

Unravelling the web of addictions: A network analysis approach

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Background: Common elements across different forms of addictive behaviors have been implicated with their comorbidities, as well as the transition/replacement of one form of addiction with another. Despite network analysis presenting as an innovative and promising statistical method of examining the behavioral commonalities/ interrelations, such as those assumed to occur between the different forms of addictions, there has been no relevant study to date. *Methods:* To address this gap, an online community sample of 937 adult participants (33.6% women, 66.4% men) completed self-rating questionnaires covering a range of addictive symptoms including alcohol, drugs, tobacco, sex, online gambling, internet use, internet gaming, social media use, shopping, and exercise. Their responses were examined with regularized partial correlation network analysis (EBICglasso) and triangulated maximally filtered graph (TMFG) to identify: (a) specific links between neighboring forms of addiction; and (b) clustering of symptoms of addiction. *Results:* Findings showed positive network connections across different forms of addiction, with gambling showing the highest centrality, sequentially followed by internet use, internet gaming, alcohol, shopping, social media use, drugs, sex, smoking, and exercise addictive symptoms. Interestingly, different network structures were observed for males and females. *Conclusion:* Clinical implications for the assessment and treatment of addiction comorbidities and the replacement of one form of addiction with another are discussed in the light of the emerging literature.

Keywords: network analysis of addictive behaviours

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S-6A3

Identifying the psychological processes delineating non-problematic versus problematic binge-watching: A machine learning analytical approach

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Background: With the expansion of on-demand viewing technology, binge-watching (i.e., watching multiple episodes of TV series back-to-back) has become widespread practice, thereby attracting growing research interest, especially to explore its potential harmfulness. Initial studies on this topic, however, have underlined the need to promote a balanced and sensible approach in exploring this phenomenon by distinguishing between high but healthy and problematic involvement in binge-watching. As part of this effort, this study investigates the distinct psychological predictors of these two behavioral patterns, by using a machine learning analytical approach. *Method:* A total of 4275 TV series viewers completed an online survey assessing sociodemographics, binge-watching engagement, and a set of relevant predictor variables, namely TV series watching motivations, impulsivity traits, and affect. Two regression models were computed, one for each dependent variable (i.e., high and problematic involvement in binge-watching), applying machine learning analyses. *Results:* Among the best performing algorithms (i.e., lasso, ridge, elastic net regressions), which validated well to the test sample, emotional enhancement motivation, followed by enrichment and social motivations, were the most important variables in modeling intensive but healthy involvement, while coping/escapism motivations, followed by urgency and lack of perseverance (two impulsivity traits), demonstrated the largest contribution in predicting problematic involvement. *Conclusions:* The present findings indicate that non-problematic and problematic engagement in binge-watching are underlined by distinct motivational and dispositional psychological dimensions. Specifically, high but healthy involvement is driven by positive reinforcement triggered by TV series watching, whereas problematic involvement is characterized by negative reinforcement motives and impulsivity markers.

Keywords: binge-watching, engagement, machine learning

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S-6A4

Development of Affective Buying Motives Scale and subtyping of compulsive buyers based on coping and enhancement motives

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The literature on compulsive buying indicates the predominance of mood repair as a motive of uncontrolled buying. However, in addition to coping motive, the motive of enhancing positive affect and/or seeking pleasure from material acquisition has also received empirical support. Thus, the literature points to both coping and enhancement motives as potential risk factors for compulsive buying. However, without a specific measure of buying motives, these risk pathways remain untested. The first aim of the research was to develop and validate a measure of coping and enhancement buying motives. We hypothesized that coping and enhancement motives would be positive but unique predictors of compulsive buying, although we expected that coping motives would be more strongly associated with compulsive buying than enhancement motives. The second aim of the current study was to use the affective buying motives scale to identify clusters of compulsive buyers.), We hypothesized that coping buyers are likely to experience more severe problems due to buying and to have more depressive symptoms as well as covert narcissism than other cluster of buyers. In contrast, we hypothesized that enhancement buyers are likely to have stronger materialistic value than other clusters of buyers. Affective Buying Motive Questionnaire (ABMQ) was developed and validated with two online survey samples (N=869 and 1157). The final 7-item scale consisted of items for coping motive and enhancement motive. The three hypotheses received support. We will discuss theoretical and practical implications in our presentation.

Keywords: compulsive buying, buying motives, coping motive, enhancement motive

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S-6A5

Food addiction and alcohol use in individuals with morbid obesity

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Background: The aim was to investigate whether food addiction (FA) is associated with alcohol consumption in individuals prior to bariatric surgery. In addition, weight-related quality of life and psychopathological variables were assessed in relation to FA. *Methods:* The sample studied consisted of 419 individuals with predominantly morbid obesity. FA, alcohol consumption, weight-related quality of life, eating disorder, anxiety, and depression symptomatology were assessed with validated questionnaires. Their association as well as differences between individuals with/without FA were examined using nonparametric methods. *Results:* The extent of psychological comorbidity in the sample was high (38% FA, 79% eating disorder, 11% current risky alcohol use, and 5% alcohol-related disorder). There were no differences between individuals with/without FA in past and current risky alcohol use or frequency of an alcohol-related disorder. As expected, there were associations of FA symptom severity with global eating disorder pathology, depression and anxiety symptomatology, but not with weight-related quality of life or alcohol use. *Conclusion:* Results confirm previous findings of a lack of association of FA with alcohol use in people with obesity prior to bariatric surgery and an association of FA with eating disorder, anxiety, and depressive symptoms. Longitudinal studies with large samples and follow-ups should examine a potential cross addiction transfer from FA to substance use after bariatric surgery and potential dissimulation of alcohol use as a possible confounding variable.

Keywords: Food Addiction, obesity, alcohol use

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S-6B1

Psychological and neuroscientific findings related to problematic pornography use

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Symposium summary: The first presentation will demonstrate that acute stress interacting with craving for pornography are main predictors of problematic pornography use. The role of oxytocin in combination with empathy in individuals reporting problematic pornography use will be addressed in the second talk emphasizing that the relationship between oxytocin and pornography-related problems is mediated by diminished empathy. In the third talk, an fMRI study will be presented showing that activities in ventral and dorsal striatal regions accompanied by orbitofrontal activities while viewing visual sexual stimuli are correlated with subjective arousal and self-reported problems related to pornography use. Finally, the fourth presentation will summarize current knowledge about potential neurobiological mechanisms involved in problematic pornography use and relate it to neuroscientific theories of addictive behaviors.

Keywords: compulsive sexual behaviors, craving, oxytocin, neuroimaging

S-6B2

The interaction of inhibitory control, stress and craving in pornography use disorder

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Background: Similar to other behavioral addictions, pornography use disorder (PUD) is characterized by a diminished control over the behavior's continuation despite negative consequences. The Interaction of Person-Affect-Cognition-Execution (I-PACE) model suggests that a confrontation with certain internal or external triggers (e.g. stress) may trigger craving which, moderated by inhibitory control, might lead to the execution of the addictive behavior. *Method:* A total of 96 heterosexual male participants who regularly consumed pornography were included in this study. After an induction of acute stress, participants completed a modified stop-signal task with certain and uncertain go trials in order to measure inhibitory control. Acute stress levels as well as self-reported craving and emotion regulation strategies were assessed in order to predict severity of PUD symptoms via multiple regression analysis. *Results:* Inhibitory control, acute stress and craving were all correlated with symptom severity, while no association between emotion regulation strategies and severity of PUD symptoms was found.

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When considering the interaction of craving, stress and inhibitory control, the highest symptom severity was found in participants with high stress, high craving and good inhibitory control. Craving was the only predictor that meaningfully contributed on its own to predicting symptom severity. *Conclusions:* Results indicate a complex interaction between craving, stress and inhibitory control. Especially the results concerning inhibitory control are ambiguous as both the highest and the lowest symptom severity occurred in participants with good inhibitory control. Further research is required to identify mediating or further moderating factors.

S-6B3

Individual subjective reward value of visual sexual stimuli is coded in striatum and orbitofrontal cortex

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Background: In the human brain, different rewards are appraised in a common neural network including the striatum and orbitofrontal cortex. As opposed to other reward domains, there is little research on the neural representation of subjective reward values of visual sexual stimuli (VSS) and on their role in the development of pathological pornography use (PPU). *Method:* We investigate the connection between neural reactivity to VSS and individual preference using functional magnetic resonance imaging (fMRI). 72 men viewed different VSS film clips in the MRI scanner. Ratings regarding valence and sexual arousal were obtained and used to construct parametric modulators in the fMRI analysis. Subjects also filled out questionnaires on self-reported symptoms of PPU. *Results:* Neural activity during VSS viewing in the nucleus accumbens, caudate nucleus and orbitofrontal cortex was positively associated with subjective ratings of the respective VSS. The association of neural reactivity with sexual arousal ratings was positively correlated with self-reported PPU. *Conclusions:* The results suggest a precise valuation of VSS according to individual preferences in relevant reward regions. A stronger relationship between rating and activation in PPU individuals indicate a steeper tuning of preference in these individuals. This effect may function as a vulnerability factor by signaling addiction-relevant information, and boosting motivation to respond to these stimuli.

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S-6B4

Unleashed desire: Diminished resting state functional connectivity in CSBD in the sex@brain study

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Background: Problems arising from compulsive sexual behavior disorder (CSBD) are often seen in clinical settings. In the sex@brain study we aimed to extend the knowledge about the clinical characteristics and the underlying neurobiology of individuals with CSBD. *Methods:* We used a seed-based resting state fMRI approach investigating state functional connectivity in CSBD. A group of men with CSBD (n = 39) was compared to a group of healthy controls (n = 33). Groups were matched for age and educational level. The focus of this investigation lies on frontal and limbic regions highly relevant for emotional processing and behavioral control. *Results:* Initial results showed decreased connectivity between the left amygdala and left frontal pole as well as right posterior cingulate cortex in men with CSBD compared to healthy controls. Moreover, attenuated connectivity between putamen and anterior cingulate cortex was found in men with CSBD when compared to healthy controls. *Conclusion & recommendations:* With the top-down inhibitory control of the frontal cortex over limbic regions taken into account, the results highlight the importance of a strong functional connectivity between prefrontal areas and limbic areas. In addition, a diminished connectivity between striatum and anterior cingulate cortex suggests a reduced communication between behavioral inhibition and the brain's reward system. Further research is needed for the understanding of the interplay between emotional and behavioral control and may contribute to a better understanding of sexual compulsive behavior and may lead to more differentiated and effective diagnostics and treatment.

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S-6B5

Neurobiology of problematic pornography use: What we know, and what we do not know

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Background: Problematic pornography use may be considered as a subcomponent of compulsive sexual behavior disorder (CSBD), which has been included in the ICD-11. Many authors, however, see parallels between the specific problems in controlling the use of pornography and addictive behaviors. *Method:* A narrative review will be presented that examines the current state of research on neurobiological mechanisms potentially involved in pornography-use disorder (PUD). *Results:* Cue reactivity and craving can be demonstrated in PUD, and neuroimaging studies have implicated the ventral striatum and other components of fronto-striatal loops as correlates of cue reactivity and craving in PUD. Habitual effects have been evidenced in PUD, which may be represented neurally by involvement of the dorsal striatum *Conclusions:* Fronto-striatal loops involving both the ventral and the dorsal striatum may represent neural correlates of PUD. There is, however, ongoing debate about whether studies using pornographic pictures to induce cue reactivity and craving are comparable to studies addressing other behavioral addictions, given that pornographic pictures may be considered as naturally rewarding and therefore may not represent cues. Studies comparing brain responses to pornographic stimuli with those to pornography-related but not explicit sexual material are needed. In addition, studies investigating different stages of PUD may contribute to a better understanding of the neurobiological underpinnings of PUD, e.g. by examining potential shifts from ventral to dorsal striatal involvement in the course of PUD.

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S-6C1

Examining the convergence between gaming and gambling through a network analysis framework

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Gaming and gambling are two different activities presenting specific overlaps due to the way in which these activities are currently being designed. These overlaps have led scholars to suggest a potential convergence between them due to in-game microtransactions that present with gambling-like features (e.g., loot boxes). Since both gaming and gambling can develop into behavioural addictions through excessive engagement leading to Gaming Disorder (GD) and Gambling Disorder (GBD), it is paramount to investigate their potential empirical convergence. To achieve this goal, a network analysis study was conducted using the Gaming Disorder Test (GDT) and the four items of the Short Version of Internet Addiction Test (s-IAT), assessing disordered online gambling in a sample of 553 participants (mean age = 21.56 years, 12.2% female). The network model used was Gaussian graphical model (GGM). The results of this study showed good stability and centrality indices of the network and an association between "preoccupation" in gambling disorder and "loss of control" in disordered gaming. However, this association was not robust enough to corroborate the 'convergence hypotheses' between these disorders. Future research should test if this hypothesis is related to online or offline gambling and gaming activities in a disordered usage context.

Keywords: gambling disorder, gaming disorder, network analysis, symptoms, behavioral addiction

S-6C2

Loot boxes, gaming, and gambling: A path model explaining the link between loot boxes and gambling in adolescents

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In recent years, the boundaries between videogaming and gambling have become increasingly blurred. In this scenario, loot boxes (LBs) may represent an activity that foster gambling behaviour because LBs are gambling-like activities embedded within videogames. Although young video gamers showed to be familiar with them, most of the studies on the relationships between LBs and gambling have been conducted with adults. To fill this gap, the aim of the present study was twofold: i) to analyze adolescents' behaviour and severity with respect to LBs, videogaming, and gambling; ii) to develop and test a path model explaining

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the link between LBs use, videogaming, and gambling. We hypothesized that videogaming would mediate the relationship between LBs use and problem gambling. Participants were 1204 Italian adolescents (57% males, mean age = 15.56, SD = .57) attending high school. Results showed that 54% of them encountered at least one LB playing videogames, and 10% purchased at least one LB in the last month. Video gamers and gamblers were respectively 90% and 60%. The hypothesized path model was adequate (CFI = .994, TLI = .97, RMSEA = 0.06). In detail, LBs use had a significant and positive indirect effect on problem gambling through videogaming frequency and problem gaming. The results showed that involvement in videogaming can be taken into consideration in explaining a possible pathway from LBs to problem gambling in youth.

Keywords: gaming, gambling, loot boxes, adolescents, path analysis

S-6C3

Individual differences in problematic videogaming, gambling and reward reactivity to loot box cues between loot box purchasers and loot box 'earners' in Overwatch

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Video-game loot boxes are a popular form of microtransaction that have been widely criticized for their structural similarities to gambling. Recent research linking loot box expenditure to gambling activity has illuminated potential harms associated with loot box use. Whether harms related to gambling, gaming and further loot box use differ between earning loot boxes through gameplay (i.e., earners or 'grinders') versus acquiring loot boxes through purchasing remains understudied. This pre-registered study explores gambling, gaming and loot box-related harms between loot box purchasers and earners in the scope of the game Overwatch. This study also examined differences between the two types of loot box users in reward and emotional reactivity to Overwatch loot box cues. Compared to earners, we found that loot box purchasers reported greater video-game harms related specifically to expenditure. Purchasers also reported greater risky loot box use and less problem gambling tied to games outside the context of Overwatch than earners. Loot box purchasers and earners did not differ in problematic videogaming generally. Interestingly, loot box purchasers displayed greater impulsivity and reward reactivity than loot box earners, as indexed by heightened arousal to loot box cues and greater motivation to open more loot boxes. Our results suggest that potential harms tied to loot box engagement should be assessed on a game-by-game basis in order to better understand the potentially problematic nature of loot box use.

Keywords: loot boxes, videogaming, gambling, individual differences, impulsivity

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S-6C4

Money used in gaming is associated with problem gambling: Results of the ESPAD 2019 Finland

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Background and aims: The convergence of gaming and gambling may pose a risk for adolescents. Thus, it is important to find out how these behaviours are associated with other addictive behaviours in order to develop efficient preventive measures for youth. The aim of this study examined 1) whether problematic gaming and money used for gaming activities was a risk factor for gambling, and 2) what kind of impact adolescents' substance use along with other factors related to friends and parents had on this association. *Methods:* The European School Survey Project on Alcohol and Other Drugs data, 2019 of Finnish adolescents aged 15 to 16 (N =4595). Cross-tabulations with Rao-Scott's chi square tests were applied to study the associations of the background factors with gambling in the past 12 months. A multinomial logistic regression model was fitted for the outcome variable (gambling in the past 12 months) adjusted for all independent and background variables. *Results:* Problematic gaming alone was not associated with gambling participation, whereas using money for digital games increased the risk of gambling. Boys gamble more than girls. The use of alcohol and drugs increased the risk of gambling. Parental monitoring reduced the risk of gambling, whereas hanging around weekly with friends increased the risk. *Discussion and conclusions:* Using money on gaming sites may put some adolescents at risk of developing problems with either gaming or gambling. The link between using money in digital games and gambling participation calls for preventive measures, intervention and regulatory acts.

Keywords: gambling, gaming, money used in gaming, youth, substance use

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S-6C5

Basic psychological needs in gambling and gaming problems

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Background and aims: Studies on Self-Determination Theory (SDT) have placed satisfaction of basic psychological needs (autonomy, relatedness, and competence) at the core of wellbeing, whereas frustration of these needs result in multiple potentially unhealthy mental and behavioural patterns. In this paper, we analyse whether and how need satisfaction and frustration relate to the severity of gambling and gaming problems. *Methods:* A survey study with 18–75-year-old Finnish participants (N=1530; 50.33% male) was conducted in April 2021. Basic psychological needs were measured with the Basic Psychological Need Satisfaction and Frustration Scale, mental health issues with the five-item Mental Health Inventory, gambling problems with the Problem Gambling Severity Index, and gaming problems with the Internet Gaming Disorder Test. Zero-inflated negative binomial analyses were conducted to examine how satisfaction and frustration of basic psychological needs, together with mental health issues, associate with gaming and gambling problems. *Results:* Mental health issues were associated with both gambling and gaming problems, but this association became non-significant after the addition of basic psychological needs into the model. However, better mental health still predicted the absence of gaming problems. While need satisfaction had no association to the absence of gaming or gambling problems, need frustration predicted increases in the severity of both gaming and gambling problems. *Discussion and conclusions:* Frustration of basic psychological needs is associated with both gambling and gaming problems and should be considered when these kinds of problems emerge.

Keywords: Gambling problems, gaming problems, basic psychological needs, mental health

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S-6D1

Problematic use of social media and smartphone in eastern and western contexts

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Symposium summary: Background: Smartphone and social media (SM) usage has increased over time and currently the usage of both is prevalent across countries and among people of varying ages. Usage may differ according to many factors including different jurisdictions that may have different policies and cultures. *Method:* This symposium considers data from western and eastern cultures with a focus on SNS and smartphone usage. *Results:* Similarities and differences across studies will be discussed. Dr. Moretta will discuss relationships between preferences for online social interaction, mood and self-regulation, and negative outcomes related to SNS usage in an Italian sample, and Dr. Chen will discuss these relationships in a Chinese sample. Dr. Canale will discuss three factors (addictive pattern, antisocial and risky patterns of use) as they relate to problematic smartphone use in an Italian sample. Dr. Bhang will discuss how stress factors associate with SM use differentially based on smartphone addiction status in youth from South Korea. Dr. Beatrix Koronczai will discuss results from a meta-analysis on the association between problematic internet or social media use and body image, referring to studies from several cultural contexts. *Conclusion:* More research into factors that may influence smartphone and SNS usage is needed. Future research should use similar methodologies across countries and assessments of specific policy and cultural measures to better understand smartphone and SM usage and their correlates.

Keywords: problematic use of media; problematic use of smartphone use; mood regulation

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S-6D2

Modeling problematic use of social media in a western culture: an Italian study

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Background: The cross-cultural generalization of a theoretical model of problematic use of social media (PUSM) is currently lacking in the literature. The cognitive-behavioral model of generalized Pathological Internet Use (GPIU) proposed by Caplan (2010) may provide a conceptual basis for understanding the problematic use of social media (SMs). The present study is a part of a larger international research project aimed to examine whether the factor structure of the Problematic Social Network Sites Use Scale (PSNSUS; an adaptation to SM use of the Generalized Problematic Internet Use Scale 2; Caplan, 2010) and the relationships among constructs are similar across multiple cultures and geographic regions globally. Thus, this study aimed to test the factor structure of PSNSUS and the feasibility of the model of GPIU in the context of PUSM in Italy. *Method:* The Italian version of the PSNSUS (including five subscales, i.e., preference for online social interaction - POSI, mood regulation, cognitive preoccupation, compulsive use, and negative outcomes) was administered to 706 Italian participants. A Confirmatory Factor Analysis and a Structural Equation Modeling analysis were used to test the theoretical model. *Results:* The POSI domain positively predicted SM use for mood regulation and poor self-regulation; using SMs for mood regulation positively predicted poor self-regulation; and poor self-regulation positively predicted negative outcomes of SM use. *Conclusion:* Our findings support the feasibility of the model and the hypothesized relationships among the latent constructs in the context of PUSM in Italy.

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S-6D3

Modeling problematic use of social media in an eastern culture: a Chinese study

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Background: Despite the advantages of social media (SMs), SM usage may become problematic. A theoretical model of problematic use of social media (PUSM) across different cultural contexts is currently lacking. We conducted a large cross-cultural study, adapting the Generalized Problematic Internet Use Scale 2 (GPIUS2) into Problematic Social Network Sites Use Scale (PSNSUS), to examine the factor structure of PSNSUS and the feasibility of the model of generalized PIU in the context of PUSM across multiple cultures. Here we present the study from China. *Methods:* A convenience sample of 1392 individuals (aged 18-50 years) completed a self-reported online survey, including their demographics and a 15-items PSNSUS. A confirmatory factor analysis and structural equation modeling was used to test the theoretical model. *Results:* The Chinese version of the PSNSUS (including five subscales, i.e., preference for online social interaction - POSI, mood regulation, cognitive preoccupation, compulsive use, and negative outcomes) showed good fit indices and internal consistency. The POSI factor positively predicted SM use for mood regulation and poor self-regulation; using SMs for mood regulation positively predicted poor self-regulation; and poor self-regulation positively predicted negative outcomes of SMs use. *Conclusions:* The results suggest that generalized PIU should be considered in the context of PUSM, and the Chinese version of the PSNSUS may serve as a valuable tool in understanding SM use in China.

S-6D4

A test of the pathway model of problematic smartphone use

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Background and aims: Problematic smartphone use (PSU) has been described as a growing public health issue. In the current study, we aimed to provide a unique and comprehensive test of the pathway model of PSU. This model posits three distinct developmental pathways

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leading to PSU: (1) the excessive reassurance pathway, (2) the impulsive pathway and (3) the extraversion pathway. *Methods:* Undergraduate students (n = 795, 69.8% female, mean age = 23.80 years, sd = 3.02) completed online self-report measures of PSU (addictive use, antisocial use and dangerous use) and the psychological features (personality traits and psychopathological symptoms) underlying the three pathways. Results: Bayesian analyses revealed that addictive use is mainly driven by the excessive reassurance pathway and the impulsive pathway, for which candidate etiopathological factors include heightened negative urgency, a hyperactive behavioural inhibition system, and symptoms of social anxiety. Dangerous and antisocial use are mainly driven by the impulsive pathway and the extraversion pathway, for which candidate etiopathological factors include specific impulsivity components (lack of premeditation and sensation seeking) and primary psychopathy (inclination to lie, lack of remorse, callousness, and manipulativeness). *Discussion and conclusions:* The present study constitutes the first comprehensive test of the pathway model of PSU. We provide robust and original results regarding the psychological dimensions associated with each of the postulated pathways of PSU, which should be taken into account when considering regulation of smartphone use or tailoring prevention protocols to reduce problematic usage patterns.

S-6D5

Stress factors associated with social network sites usages in adolescents with Internet addiction/smartphone addiction

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Objective: This study investigated the stress factors that are associated with social network site (SNS) use in adolescents with IA/SA (Internet addiction or smartphone addiction) compared with adolescents without IA/SA in Korea. *Methods:* Data from 2,997 Internet and smartphone users who participated in a survey about the actual use of smart digital media in Korea were included. The measurements included SNS use, stress factor scale, Internet Gaming Use-Elicited Symptom Screen (IGUESS), and Smartphone Addiction Proneness Scale (SMAPS). The subjects were divided into an Internet addiction and smartphone dependence risk group and a control group (IA/SA group: ≥10 on IGUESS or ≥ 23 on SMAPS). For each of the two groups, binary logistic regression analyses (enter method) were performed to assess the stress factors associated with SNS use. *Results:* The stress factors associated with SNS use between the IA/SA and control groups were different. The stress factors in adolescents with IA/SA were sibling rivalry and physical health (B =0.358, S.E.=0.080, p<0.001, OR=1.431; B=1.216, S.E.=0.289, p<0.001, OR=3.375). In the control group, SNS use was

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negatively associated with stress, including appearance and heterosexual relationships (B=0.358, S.E.=0.080, p<0.001, OR=1.431; B=1.216, S.E.=0.289, p<0.001, OR=3.375, B=-1.082, S.E.=0.307, p<0.001). *Conclusion:* This study indicates that there is a need to provide personalized stress management for IA/SA adolescents experiencing stress about SNS use, which is different from that experienced by adolescents without IA/SA.

S-6D6

Meta-analysis on association between problematic internet or social media use and body image

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Background and aim: Based on the literature on the impact of mass media on body image, we assumed that problematic internet (PIU) or social media use (PSMU) is linked to negative body image. Consequently, the present meta-analysis was conducted to systematically investigate the association between PIU or PSMU and body image. *Methods:* A systematic literature search was performed in 4 databases (EBSCO, PubMed, Web of Science and Proquest) and in the reference lists of the identified publications and relevant reviews. We included all (1) original empirical studies that (2) provided correlational data or data from group comparisons. A total of 13 studies met these two criteria including the data of 7194 participants (68% females). *Results:* A weak, negative association (r=-.23, p<.001) was found between PIU/PSMU and body image: the more problematic social media or internet use was associated with the more negative body image. The correlation coefficient was higher among males (r=-.26, p<.001), among elder participants (r=-.33, p<.001) and in clinical samples (r=-.44, p<.001). After performing meta-regression, the year of publication and the age of participants significantly predicted the association between PIU and PSMU and body image. As for the year of publication, the more recently the study was published, the stronger the correlation was found to be. *Conclusions:* The factors which enhance the association between PIU or PSMU and negative body image are being a male, being adult, and being patient with mental disorders. The question may arise however, whether this association is decreasing with time.

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S-6E1

Parental and family risk and protective factors associated with problematic gaming in adolescents

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Our clinical work with adolescents with gaming disorder is based on the assumption that a treatment should address risk and protective factors of both intrapersonal (characteristics of the youth) and interpersonal nature. We assessed the importance of both types of factors for the development and persistence of problematic gaming (PG) in adolescents. To this end, we performed a systematic literature review adhering to CONSORT guidelines. As regards interpersonal factors we especially focused on parental and family (PF) features. From four databases, we selected all PG publications meeting preset methodology standards. Six categories of risk and protective PF were distinguished, i.e., problems faced by the parents (e.g., anxiety, depression, addiction), child abuse, co-parental teamwork, parenting style (risk: authoritarian, neglectful, permissive; protective: authoritative), family attachment, and family functioning (including communication between family members). In most studies sampled, risk factors from all these six categories were associated with increased rates of PG, and protective factors with lowered rates. The association between these factors and PG became even more clear when collapsing the six categories into two classes of risk (negative parenting and negative family dynamics) and of protective factors (positive parenting, positive family dynamics). Most effect sizes were statistically significant though often small. We also assessed the impact of intrapersonal risk and protective factors. Intrapersonal features found to be linked to PG concerned self-esteem, social competence, self-control, emotion regulation skills, and comorbidity (ADHD). The results confirm the importance of both intra- and inpersonal factors in PG. This should be reflected in treatment development.

Keywords: problematic gaming, adolescents, risk factors, protective factors, family

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S-6E2

Loneliness, family harmony, and disordered gaming in gamers before and during the COVID-19 pandemic

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Gaming disorder has been associated with increased loneliness as well as poorer family relationships. Additionally, loneliness as well as dysfunctional family relations may have exacerbated during the COVID-19 pandemic. The aim of the current work was to investigate (1) how loneliness, family relations, and gaming disorder are associated in a sample of gamers, and (2) if there are group differences between these associations in gamers who responded to the survey before and during the pandemic years. The effective sample comprised 47819 people (age M = 25.76; SD = 7.42; 90.3% men, 9.7% women) who responded to an English-language online survey regarding gaming and other variables of relevance. Respondents took part in the cross-sectional study between 2019-2021, that is, some people responded before and some during the pandemic years. Bivariate correlation analysis results showed that higher gaming disorder scores were associated with experiencing more loneliness and less harmony in family relationships. The results of analysis of variance tests showed that people who took part in the survey in 2019 scored lower on the gaming disorder, loneliness, and family relations scales than participants who took part in the study during 2020 and 2021. This study provides empirical evidence that the COVID-19 pandemic might have affected the psychological health as well as social relations of gamers in a negative way.

Keywords: gaming disorder; Internet gaming disorder; loneliness; family harmony; COVID-19; pandemic

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S-6E3

Family involvement in treatment of adolescent Internet addiction

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Previous research has shown that family-related factors such as family functioning, parenting style, and parental emotional support are associated with Internet addiction (IA) in adolescents. There is also emerging evidence of the effectiveness of family-based interventions in reducing adolescent IA. However, little research has been done to study family involvement in the IA treatment process from the practitioners' perspective. This study employed a qualitative design to examine practitioners' views on the roles and challenges of family participation in IA treatment. A total of 10 practitioners (social workers, counselors, and a psychologist) working with adolescents with IA in Hong Kong were interviewed. Thematic analysis was used to analyze the transcribed interviews. The three themes were derived from the interviews include: 1) family involvement in IA intervention is challenging yet important; 2) shifting the focus from the adolescent to the relationship; and 3) provision of individualized services and intervention to address the heterogeneous nature of cases. While the results support family participation in IA treatment, caution regarding family dynamics is required when considering whether family involvement is appropriate. Clinical implications of the study's findings will be discussed

Keywords: Internet addiction, qualitative study, treatment, family involvement

S-6E4

Family therapy decreases Internet Gaming Disorder in adolescents

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A treatment for Internet Gaming Disorder (IGD) in adolescents should target both intrapersonal risk and protective factors and interpersonal ones, especially parental and family factors., as is done in multidimensional family therapy (MDFT). We conducted a randomised controlled trial comparing MDFT with family therapy as usual (FTAU). Participants were 42 treatment seeking adolescents from Geneva who presented with IGD. The treatment completion rate was higher for MDFT than for FTAU: 100% versus 70%. Follow-up assessments were scheduled at 6 and 12 months after baseline. Both MDFT and FTAU decreased the prevalence of IGD and lowered the number of IGD criteria met. MDFT outperformed FTAU in reducing the number of IGD criteria endorsed. Both treatments improved the adolescents'

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quality of life in relation to gaming and reduced mental comorbidity. The parents rated the gaming problems of their children as being more severe than as perceived by the adolescents themselves. The discrepancy in how parents and adolescents viewed the youth's gaming behaviour, grew smaller during treatment and across time. The results of this trial suggest that one should not impose gaming restriction rules on a youth with IGD without first bridging the parent-child gap in perception and appreciation of the nature and severity of the gaming and other problems the adolescent may have. Put more broadly, resolving family disharmony is a precondition of treatment success.

Keywords: Internet Gaming Disorder, adolescents, family therapy, randomised controlled trial

S-6E5

The current status of parenting practices affecting children and adolescents' problematic media use

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Background: Over the last three decades, digital media solutions have increasingly played a significant role in children's and adolescents' lives. The increased use of new game and social media platforms has created concern about the possible adverse health consequences for young people, which requires much more attention from parents or caregivers. The aim of this study was to explore the associations between parenting practices including restrictive, active, and co-using mediation with problematic media use (problematic gaming, and social media behaviors) among children and adolescents. *Method:* A systematic review with meta-analysis of quantitative studies was conducted, and English language studies were identified from three online databases (Web of Science, Scopus, and EBSCO/CINAHL) of articles published before August 2019. *Results:* In total, 41 studies that met the inclusion criteria were included in the review. Overall, the results will contain a summary on the links between different parenting practices and problematic media use patterns. Additional subgroup analyses of types of problematic media use, age, assessment of problematic media use and parental mediation will be presented. *Conclusions:* The practical relevance of the results alongside the need for advancement of methodological issues and a parental mediation concept within the literature are discussed.

Keywords: parenting practices, adolescents, media use

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S-6F1

The data business model behind social media platforms and its detrimental aspects

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The recent years have seen a dramatic rise in studies inferring psychological traits from digital traces as left on social media platforms or the smartphone. In the present talk I demonstrate that psychological traits and technological use disorder tendencies are associated to some extent with real world app usage. Such associations also underline growing privacy problems for the users of digital platforms. Beyond that I provide an overview on economical and psychological theories of relevance to understand social media platform design and I also explain how different design elements might impact on the time spent on the online platforms (and thereby putatively also fostering addictive behaviors in the social media realm). At the moment of writing, application programming interfaces (APIs) of the social media platforms such as Facebook are closed for independent scientists. Therefore, I will make a case for opening such APIs to shed light on what is actually happening on social media platforms – also regarding addictive usage patterns.

Keywords: digital phenotyping, mobile sensing, data business model, social media, corporate responsibility

S-6F2

The design of social media platforms – Initial evidence on relations between personality, susceptibility to design element-driven increased social media use, and problematic social media use

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Background: Experts criticize social media companies for driving their users to spend more and more time on their platforms. Specifically, certain design elements of social media platforms are suspected to lure users into spending increasing time on the platforms and into problematic use of social media, accordingly. Thus far, however, no study provides empirical data on i) whether there are individual differences driving susceptibility to design element-driven increased social media use (e.g., spending more time on social media than intended because one cannot stop "scrolling down" to see new content), and ii) whether this susceptibility is related to problematic use of social media. *Method:* Individuals from the US (current

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N=84, final N=500; data collection in progress) participating in the present study complete scales on socio-demographics, the Big Five of personality, and problematic social media use. Additionally, participants complete a questionnaire on how often they spend more time on social media than intended due to various design elements of social media. *Results:* Preliminary results indicate that Neuroticism, susceptibility to design element-driven increased social media use, and problematic social media use are positively correlated. Additionally, the results point toward a mediation of the relation between Neuroticism and problematic use via the susceptibility to design element-driven increased social media use. *Conclusions:* These results indicate that individuals scoring high in Neuroticism tend to be more susceptible to design element-driven increased social media use, which seems to explain (part of) the relation between Neuroticism and problematic social media use.

Keywords: problematic social media use, social media design, personality

S-6F3

Why do women and men engage in problematic digital media usage? The mediating role of media multitasking

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More and more people are accessing different digital media using different devices. Besides the benefits of information sharing and quick contact with other people, the use of multiple media can lead to negative consequences such as problematic use. In this context, media multitasking, defined as switching from one media to another, can play an important role in understanding the mechanism of problematic digital media usage development. Consequently, the main aim of the study is to investigate media multitasking as a mediator between impulsivity, depression, anxiety, and problematic digital media usage. In the study 492 participants (251 female) took part (mean age M = 22.73 years; SD = 2.75). We used Media Multitasking Scale, Hospital Anxiety and Depression Scale, The Barratt Impulsivity Scale (BIS 11), Problematic Facebook use Scale, Problematic Internet use Scale, and Problematic smartphone use scale. We showed that anxiety was positively associated with problematic Internet use among male users. Additionally, attentional impulsivity was positively related to problematic smartphone use among both groups. The attentional impulsivity was also positively associated with problematic Internet use, and problematic Facebook use among male users. There was a negative relationship between non-planning impulsivity and PSU among male users. The findings also showed that multitasking mediated the relationship between motor impulsivity and problematic digital media usage among male users. The results may indicate that media multitasking may be important factor in understanding the mechanism of problematic digital media usage development, especially in the male users group.

Keywords: media multitasking, depression, anxiety, impulsivity, problematic digital media usage

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S-6F4

Screen time and COVID-19: Observations from among the college students in India

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Objectives: The current study aimed to assess the pattern of digital media use and screen time among students during lockdown. It also aimed to explore possible correlates of problematic digital media use and screen-time among students. *Methodology:* It was a prospective observational study. Students pursuing undergraduate courses in Public and Private State Universities constituted the study universe. The study used a survey approach for data collection. Besides the screen time, the mental well being of the study participants was assessed by the WHO Well-being Index and the personality was assessed using the Big Five Inventory (BFI)-10. *Results:* A total of 731 responses were included in the analysis. Around 93% self-reported an increase in daily screen time during COVID-19. A small but significant negative correlation between increased screen time and QoL ($rs = -0.154$, $p < .001$) was found. Increased screen time due to the use of social media for non-communication purposes was associated with poorer QoL ($U = 32947.50$; $p = .02$) and greater COVID stress ($U = 32381.50$; $p = .01$). Out of total of 202 students who shared the screenshot of the phone ST function, 145 (71.8%) underestimated their daily smartphone ST, whereas 56 (27.7%) overestimated ST. In the regression analysis the predicted odds of poor mental well- being were 1.430 times greater for subjects with higher neuroticism scores for the overall sample.

Keywords: screentime, students, COVID-19

S-6F5

‘Digital detox’: The effect of social media abstinence on usage, habits and wellbeing

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Many people spend 3 or more hours daily on social media and almost half of users indicate they want to reduce their usage. An increasingly popular intervention to regain control is a period of abstinence or ‘digital detox’. However, evidence for the effectiveness of detox-interventions is limited, and the underlying mechanisms are largely unknown. In this study,

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we investigated the effects of a digital detox on social media use, mental wellbeing, and experienced automaticity and craving. A total of 120 young adults motivated to reduce usage were randomly assigned to either an experimental or waiting-list condition. After a one-week baseline measurement, participants in the experimental group removed all social media apps for one week (i.e. detox), followed by three weeks of follow-up measurements. Using a combination of ecological momentary assessment, smartphone usage logging data and weekly questionnaires, we found that the detox significantly reduced social media use, automaticity and craving up to three weeks post-detox, while improving mental wellbeing, sleep quality and experienced social media use problems. Our findings suggest that social media is driven by both automatic habits and craving, and that detoxing is an effective way to reduce social media habits for those who want to cut back.

Keywords: social media, detox, automaticity, habit, craving

S-6F6

Phubbing: Features of addictive behavior of the russian youth

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The problem of smartphone addiction is becoming relevant to the youth (Servidio, 2014; Karadağ, 2015; Chotpitayasunondh, 2016; Zhou, 2016; Kayis, 2016; Cizmaci, 2017; T'ng, 2018). This problem is currently understudied in Russia. The purpose of this research was to investigate addiction aspects among the youth of the central part of Russia (Kostroma). *Method:* 525 people participated in the research, 72,4% male, 27,6% female (aged 17 – 29). We used the Phubbing Scale (Karadağ, 2015) as the most popular instrument of addiction investigation, together with Generic Scale of Phubbing (GSP), the Generic Scale of Being Phubbed (GSBP) (Chotpitayasunondh, 2016). *Results:* Age and gender differences in the intensity of addiction to smartphones were revealed. The younger respondents showed more signs of addiction. They feel more inferior without their smartphones ($p<0,01$), though they realize that 'the time allocated to social, personal or professional activities decreases because of my mobile' ($p<0,001$). They also show more sensitivity to being phubbed by others – 'others would rather pay their attention to their phones than talking to me' (at $p<0,001$). Young females, rather than males, reported their addiction to smartphones – 'when I wake up in the morning, I first check the messages on my phone' ($p<0,001$). Other researchers also got similar results (e.g. Karadag, 2015). The data received from GSP and GSBP questionnaires proved gadgets to be a demonstration of their dominance in the relationships for the males, where as for the females, the addiction to smartphones is caused by the lack of self-control ($p<0,001$) and anxiety.

Keywords: phubbing, smartphone addiction, partner neglect, addictive behavior, victim of phubbing

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S-6G1

Round table: Women and Behavioral Addiction – New paths in research and treatment

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Symposium summary: It becomes more and more obvious that a gendered approach to research, prevention and treatment is highly relevant to gain a better understanding of and be more responsive to female-specific aspects of behavioural addiction. Literature and studies on Women and Gambling Disorder and other Behavioural Addiction are scarce, both in Europe and all over the world. Moreover, the existing data are not specific to women but inferred from mostly male samples. Nevertheless, more and more women are affected by pathological gambling and other non-substance related addictions. Obviously, women have a crucial role in family and society, and their gambling or other addictive behaviours, which are often underestimated, may have a deep impact on their social and personal life. One key issue is that women often experience great difficulty in finding appropriate treatment services. Most health clinics are not "female friendly", and treatment programs very rarely offer female-specific treatment approaches. In 2020 a pandemic struck all over the world. It deeply affected our lives and existence, our physical and mental health, in many ways. B.A. played an important role in women's life during the various COVID-19 lockdowns. Women paid high costs in this period and taking care of their health is now even more important. It's crucial to learn from your experiences as researchers and clinicians and to gather data from all over the world to enrich our shared understanding of these issues, to compare, discuss and improve research and treatment for the women on whose behalf we are working on.

Keywords*:* women, gender, addiction, treatment, research

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S-6G2

Dealing with gender bias in treatment demands regarding Internet-related disorders

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Internet-related disorders are increasing motives for treatment demands worldwide. Adequate treatment coverage is a big challenge for health systems, since it consists in availability of sufficient dedicated facilities, of well-trained health professionals, of increased awareness of public audience about alarming symptoms in favor of treatment need and of continuous treatment facilities' agility to adapt to emerging and changing treatment needs. In a daily basis, treatment facilities that are being sought by patients and receiving referrals by relatives, are facing several gender biases regarding Internet-related disorders. A first one is that these demands are mostly coming from males and women are under-represented in treatment settings, although prevalence rates in general population are quite comparable. A second gender bias is that of concerns and referrals coming from parents or health professionals are mostly for Gaming disorders in male and for social network and smartphone use disorders for female. A third gender bias is that of relatives triggering the treatment seeking and being active in daily support during treatment process are mostly mothers and female partners. To achieve gender equity in access to treatment and support, health systems will have to address these gender biases and health professionals will have to tackle it and to adapt to gender specificities regarding increasing Internet related disorders' treatment demands. Discussing these issues in a round table with international experts could be a first step toward increased visibility of these phenomenon and collecting transcultural opinions on its resolution tracks.

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S-6G3

Online gambling: Comparison of women vs men

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Background. In France, the prevalence of online gambling has largely increased over the last decade, and women represent a third of problem gamblers. *Objective.* Our study aimed to compare gambling habits between women and men among 450 non-problematic and at-risk online gamblers. *Method.* Participants completed a structured interview exploring their gambling habits, gambling-related motives and negative consequences. Results. Women were more likely than men to mention spending money as the main negative consequence, although they had a lower self-imposed budget per week dedicated to gambling. *Discussion.* Our results raise the question of control and guilt over money that women can experience regarding online gambling.

S-6G4

Measuring female gaming: Insights from an international quantitative exploration of female gamers

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Research investigating female gaming is relatively scarce, especially using a quantitative approach. However, there is evidence suggesting clinicians are increasingly treating problem gaming as a behavioural addiction. The objective of this presentation is to measure the female gamer phenomenon to establish an international profile, to determine predictors associated with perceived Internet Gaming Disorder (IGD), and to identify those who are potentially at risk of developing gaming disorder. An online survey was applied through international gaming forums (N = 625) assessing sociodemographic, gaming devices, play genres, and scales on gaming, gender issues, and psychological outcomes. Female gamers reported the use of video games, especially popular online games using computers and consoles. The proportion of gamers with IGD was very low (1%). Several risk factors were identified for IGD high scores (i.e., achievement and social motivations, embodied presence and identification with the avatar, hostility and social phobia together with negative body image, playing Multiplay-

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er Online Battle Arena games, Massively Multiplayer Online Role-Playing Games, and First-Person-Shooter games). Findings highlight the profile of those who are at risk of problematic gaming which will be discussed to support gender issues related to gaming appropriately.

S-6G5

Emotional intelligence as a coping resource of co-dependent women

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Background and aims: Dependence in a family creates a personally significant difficult situation for co-dependents. They become susceptible to an addict's mood and behavior and stress caused by anxiety for their life and their struggle to recover. They cope with stress in a certain way. The research aim is to study female co-dependents' coping behavior and its correlation with their emotional intelligence. *Methods:* Mayer–Salovey–Caruso Emotional Intelligence Test (1998), Ways of Coping Questionnaire (Folkman &Lazarus, 1988). The study involves of 30 women aged from 32 to 55 in close relationships with a substance addict. *Results:* Female co-dependents prefer such coping strategies as positive reappraisal, self-control, seeking social support, planful problem solving. Accepting responsibility, distancing, confrontative coping, and escape-avoidance coping strategies are less preferable in the group. The emotional intelligence data indicate a lower level of one's emotional regulation, a vague awareness of one's emotions, a low ability to interpret emotional information and use it to solve life problems. The correlation between individual Emotional Intelligence characteristics and coping strategies is identified ($p \leq 0.001$): if co-dependents` ability to identify their own and others' emotions and maintain their emotional state enhances, they are less likely to choose distancing; if the ability to identify emotions and use to solve problems improves, the respondents prefer positive reappraisal. It stimulates the process of "facing" with a real life situation, changes one's perception of it, and creates a resource for further coping efforts. *Funding:* The study was funded by RFBR (research project № 20-013-00435a).

S-6G6

Factors of outlook rejuvenation addiction in women

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Kostroma State University, Russian Federation

Background and aims: Unwanted signs of aging cause appearance concerns and stress in middle-aged women (Rumsey & Harcourt, 2014; Trekels & Eggermont, 2017; Labunskaya, 2018). To cope with stress of negative self-perception women try to use caring manipulations. Midlife women affected by appearance concerns form the outlook rejuvenation addiction. The study is identifying its factors. *Methods:* The sample - 52 women (aged 40-60)

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concerning outlook age changes. They undergo rejuvenation facial-body procedures in the aesthetic medicine centre. Interview and customers` statistical analysis are used to confirm addictive behavior in a longitudinal study. *Results:* Statistics show continuance and regularity in undergoing manipulations to transform appearance – the willing to improve a face (get rid of wrinkles), skin elasticity, face and body contours, etc. 40% of women visit the centre for more than 12 years, the frequency says that 48% (25 women) use aesthetic services (not surgical) from 4-5 to 11 times a month becoming their addicts. Among the factors of B.Addictions there are self-appearance discontent, high level of outlook significance and value in studied women (in a control group members place less emphasis on the importance of physical appearance); stress and discomfort caused by loss of attractiveness with age, by their subjective evaluation. Regular undergoing of aesthetic services to look younger is women`s coping to reduce stress and fear of the future, to develop better interpersonal relationships, to improve the emotional background - the emergence of positive emotions, a sense of security and satisfaction. *Funding:* The study is supported by RFBR, 18-013-01005.

S-6G7

Comparison of males and females in a sample of adult ADHD patients: clinical profile, comorbidity and behavioral addictions

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Background: Sex differences in the prevalence of ADHD are well documented in the literature, like others neurodevelopemental disorders, it is more prevalent in males, with a males to females ratio of 7-8:1 in clinical settings and 3-4:1 in community samples. The discrepancy in sex ratio between clinic and community samples highlights that a large number of females remain unidentified and untreated. There is increasing recognition that females with ADHD show a modified set of behaviors, symptoms and comorbidities, when compared with ADHD males. *Methods:* 60 ADHD outpatients (30 males and 30 females), recruited at the Brain Center Firenze, were evaluated collecting demographic variables, using psychometric instruments and neuropsychological tests, in order to highlight gender differences in clinical presentation. *Results:* Preliminary results show a trend towards a higher education and employment rates in females compared to males, despite higher scores at the Barkley Adult ADHD Rating Scale-IV (a clinical scale for assessment of ADHD symptoms) and similar scores at the Symptoms of Depression Questionnaire (SDQ). With regard to Behavioral Addictions, females show more food addiction, shopping addiction and internet addiction while males show higher score at the scales for sex addiction and gambling. *Conclusion:* In the present study, females tend to show a better functioning in spite of higher score in the scale for assessment of ADHD symptoms.

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S-7A1

Context matters: Exploring relationships between Compulsive Sexual Behavior and morality

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Symposium summary: With the inclusion of Compulsive Sexual Behavior Disorder in the ICD-11, there is increasing interest in the role that religious values and morality play in the experience and expression of CSBD and problematic pornography use. A body of past work suggests that conservative morality and religion may make people interpret normal sexual behavior as pathological. However, many questions remain unanswered. The present symposium presents cutting edge examinations of these topics using a range of quantitative and qualitative methodologies. Todd Jennings will present a systematic review of all prior research examining the interface of religion, morality, and compulsive sexual behavior. K. Camille Hoagland and A. Shanti James will use qualitative methods in a U.S. nationally representative sample of adults to explore women's experience of moral disapproval of pornography. Kaelyn Griffin will discuss recent efforts to understand how religious experiences beyond moral incongruence influence interpretations of sexual behavior. Neil Gleason will report results from a quantitative study that examines if moral incongruence extends beyond pornography use. Dr. Beáta Bőthe will present results of a large, multi-national (N > 100,000) machine-learning study that examines the best empirical predictors of problematic pornography use, including moral incongruence. Collectively, these works present cutting edge research employing a variety of methods to explore the importance of religion and morality in understanding problematic pornography use and compulsive sexual behavior.

Keywords*:* moral incongruence; religion; sexual addiction; cultural context; women's pornography use

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S-7A2

Compulsive Sexual Behavior, religiosity, and spirituality: A systematic review

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Background: The relationship between compulsive sexual behavior (CSB), religiosity, and spirituality is receiving considerable research attention. This presentation reviews research evaluating the relationship religiosity and spirituality have with CSB to inform clinical assessment and treatment of this syndrome. *Method:* Using the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) guidelines, we review research published through August 1st, 2021. The present work only reviewed quantitative analyses. *Results:* The systematic review identified fifty-nine studies examining the relationship between CSB and religiosity or spirituality. Studies predominately consisted of heterosexual White men and women. A wide variety of assessment measures were used, though the most commonly measured constructs included religious participation, belief salience, and problematic pornography use (PPU). In general, small to moderate positive relationships between religiosity and CSB were identified. However, recent studies examining moral disapproval as a mediator or moderator produced stronger indirect relationships between religiosity and PPU. Only seven studies evaluated the relationship between CSB and spirituality. These studies often reported positive relationships between indicators of spiritual struggles and CSB or a negative relationship between aspects of spiritual well-being and CSB. *Conclusions*: Research examining the association between CSB and religiosity is flourishing. Although moral incongruence produces strong indirect relationships between religiosity and PPU, further investigation into other religiosity or spirituality constructs and their link to various manifestations of CSB is needed. Future research should attempt to understand these relationships in minoritized groups such as sexual and gender diverse populations.

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S-7A3

Moral disapproval of pornography among women: A qualitative analysis in a nationally representative sample

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Background: Prior research exploring pornography related problems typically focuses on men, primarily because women often report using less pornography than men. Recent work has shown that moral disapproval is often a robust predictor of pornography-related distress. However, very little work has been done to explore why people actually morally disapprove of pornography. Taken together, these observations regarding past literature suggest that we know very little about reasons for moral disapproval of pornography among women and how such disapproval predicts symptoms of pathology. *Method:* In August of 2019, a nationally representative sample of adults in the United States was collected. Participants were asked to report on a sliding scale the extent to which they found pornography use to be morally objectionable or morally acceptable. Participants who reported moral disapproval of pornography were asked to qualitatively describe their reasons for moral disapproval. These qualitative responses were analyzed and coded for content. These coded responses were then analyzed to explore reasons for moral disapproval as they relate to other key constructs. *Results:* Results revealed 14 categories of reported reasons for moral disapproval of pornography use, with some evidence that men and women's opposition to pornography use may vary slightly. *Conclusions:* These reasons bear important implications for the understanding of moral disapproval of pornography in general and also for the conceptualization of problematic pornography use among women, both in research and clinical practice.

S-7A4

Strange bedfellows: Religion, problematic pornography use, and purity culture

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Background: Religious abuse and trauma remain understudied despite the personal and cultural significance of religion. The current study examined the relationships between religious trauma, internalization of purity culture beliefs, problematic pornography use (PPU), religiosity, and psychopathology in a sample of university students. *Method:* Data were collected through an anonymous, online, self-report survey of a diverse undergraduate student population in the United States. Religious trauma was measured with the Spiritual Abuse Questionnaire (SAQ), religiosity with the Duke University Religion Index (DUREL), PPU assessed with the Brief

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Pornography Screen (BPS), and DSM-5 cross cutting utilized for assessment of anxiety and depression. *Results:* Pearson Product correlations revealed that SAQ scores were unrelated with PPU (r=0.08, p=.06), religiosity (r=-0.04, p=.26) or purity culture beliefs (r=0.02, p=.59), but positive relationships were found between SAQ scores and depression (r=0.17, p<.001) and anxiety (r=0.17, p<.001). Purity cultural beliefs were positively related to PPU (r=0.21, p<.001) and religiosity (r=0.52, p<.001), but negatively correlated with depression (r=-0.16, p<.001) and anxiety (r=-0.16, p<.001). *Conclusions:* The current study demonstrates there are relationships present between religious trauma and psychopathology, but not with PPU. Purity cultural beliefs were positively related to psychopathology. Additional research is needed to tease apart the relationships between religious trauma, purity cultural, religiosity, PPU and psychopathology to inform treatment approaches for distress help seeking clients.

S-7A5

Expanding the Moral Incongruence Model beyond Problematic Pornography Use

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Background: The Moral Incongruence Model of Problematic Pornography Use (PPU) states that self-perceived PPU may result from a conflict between pornography use and moral disapproval (MD) of pornography, with PPU showing a stronger positive relationship with pornography use frequency at high levels of MD. This study aims to replicate and expand this model beyond PPU to other forms of compulsive sexual behavior (CSB) and to investigate the potential contributing role of positive and negative emotional reactions to sexual stimuli (i.e. erotophobia/erotophilia). *Method:* N=879 American participants (49.8% male, 85.7% heterosexual) were recruited to complete an online survey via Amazon's Mechanical-Turk. Participants completed measures assessing CSB (Compulsive Sexual Behavior Inventory-13), erotophobia/erotophilia (Sexual Liberalism Scale), and frequency and MD of various sexual behaviors. *Results:* CSB was significantly positively associated with frequency of pornography use, masturbation, sexual fantasy, and number of sex partners in the past 3 months. Partly consistent with the moral incongruence model, increased MD made this association stronger for all behaviors except masturbation. Erotophilia was positively associated with sexual frequency and CSB, and adding erotophilia to the moral incongruence model significantly increased variance of CSB explained. Erotophilia was also a significant moderating variable, with high levels of erotophilia leading CSB to be more strongly positively associated with masturbation MD and number of sexual partners. *Conclusions:* The moral incongruence model was replicated and appears applicable to some aspects of CSB beyond PPU. In addition, erotophilia was found to significantly contribute to the model as a direct and interactive factor.

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S-7A6

Predicting problematic pornography use: A large-scale machine learning study across 70+ cross-sectional and longitudinal samples

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Background: Although research related to problematic pornography use (PPU) has proliferated in the past two decades, most prior studies were characterized by homogenous, relatively small samples, a lack of substantive theory or integration, and a lack of large-scale, collaborative studies between research laboratories, resulting in crucial knowledge gaps (e.g., role of moral incongruence in PPU in different cultures). This study aims to combine several independent laboratories' already existing cross-sectional and longitudinal datasets to identify which risk factors can best predict PPU and changes in PPU over time. *Method:* We contacted 98 researchers and laboratories to provide available PPU datasets for the study. Data analysis will take place in the fall and winter of 2021. We will use random forest models on each dataset to examine how different sociodemographic and psychological characteristics predict PPU and changes in PPU over time. Then, we will combine the results of all datasets using random-effects meta-analysis with meta-analytic moderators (e.g., community vs. treatment-seeking samples). *Expected results:* By the fall of 2021, we had received 74 cross-sectional and longitudinal PPU datasets, including 100,000+ participants from 17 countries, with a pool of 700+ potential predictors of PPU. As the present study is exploratory in nature and machine learning is a data-driven method, we do not have a priori expectations about the findings *Conclusions:* This work will contribute to a better understanding of PPU's onset and maintenance and may provide key insights for developing more efficient prevention and intervention programs targeting PPU.

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S-7B1

Understanding compulsive sexual behavior in women

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Symposium summary: Backgrounds: To date, most studies on compulsive sexual behavior (CSB) have been carried out in men. The lack of adequate knowledge about the mechanisms of CSB in women and the commonly prevailing stereotypes may diminish help-seeking among women with this condition. Further, clinical approaches tailored to meet women's unique medical and mental health needs regarding CSB have also not been fully explored. Due to the recent inclusion of CSBD in ICD-11 and the insufficient knowledge of this problem among women, greater research is needed to establish accurate prevalence rates of CSBD among women and explore clinical patterns of sexual functioning of women reporting issues for CSB. *Methods:* In this symposium, we will provide current research findings on CSB among women, and discuss directions for future investigations. *Results:* Recent findings provide a deeper insight into the prevalence of CSB in women, its clinical picture, and comorbidity with other conditions, such as substance use disorder or disordered eating symptoms. Problematic pornography use (PPU) has been found to be linked with elevated rates of psychopathology, higher frequency of engagement in sexual activities, such as pornography use, dyadic sexual intercourse, and masturbation. As it turned out, women who are anxiously attached to a romantic partner may be more liable for the influence of pornography consumption on their body image self-consciousness. *Conclusions:* Current findings highlight the importance of further exploration of CSB in women, with the special focus on developing effective treatments for CSB tailored to women.

Keywords: women, compulsive sexual behavior, pornography

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S-7B2

Comparison of Compulsive Sexual Behavior (CSB) and sexual activity between a group of women seeking treatment for CSB and women from a community sample in Poland.

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Background: One of the missing gaps in the literature on compulsive sexual behavior (CSB) pertains to the lack of scientific investigation on CSB among women. Little is known about the prevalence of CSB and patterns of sexual functioning in this group. The present study examined the prevalence and severity of CSB symptoms, problematic pornography use (PPU), and sexual activity in two samples of Polish women – treatment-seekers and community-based. *Methods:* The samples comprised of 661 Polish women seeking treatment for CSB and 679 Polish women from the community. Women completed an anonymous online-based survey assessing their demographics, sexual activity, and CSB. CSB symptoms severity was measured by the SAST-R (cutoff score of 6), and PPU was measured by the BPS (cutoff score of 4). *Results:* 65.5% of treatment-seekers and 24.9% of a community sample meet the SAST-R cutoff. 41.3% of treatment-seekers and 13% of a community sample met the BPS cutoff. Furthermore, treatment-seeking women (as compared to community women) reported younger ages of first pornography use and first sexual intercourse, had more past week sexual intercourse and last year partners, spent more time on watching pornography during past week, and masturbated more frequently in the past week. In addition, 63.3% of treatment-seekers who meet the SAST-R cutoff were not seeking treatment for sexual behavior in the past. *Conclusions:* Our findings reflect a need for further exploration of the CSB among women, particularly the role of pornography consumption, and the possible barriers in seeking treatment.

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S-7B3

Attachment insecurities and body image self-consciousness among women: The mediating role of pornography use

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[4]University of Nevada, Las Vegas, USA

Background: The present study examined the mediating role of pornography use between attachment insecurities and body image self-consciousness in a large sample of women. We hypothesized that pornography use would mediate the relationship between insecure attachment orientations and body image self-consciousness. *Method:* We recruited a convenient sample of 1001 Israeli women who completed measures assessing attachment orientation, body self-consciousness, and pornography use frequency. We employed structural equation modeling with maximum likelihood estimation method to examine the direct pathways between attachment and body image self-consciousness, as well as the indirect, or mediational, pathways through pornography use. *Results:* Pairwise correlations indicated that all the main study constructs were significantly correlated with one another. Among women not currently in a relationship, the association between attachment and body image self-consciousness was not mediated by pornography use. Neither avoidant attachment ($\beta=0.27$, $p<0.001$) nor anxious attachment ($\beta=0.29$, $p<0.001$) were significantly related to pornography use. Pornography use, in turn, was not significantly related to body image self-consciousness. For women currently in a relationship, a full model with significant direct and indirect effects was revealed. Avoidant attachment ($\beta=0.03$) was not significantly related to pornography use, but anxious attachment ($\beta=0.09$, $p=0.02$) was significantly related to pornography use. Pornography use was significantly related to body image self-consciousness ($\beta=0.07$, $p=0.05$). *Conclusions:* Our results suggest women may be more susceptible to the influence of pornography use on their body image self-consciousness when they are anxiously attached to a romantic partner. Implications for clinical practice and future directions are discussed.

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S-7B4

Compulsive sexual behavior disorder and risky sexual behavior among young women with substance use disorder

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Background and aims: There is abundance of research on various addictions from substance use disorders to gambling and compulsive sexual behavior disorder (CSBD). We know significant less on whether there is a common disposition for substance and behavioral addictions, especially among women. In the current presentation, we will report the results of our research that for the first time examines this question by investigating whether women with substance use disorder (SUD) also suffer from high co-morbidity of behavioral addictions in the form of CSBD and risky sexual behavior. *Methods:* The sample comprised 135 women of whom 65 with substance use disorder (drugs or alcohol) [aged 24.32 on average, SD=6.07] and 70 healthy controls [aged 23.65 on average, SD=2.61]. Each participant completed a battery of self-report measures of drug abuse and alcoholism, CSBD and risky sexual behavior as well as early-life trauma and negative and positive life events. *Results:* Results indicate that young women who suffer from substance use disorder show higher CSBD symptoms and more prevalent risky sexual behavior than controls. CSBD was also found to mediate the association between substance use and risky sexual behavior. In addition, all addictive behaviors were linked with emotional abuse during childhood but not with other types of abuse. Conversely, negative life events in adulthood were only linked with CSBD and not with substance use. *Conclusions:* The findings provide deeper insights into the comorbidity of addictive behaviors and an opportunity for developing more effective treatments for women who suffer from these addictions.

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S-7B5

Left out: Examining Compulsive Sexual Behavior and Problematic Pornography Use in women college students

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Background: Compulsive Sexual Behavior (CSB) is a persistent pattern of failure to control intense and repetitive sexual impulses or urges, resulting in repetitive sexual behavior that causes marked distress or impairment in an individual's functioning. Problematic Pornography Use (PPU) is the most common form of CSB among men; however, little is known about CSB and PPU in women. As rates of pornography viewing among women continue to rise, further research is needed to investigate CSB and pornography for women college students. *Method:* Using an anonymous online self-report survey, 887 female college participants completed questionnaires assessing their demographics, pornography use, sexual history, and psychopathology. We used the Brief Pornography Screen (cutoff score=4) to assess for PPU, the DSM-5 Cross-Cutting Symptom Measure for psychopathology, and the Compulsive Sexual Behavior Inventory-13 (CSBI-13; cutoff score=35) for CSB. Participants were at least 18 years of age and endorsed using pornography in the last 12 months. *Results:* The prevalence of PPU among women surveyed was 20.6%. Women with PPU were more likely to meet the CSBI-13 cutoff, to view pornography both more frequently and for a longer duration of time compared to women without PPU. Lastly, women that screened positive for PPU were more likely to screen positive for anxiety, mania, sleep issues, and suicidal ideation. *Conclusions:* PPU is prevalent in women college students and is associated with elevated rates of psychopathology. Results highlight the importance of further research examining PPU and CSB in women given the possibility of sexual health disparities.

S-7B6

Double trouble? Examining the overlap between problematic pornography use and disordered eating symptoms in college women

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Background: Problematic pornography use (PPU) is a behavioral addiction that may co-occur with eating disorder pathology. The exposure to nontraditional media such as pornography contains idealized appearances that has been suggested to promote the development of disordered eating symptoms. While extant research suggests more frequent PPU in men, the rate of pornography use among women is rising, highlighting a need to examine the co-occurrence of PPU and disordered eating in order to understand what may drive these

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behaviors. The current study examined to what extent PPU is associated with disordered eating in young women. *Method:* Participants included an ethnically diverse sample of 887 undergraduate women from the Southeast and Southwest regions of the United States. The Eating Disorder Examination Questionnaire 6.0 (EDEQ 6.0) was used to assess overall disordered eating symptoms (cutoff > 4). The Brief Pornography Screen (BPS) was used to assess for PPU (cutoff = 4). *Results:* Chi square tests were conducted to evaluate prevalence rates of PPU and disordered eating symptoms. The prevalence of disordered eating among women in our sample was 16% and approximately 20% for PPU. Women with elevated levels of disordered eating symptoms also screened positive for PPU with a prevalence of 33.6% *Conclusions:* Current findings underscore a need for greater research examining the co-occurrence of PPU and disordered eating symptoms in women. Considering the harmful and enduring nature of both PPU and disordered eating symptoms, it is essential to properly screen for them to increase the likelihood of a successful recovery.

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S-7C1

Profiling Gaming Disorder: Cross-addictive comorbidities, identification, prevention and treatment

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Symposium summary: The present symposium integrates novel findings from Australia, Canada, Germany, the UK and the US in a broad look at measurement, prevention, and help-seeking for gaming disorder in the context of other addictions and the COVID-19 pandemic. The empirical evidence presented is based on survey, epidemiological, and clinical data and aims to enhance the understanding of: a) the positioning of gaming disorder (GD) in relation to other addictive behaviors; b) the utility of machine learning approaches on analyzing electroencephalography (EEG) data to identify GD; c) the effectiveness of a CBT-based intervention in preventing GD and; d) the links between addiction help seeking and lockdowns during the COVID-19 pandemic. The first presentation presents the results of the registered trial from Germany and examines the effectiveness of school-based, 4-session cognitive behavioral therapy prevention intervention (PROTECT) for GD. The second contribution uses advanced growth modelling on call data from an addictions helpline in the province of Ontario, Canada to illustrate the temporal associations between GD- and Internet-related help-seeking requests and lockdowns during the COVID-19 pandemic. The third presentation is from the UK and uses machine learning to generate the EEG footprint of GD and contrast this with recreational gaming. Finally, the fourth and fifth contributions from Australia and the USA use variable-and person-centered approaches to highlight the positioning of GD in relation to other addictions and to introduce novel profiles of cross-addictive comorbidities. Findings will be discussed in the light of the emerging GD literature around identification, prevention, and treatment for GD.

Keywords*:* gaming disorder, internet addiction, substance addiction, treatment, prevention

S-7C2

Effectiveness of Cognitive Behavioral Therapy to prevent gaming disorder and unspecified Internet use disorder in adolescents: A cluster randomized clinical trial

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Background: Behavioral addictions were introduced as novel mental disorders in the ICD-11, based on evidence that human behavior itself can become addictive, analogously to substance-related addictions. To prevent gaming disorder (GD) and unspecified Internet use

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disorders (IUD), we developed a CBT-based intervention (PROTECT) which follows the APA-guidelines for prevention in psychology. This theory-driven, school-based, indicated, 4-session preventive intervention targets addictive reward processing and pathological cognitive mechanisms. *Methods:* N=422 at-risk adolescents from 33 schools in Germany (mean age [SD] =15.11 [2.01] years) who did not meet IGD criteria were randomly assigned to the PROTECT intervention group (52.7% female) or the assessment-only control group (55.3% female). Students met for 90 minutes in 24 groups of 3-11 adolescents every week for four weeks. Two group leaders delivered a manualized treatment based on cognitive behavioral therapy that is intended to promote knowledge on addictive reward processing, adaptive cognitions and alternative coping (behavioral and emotional). Primary outcomes were symptom severity as measured by the adapted videogame dependency scale and incidence rates as measured by structured clinical interviews after 12 months. *Results:* The PROTECT intervention group showed a significantly stronger reduction in GD and unspecified IUD severity ($\gamma 11 = -0.128$, $p = .032$, 95% CI [-.246; -.011]) and a significantly stronger reduction in procrastination ($\gamma 11 = -0.458$, $p < .001$, 95% CI [-.735; -.180]). Differences in incidence rates did not reach significance. *Discussion & Conclusions:* PROTECT effectively reduces GD and unspecified symptoms over 12 months. Larger samples are needed to confirm a reduction in incidence rates. ClinicalTrials.gov registration: NCT02907658

S-7C3

Impact of COVID-19 on helpline calls for activities related to technology overuse in Ontario, Canada

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Background: Video gaming revenues have increased dramatically during the COVID-19 pandemic. Trending social games and hyper-casual games are attracting new audiences that require further study. While engaging in video games and Internet-related behaviors inherently may help promote social connection and alleviate stress during the pandemic, a small proportion of individuals develop problematic habits that interfere with daily functioning. Therefore, the aim of this study is to examine the impact of COVID-19 lockdowns on the number of helpline calls for gaming disorder and problematic Internet use in the province of Ontario, Canada. *Methods:* Helpline calls were collected from a provincial mental health & addiction treatment service hotline from January 2019 to December 2021. This free and confidential service is for people who experience problems with alcohol, drugs, mental illness, and behavioral disorders. Growth modeling will be employed to examine the links between the number of calls received, the number of COVID-19 cases reported province-wide and the

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accumulated lockdown days across the different months. *Results:* The associations between the linear, quadratic and cubic growth/change curve factors of the number of calls received in relation to the progress of the pandemic will be reported for time variant, time-invariant and parallel growth moderators. *Conclusions:* Helpline calls are expected to increase during lockdowns and decrease when restrictions are lifted. This study serves to inform preventive measures that should be considered with the implementation of lockdown during a pandemic to prevent problematic forms of gaming or Internet use.

S-7C4

Utilizing a Brain Inspired Spiking Neural Network to better predict and identify Gaming Disorder using EEG data

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Background: The wide range of negative consequences associated with gaming points to the importance of accurately differentiate problematic or disordered gaming from recreational gaming. Artificial Intelligence (AI), specifically the use of Machine Learning (ML) such as Spiking Neural Networks (SNN), has shown promise in this area. The computational modeling of electroencephalography (EEG) data is based on the framework of SNN architecture, NeuCube, which has been utilized within this study for the mapping, learning, visualising, and classifying of brain activity patterns related to problematic gaming and recreational gaming. The NeuCube SNN model has been previously applied to resting state EEG data to understand personal differences in mindfulness success within depression and may be used to examine variables that predict gaming disorder. *Methods:* EEG data were collected under strict monitoring with 2 mins. eyes open state and 2 mins. eyes closed. Following this, data were cleaned and prepared for use with the NeuCube SNN architecture. *Results:* Findings suggest a discriminative pattern of spatiotemporal connections in the SNN models as a function of group characteristics (problematic gaming and recreational gaming group) and revealed information about the contribution of particular brain regions that can be used to identify and predict problematic/disordered gaming in individuals. *Discussion & Conclusions:* The findings indicate that the designed SNN-based methodology can be potentially explored and used in the future to predict problematic gaming. and for early detection and intervention plans; which will benefit in social functionality and maximizing mental health outcomes for individuals experiencing problematic/disordered gaming.

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S-7C5

Factor structure of ten psychoactive substance addictions and behavioral addictions

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Background: Over the past two decades, many problematic excessive behaviors have increasingly been conceptualized as addictions due to their similarity with more traditional psychoactive substance addictions. The primary aim of the present study was to simultaneously examine the factor structure of three psychoactive substance addictions (alcohol use, cigarette smoking, and illicit drug use) and seven behavioral addictions (sex, social media use, shopping, exercise, gambling, internet gaming, and internet use). *Methods:* A total of 968 participants completed an online survey including ten psychometric scales assessing the ten different potentially addictive behaviours. Their responses were analysed using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). Results: EFA supported a two-factor solution, with different factors for the psychoactive substance and most behavioural addictions. CFA supported the two-factor model in a separate sample. There was good support for the external validities of the CFA latent factors and for the reliability of the behavioural latent factor in the two-factor CFA model. There was insufficient support for the reliability of the psychoactive substance latent factor in this model. *Conclusions:* The taxonomic, theoretical, and clinical implications of the findings are discussed in the light of the evolving addictions literature.

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S-7C6

Cross-addiction risk typologies and their connection with COVID-19 anxiety: A latent class profiling approach

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Background: "Cross-addiction" involves a person substituting one form of addictive behaviour for another. While various cross-addiction presentations have been described throughout the literature (drugs to alcohol, alcohol to smoking, gambling to sex), minimal research has explored whether different types of cross-addiction risk exist. We examined the co-occurrence of substance and behavioral addictions and whether addiction profiles differed in COVID-19-related anxiety. *Methods:* We recruited 968 participants through social media and online forums in the latter half of 2020. We assessed 10 addictive behaviours and COVID-19-related anxiety with validated instruments. We used Latent Class/Profiling analyses with mean scores on addictive behavior scales to identify different risk profiles and compared proportions who met cut-off scores for each disorder between classes. We conducted t-tests to examine differences in COVID-19 anxiety between classes. *Results:* Two distinct risk profiles were identified, “Cross-Addiction Low-Risk” (57.4%) and “Cross-Addiction High-Risk” (42.6%), with the high-risk profile having higher average scores across all addictive behaviours and more participants who met the diagnostic cut-off for multiple addictions. No individuals in the low-risk profile met cut-off scores for alcohol, drug, or gambling disorders. T-test showed significantly higher levels of COVID-19 anxiety in the high-risk compared to the low-risk profile *Discussion & Conclusions:* Profiles of those at-risk for addictions do not distinguish between type of addiction so much as severity of multiple addictions and addictions having more severe health impacts. Identification of individuals at risk for multiple addictions has important implications for targeting prevention, treatment, and further research.

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S-7D1

Psychometric properties of screening instruments for social networks use disorder: A systematic review

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Background: Children and adolescents spend a lot of time on the internet, including social networking sites such as Instagram or Facebook, which makes them a highly vulnerable group for the development of social networks use disorder (SNUD). Although various screening instruments have already been developed and validated, recommendations for an optimal scale assessing problematic social network use (PSNU) and SNUD in younger age groups are still lacking. *Method:* To identify instruments on PSNU and SNUD in children and adolescents, we conducted a systematic literature search in the databases PsycInfo, PubMed, Web of Science, PsycArticles, and Scopus. The final research took place in September 2021. In consideration of the psychometric properties and further assessment criteria recommendations for suitable instruments were derived. *Results:* The study selection process of 5,581 publications identified by our database searches resulted in a final inclusion of 26 studies revealing validation evidence for a total of 18 tools on PSNU and SNUD. With regard to validation frequency, three tools exhibited the largest evidence base: Bergen Social Media Addiction Scale (BSMAS), and the short versions of the Social Media Disorder Scale (SMDS) and Bergen Facebook Addiction Scale (BFAS). *Conlusions:* When taking the psychometric properties, the existence of a cut-off value, and the theoretical foundation as further criteria into account the SMDS-SF and BSMAS turned out to be the most appropriate screening measures for SNUD by achieving the highest score. Advantages of the SMDS are the availability of an economic short version and the possibility of a parental rating (SMDS-P).

Keywords: social media addiction, assessment, psychometric properties

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S-7D2

New assessment of problematic use of social networks

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Background: Problematic use of Social Networking Sites (SNS) is an online behaviour that requires accurate and appropriate measurement. Several scales have been developed to measure addiction to using SNS. However, the present paper includes a component of utmost interest that has not been previously measured: social and physical comparison in SNS. This study aims to carry out a comprehensive assessment of problematic SNS use, taking into account not only addictive use, but also comparative use of SNS. *Method:* Two scales of problematic SNS use were developed with two different samples, (i) a sample of 500 women, where an Exploratory Factor Analysis (EFA) was performed to develop the appearance concern questionnaire (CONAPP), and (ii) another sample of 1,003 participants where an EFA and a Confirmatory Factor Analysis (CFA) were performed to develop the Problematic Use of Social Networks (UPS) questionnaire. Results: Both questionnaires have adequate psychometric properties. The CONAPP questionnaire was found to be unidimensional, and the UPS questionnaire bidimensional (comprising the factor "addictive consequences" and a second factor “negative social comparison”). *Conclusions:* Two questionnaires have been developed for a comprehensive assessment of problematic SNS use. These results have implications for the improvement of the assessment of problematic SNS use and possible prevention plans.

Keywords: problematic social network use, social networking, assessment

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S-7D3

Psychometric evaluation of the Instagram Motives Questionnaire (IMQ) and the Instagram Usage Patterns Questionnaire across three languages

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In view of the growing interest regarding problematic Instagram use and the unavailability of valid and reliable instruments to measure the different motives and patterns of use involved, two measures were developed and validated through confirmatory factor analysis, the Instagram Motives Questionnaire (IMQ – 32 items) and the Instagram Usage Patterns Questionnaire (IUPQ – 37 items). In order to promote international cross-cultural research, the IMQ and IUPQ were disseminated online in nine countries and three languages (Spanish, English, and French). Other measures were taken as well: self-esteem, compulsive internet use, stress, anxiety and depression, comparison orientation, etc. The final sample was composed of 6284 participants for the IMQ and 5115 participants for the IUPQ. Confirmatory factor analysis, an analysis of measurement invariance across language and gender, and correlational analysis were performed to establish structural and construct validity. Alpha and Omega Reliability coefficients were also computed. Both questionnaires have good psychometric properties and fit each language properly. Equivalence across languages was supported but not across gender. Correlation patterns between the IMQ and IUPQ factors with the rest of the variables support the validity and usefulness of both scales. Implications of the findings are discussed.

Keywords: Instagram use, motives, psychometrics, CFA, cross-cultural research

S-7D4

A comparative, corpus-driven analysis of problematic social networking use

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Social networking site (SNS) addiction is not a formally recognised disorder, but it is increasingly discussed online and in academic research. By applying corpus linguistic methods, this study takes a quantitative, exploratory approach to determine whether problematic social networking use is presented like established addictions by the affected discourse community. In doing so, it also addresses how well existing measurements of SNS addiction fit the discourse

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surrounding this emerging disorder. Four collections of naturally-occurring language (corpora) concerning addiction were created for this study: a corpus on SNS addiction and three corpora concerning alcohol use disorder, tobacco use disorder and internet gaming disorder. All corpora were comprised of user-generated content found on Reddit, with the English Web Corpus used as a reference corpus. From these addiction corpora, keywords were identified, collocates and concordances were explored, and themes were determined and compared. Findings show that all of the dominant themes shared between corpora of established addictions are also found in the SNS addiction corpus. However, some shared linguistic features may demonstrate confirmation bias rather than shared experience. Recognisable language features associated with addiction are, in some instances, appropriated by individuals discussing SNS addiction, which is more telling of experiences of addiction-related language than experiences of addiction. When these interdiscursive references are taken into account, broad similarities remain evident between corpora, and support is shown for measurements of SNS addiction that apply the components model of addiction.

Keywords: SNS addiction, corpus linguistics, comparative keywords analysis

S-7D5

DEBA-Internet: A new screening test for Internet Addiction

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Context: The growing use of Internet is associated with an increase problematic use of screens. Another difficulty reported by clinicians concerns the variety of Internet activities: gambling, social networking, video visioning, information and streaming, etc. Clinicians from all horizons (schools, work place, health and psychosocial services, etc.) and working with youth and adults, need a screening tool adapted to the diversity of these situations. *Objectives:* Develop and validate a screening tool adapted for youths and adults, integrating all types of Internet activities. *Method:* Interviews with teenagers and young adults (n=89, 15-25 years old, m=19.7, sd=1,6) divided between a problematic (n=52) and non-problematic use (n=37) based on the diagnosis interview WebAddict v1.0. Experimental questions covered eight domains: time spent, use of screens to deal with negative emotions, over preoccupation, craving, self-control

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and negatives consequences, and auto- and family/friends assessment of severity. Discriminant function analysis and ROC analysis were used to select items with high classification power. Selected items were weighted based on coefficients from logistic regression. The cutoff was selected according to the Youden Index. *Results:* Six items were finally selected: weekly time spent (weighted 0-1 hour = 0; 91+ hours = 40); 2 items on the domain of control, i.e., continuing despite fatigue and a general lack of control; 2 items on use of screens to deal with negative emotions; and opinion from friends or lover about difficulties with screens (X2). A cutoff at 39+ (total from 0 to 100) provides a sensitivity of .82 and a specificity of .88.

Keywords: Internet use, Internet Addiction, gaming, screening, test, screens use

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S-7E1

Development and validation of a prediction model for online gambling problems based on players' account data

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Background: Online gambling is a risk factor for the development of gambling problems compared to land-based activity. At the same time, online gambling provides interesting opportunities to study actual gambling behavior by using operators' routinely collected data. We used players' account-based gambling data to develop a prediction model for the screening of online problem gambling. *Methods:* A random sample of French online gamblers of poker, horse race betting and sports betting (n=8172) answered an online survey including the administration of the Problem Gambling Severity Index (PGSI). We retrospectively collected gambling tracking data gathered from the French national authority. We applied machine learning algorithms to predict the PGSI categories with gambling tracking data. The prediction model was validated in a leave-out test sample. We assessed the importance of each gambling indicator in the detection of gamblers at-risk for gambling problems. *Results:* The prediction model built with the random forest algorithm showed good predictive performance. In particular, the area under the ROC curve for the screening of PGSI 8+ gamblers was 0.85 [95% CI: 0.81–0.89]. The model correctly identified 75% of PGSI 8+ gamblers and 80% of PGSI 8- gamblers. The analysis of variables' importance suggested that money-wagered-related indicators were useful for identifying gamblers with low to moderate risk of gambling problems, whereas deposit-related indicators were helpful for identifying individuals with excessive gambling. *Conclusion:* We developed an algorithm for screening gamblers for their risk of gambling problems that could enable the setting of prevention measures for the most vulnerable gamblers.

Keywords: online gambling, prediction model, machine learning

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S-7E2

Effects of player protection measures in online gambling: A systematic review

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Background: With the increasing popularity of Internet-based gambling such as online casinos or in-play sports betting, the question arises as to what preventive measures should be implemented to effectively counter the addictive risks associated with this trend. Aim: The aim of this overview is to gather empirical findings on the effectiveness of measures to protect gamblers in online gambling environments. *Method:* A systematic literature search was conducted in six electronic databases (including an accompanying manual search) for relevant evaluation studies published in the past 12 years (until the end of 2020). In sum, a total of 22 original articles met the pre-defined inclusion criteria. *Results:* The 22 primary studies provide information on the effectiveness of 26 individual measures. Most of the empirical findings relate to personalized feedback (8), pre-commitment systems (7), and self-exclusion (6). These intervention types are expected to have positive effects in terms of addiction prevention on several domains (i.e., knowledge, attitudes and behavior). However, low utilization rates (especially in the case of voluntary limit setting), moderate effect sizes and largely missing findings on effect sustainability limit the validity of the studies. *Conclusion:* Based on the current state of knowledge, recommendations for the optimization of player protection measures in online gambling as well as research gaps that need to be considered with priority in future are derived.

Keywords: gambling disorder, prevention, harm minimization, online gambling, systematic review

S-7E3

Elite professional online poker players: Factors predicting success in a gambling game usually associated with financial loss and harm

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Background: Disordered gambling is thought to comprise elements of behavioural addiction and harm, and a large literature lists a number of risk factors for disordered gambling, such as young age, male gender, the presence of a big early win, impulsiveness, irrational cognitions about chance, spending a lot of time gambling, and engagement with multiple gambling formats. However, very little is known about elite professional gamblers, who might gamble a lot and yet not experience harm due to their ability to win often substantial amounts of money over time. Study of this group may provide a unique angle on harm reduction

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in gambling and the psychology of gambling. This study investigates responses from elite former online poker professionals along dimensions uncovered by the disordered gambling literature. *Method:* Qualitative interviews with expert online poker professionals, each with a sustained track record of success (N=19). *Results:* Participants each spent significant periods of their lives showing signs of behavioural addiction to gambling, and yet self-reported no or little harm, and many had retired from active play without showing cravings to return. Participants generally reported having a long-term decision-making focus, having no irrational cognitions, and often rarely gambled outside of their poker specialism(s). Participants were open-minded and reflective about their skill level in poker and related domains such as investing. *Conclusions:* The further study of the psychology of professional gamblers may aide understanding of harm reduction in gambling.

Keywords: gambling disorder, skilled gambling, gambling harm

S-7E4

Impact of wagering inducements on the gambling behaviors of on-line gamblers: A longitudinal study based on gambling tracking data

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Introduction: Some on-line gambling operators offer wagering inducements to gamblers to increase gambling activity. They could lead to an increase in gambling behaviors and eventually represent an addictive risk factor. This study aimed to estimate the impact of wagering inducements on the gambling behaviors of on-line gamblers and to describe this temporal relation. *Methods:* This study is part of the EDEIN research program, which includes gambling tracking data from the French national on-line gambling authority (poker, horse race and sports betting) and the French national lottery (lotteries and scratch games). They included weekly gambling intensity (wagers, deposits), gambling frequency (number of gambling days), proxies of at-risk gambling behaviors (chasing and breadth of involvement) and use of wagering inducements. The Problem Gambling Severity Index was used to determine the status of the gamblers (at-risk or not). Cross-correlations were estimated to visualize the impact of wagering inducement on different lags in the time. Then, generalized linear mixed models and two-part mixed models were performed to quantify the effect of wagering inducement on gambling activity. *Results:* The use of wagering inducements was associated with a moderate increase in gambling intensity and gambling frequency but was strongly associated with at-risk gambling behaviors (odds-ratio between 1.32 [1.16; 1.50] and 4.82 [4.61; 5.05] ac-

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cording to gambling type). These effects occurred mainly in the same week the inducement was used and was stronger for at-risk gamblers. *Conclusion:* Wagering inducements may represent a risk factor for developing or exacerbating gambling problems.

Keywords: cross-correlations, gambling disorder, gambling tracking data, generalized linear mixed models, on-line gambling, wagering inducements

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S-7F1

The Trajectory of Cyber Addictions: Current Postulations and New Avenues of Interest in the Behavioral Addiction Framework

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Symposium summary: The influence of the internet is undeniably leading individuals toward instant opportunities in the cyber world. Created by a globalized space, the daily online time spent of the international population is instantly increasing. Growing evidence showed the prevalence of online gaming were arising these last decades. International population studies confirm that cyber addiction is becoming more common and spreading rapidly around the world. The increase in the number of online gaming spaces and their legalization by governments and private gaming industries constitute strengthened the development of cyber addiction. The internet opened up possibilities for online game playing, gambling, shopping, watching pornography and connecting people virtually through social networking sites, and led some individuals to get addicted to it, which is one of behavioural addiction. Internet addiction is one kind of addiction that can produce short-term rewards, leading to diminished control over the behaviour despite adverse consequences. This behaviour itself then becomes the source of addiction rather than a psychoactive substance. Behavioural addictions resemble substance use disorders in terms of phenomenology, natural history, and neurobiology. Therefore, the symposium will highlight the current postulations and new avenues of interest in the behavioural addiction framework as the trajectory of cyber addiction. This symposium will provide updates on behavioural addiction about the guidelines for disorders due to addictive behaviours in ICD-11, problematic use of the internet and mental health among medical residents, national actions on the prevention of gaming disorder, and Cognitive Behavioral Training (CBT) as the effective treatment for youth with gaming disorder.

Keywords: gaming disorder, internet addiction, behavioral addiction, CBT, national prevention, ICD-11, medical residents, self-esteem, problematic use of internet

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S-7F2

Guidelines for disorders due to addictive behaviours in ICD-11

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Background: The Eleventh Revision of the International Classification of Diseases (ICD-11) published in January 2022, includes for the first-time "Disorders due to Addictive Behaviours". Two disorders are specified and have diagnostic guidelines; they are Gaming Disorder and Gambling Disorder. There are also diagnostic definitions available for Hazardous Gaming and Hazardous Gambling, which are defined as health risk conditions. There is provision for other behavioural addictions to be diagnosed but no other disorders are specified in ICD-11. This presentation will explore the grounds for accepting other behavioural addictions in ICD-11. *Method and Results:* Reviews of proposed approaches to accepting disorders as behavioural addictions (including Brand et al., 2020; Gullo et al., 2021) have been undertaken. In addition to candidate behavioural addictions manifesting the key addictive features of (1) impaired control over the activity, (2) increasing priority of the behaviour over other activities and responsibilities, and (iii) continued involvement despite harm, we argue that there should be (1) clear clinical relevance, namely functional impairment, (2) alignment with other addiction phenomenology, (3) sharing underlying theory, and (4) taxonomic plausibility including associations with comorbid disorders and vulnerabilities. *Conclusion:* No other behavioural addictions are currently recognised in ICD-11, but these guidelines provide a benchmark for gauging whether a repetitive behaviour conforms to a behavioural addiction. Importantly, this provides a guard against the overinflation of diagnoses and the trivialisation of the concept of behavioural addictions.

S-7F3

Problematic use of Internet and mental health among medical residents in Japan

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Backgrounds: Mental health problems (MHP) among medical residents are often found in clinical settings and potentially lead to professional lapses. Evidence suggests that.problematic use of the internet (PUI) is associated with MHP particularly in the younger population. We investigated the MHP of medical residents (depression, anxiety, and self-esteem) and their association with Internet use. *Methods:* Participants were 208 residents. The General Health Questionnaire (GHQ), Patient Health Questionnaire (PHQ), and the Rosenberg Self-Esteem Scale (RSES) were used to assess anxiety, depression, and self-esteem. The General-

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ized Problematic Internet Use Scale 2 (GPIUS2) was used to measure Internet use. Data were obtained twice, at baseline and 3 months later when the risk of MHP in residency is the highest. *Results:* Residents with MHP (N = 36) had higher GHQ scores compared to those without MHP (N = 172) at follow-up in 3 months. Residents with MHP had higher depression and lower self-esteem compared to those without MHP at baseline and follow-up. GPIUS2 total scores, and scores on the subscale preference for online social communication (POSI), were higher in residents with MHP. POSI at follow-up was positively correlated with depression at baseline and follow-up and negatively correlated with self-esteem at follow-up. *Conclusions:* Depression and self-esteem may predict PUI when the risk of MHP is the greatest for residents, indicating potential risks of PUI or Internet use as a compensatory coping behaviour. Together with depression and self-esteem assessment, Internet use may be a useful index of mental health management.

S-7F4

The effectivity of Cognitive Behavioral Therapy on Gaming Disorder patients in an outpatient setting: Experience of a developing country

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Background: The COVID-19 pandemic has led to an increase in the use of the internet in the community, especially online games, increasing the risk of addiction. According to our research, the prevalence of internet addiction in Indonesian adolescents and adults was 19% and 15% in 2020. 30% of teenagers who started as regular online gamers were developing to be addicts. Currently, there are no specific regulations for online games in Indonesia while parents seek professional help. Therefore, Indonesia's national referral hospital has developed a behavioural addiction clinic based on CBT modalities and family therapy. Studies on the effectiveness of CBT for adolescents with gaming disorders are strongly needed to standardize internet gaming disorder management. *Methods:* This research is an experimental study that followed 20 patients given CBT for six months. The CBT was in a modified module adapted to Indonesian culture and performed for 12 sessions. On the sixth month of follow-up, the data analysis found decreased online games addiction scores and duration of online game usage, improvement of psychopathology, family relationships, self-image, and parenting styles. *Results:* There was a significant change ($p<0.05$) in the duration of online games usage, online games addiction scores, relationships with family, parenting styles, self-image, and psychopathology. This modified CBT modality can be used as a national guideline in Indonesia *Conclusion:* Modified CBT is effective for gaming disorder treatment for adolescents and young adults in Indonesia. This modality could be used as a treatment model for national management in Indonesia's various mental health service centres.

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S-7G1

Coping strategies during the COVID-19 lockdown: A multicultural study on self-related risks

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Symposium summary: The current COVID-19 pandemic has been affecting the body image of individuals as well as their practice of physical exercise and their consumption of image- and performance-enhancing drugs (IPEDs) in an attempt to boost their appearance. This symposium will present the results of various cross-sectional studies that are part of an overarching global project aimed to study fitness habits during the COVID-19 lockdown which was carried out in eight countries (UK, Portugal, Spain, Italy, Hungary, Lithuania, Brazil, and Japan). These studies focus on: (1) Assessing the perception of body image during self-isolation; (2) Exploring the practice of exercising and related habits during self-isolation (e.g., using fitness apps or spending more time in social media); (3) Understanding whether exercise can help to cope with self-isolation; and (4) Exploring any potential use of IPEDs during self-isolation as a way to boost physical appearance. Findings have contributed to a better understanding of the effects of self-isolation on body image and the identification of related risky behaviours in the attempt to boost physical appearance, while contributing to the development of practices targeting mental and physical wellbeing in challenging times for humanity. *Funding:* This work has been supported by the Cost Action (CA) 16207 https://www.cost.eu/actions/CA16207/

Keywords: fitspiration; appearance anxiety; physical exercise; COVID-19 lockdown

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S-7G2

The role of anxiety about appearance on the practice of physical exercise and use of image- and performance-enhancing drugs (IPEDs) during the COVID-19 lockdown: A multicultural study

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Background: The literature has been showing evidence about the impact of restrictive measures during the COVID-19 pandemic on different psychological variables and behaviours. This study aims to assess the contribution of anxiety about appearance on the practice of physical exercise and use of image- and performance-enhancing drugs (IPEDs) during the COVID-19 lockdown. *Method:* An online survey was carried out comprising the Exercise Addiction Inventory, and the Appearance Anxiety Inventory in addition to questions on the use of IPEDs. *Results:* The sample consisted of 3.161 (65% female) adults from seven countries (Italy, Spain, the United Kingdom [UK], Lithuania, Portugal, Japan and Hungary). Mean age was 35.05 years (SD = 12.10). Overall, 4.3% of the participants were found to engage in excessive or problematic exercise during the COVID-19 lockdown with peaks registered in the UK and Spain. Participants across all countries also reported the use of drugs and medicines to boost image and performance, and this use was maintained or started during the lockdown. Significant appearance anxiety levels were found across the sample. Logistic regression models revealed that anxiety about appearance was a non-significant predictor of engaging in physical exercise but increased the probability of using IPEDs significantly. This was despite the strong association found between physical exercise and IPEDs use. *Conclusions:* This study identified risks of appearance anxiety associated with the unsupervised use of IPEDs among the general population during the COVID-19 lockdown period across all the participating countries. The risks of appearance anxiety associated with excessive physical exercising were non-significant.

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S-7G3

Excessive exercise and IPED use among sport disciplines

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Background: Physical distancing under the coronavirus disease 2019 (COVID-19) pandemic had a significant impact on lifestyles, including exercise routines. In this study, we examined the difference of tendency of addictive behaviors, such as excessive exercise and the usage of the image and performance-enhancing drug (IPED) across 12 sport disciplines *Method:* A large cross-sectional sample of the adult population (N= 2,295) was surveyed. The use of IPED was assessed in conjunction with psychometric measures such as the Exercise Addiction Inventory (EAI) and the Appearance Anxiety Inventory (AAI). The participants were grouped into activity group (AG) and non-activity group (NAG) according to the presence or absence of their exercise habits. The results were compared between these groups, as well as across sport disciplines. *Results:* The frequency of IPEDs use was higher among AG (34.6%) than NAG (14.6%). The logistic regression analysis revealed that scores equal to or above cutoff points, in both the EAI and AAI, predicted the IPED use. Regarding the differences across the various sports disciplines, those who were involved in practicing Weight Lifting and Cross-Fit were found to be more at risk of excessive exercising and more inclined to use a wide range of IPED. Conversely, those who were engaged in walking is low EAI as well as a low rate of IPED use. *Conclusions:* These results may indicate that excessive exercise is associated with the risk of cross-addiction with substance intake, particularly in disciplines that demand high-intensity functional training.

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S-7G4

Fitspiration on social media: Body-image and other psychopathological risks among young adults

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Background: The use of social media is popular in the health and the beauty industry, with an increasing number of brands using web platforms to promote their products. Among the recently-emerged trends, "fitspiration" (also abbreviated as "fitspo") has raised health concerns. Evidence suggested that fitspiration contents, although originally conceived to promote a healthier lifestyle, often portray distressful themes that can lead to unhealthy thoughts and behaviours (e.g., body image and eating disturbances, excessive exercising, misuse of supplements). Despite its popularity, the knowledge on this trend is limited, and relatively few studies explored its psychological impact on young people below 25-year-old. *Methods:* A narrative literature search was conducted in order to provide an overview of the evidence linking fitspiration trends on social media to mental health disturbances. *Results:* Various factors related to psychopathological risks have been associated with the exposure to fitspiration contents, which we have clustered in the following main topics: (i) exercise addiction and compulsive exercise; (ii) body dissatisfaction and objectification; (iii) appearance-related anxiety and depressive symptoms, self-esteem; (iv) excessive control of eating habits; (v) use of enhancing drugs; (vi) quality of life. *Conclusion:* A wide range of negative psychological effects associated with fitspiration content on social media were identified. Additional research is required to further elucidate the phenomenon, to determine the extent of the harm for young people, and to develop preventive mental health strategies.

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S-7G5

Problematic internet use during COVID-19 pandemic

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Background: Experts in the field raised concerns about the rise of the Problematic Usage of the Internet (PUI) during the Coronavirus pandemic (COVID-19), however, specific online behaviours and how they are presented cross-culturally were explored to a lesser extent. In this study, we aimed to explore the cross-cultural manifestation of specific online behaviours and their associations with self-compassion, appearance anxiety, image and performance enhancing drugs (IPEDs) use, and specific online behaviours. *Methods:* An international survey was conducted in eight countries including Italy, Lithuania, Portugal, Spain, Japan, United Kingdom, Brazil and Hungary comprising in total 2223 individuals with a mean age of 33±11 years old. Participants were surveyed for specific type of Internet use severity (the Internet Activities Scale from the Internet Severity and Activities Addiction Questionnaire), self-compassion (the Self-Compassion Scale, SCS), appearance anxiety (the Appearance Anxiety Inventory, AAI), and IPEDs use. *Results:* After adjustment for demographic factors, hours online, and country, self-compassion remained associated with higher levels of skill games and time wasters (β=-.073; p<.002), streaming (β=-.053; p=.018), digital hoarding (β=-.065; p=.006) and cyberchondria (β=-.153; p<.001). Appearance was associated with general surfing (β=.136; p<.001), online shopping (β=.137; p<.001), online gambling (β=.067; p=.003), social networking (β=.131; p<.001), pornography use (β=.102; p<.001), digital hoarding (β=.079; p<.001) and cyberchondria (β=.120; p<.001). IPEDs use also remained associated with various online behaviours during the COVID-19 pandemic *Conclusions:* Our exploratory study demonstrates that self-compassion, appearance anxiety, and IPEDS use contribute to various forms of PUI.

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S-8A1

In its own dilemma: The adverse functioning of desire thinking among specific online activities

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Background: Desire thinking describes the voluntary elaboration of a target of desire on an imaginal and verbal level. It may be a pleasurable, yet torturing state as put forward in the Elaborated Intrusion Theory of Desire (EIT) and although not per se problematic, it can become dysfunctional as stated in the Self-Regulatory Execution Function (S-REF) model of alcohol consumption. The purpose of this project is to investigate the role of desire thinking among specific online activities according to these models. *Method:* Theoretical assumptions of the S-REF and EIT and empirical findings on desire thinking were integrated into the Interaction of Person-Affect-Cognition-Execution (I-PACE) model. A structural equation model was derived from this integration where the relation between negative emotional reactivity and craving is mediated by desire thinking, which was tested in a sample of N = 925 internet users. *Results:* A theoretical integration of desire thinking into the I-PACE model emphasizes its relations to craving and its role when initiated as a reaction to negative mood. Accordingly, results of the structural equation model showed that higher negative emotional reactivity significantly predicted higher desire thinking, which in turn significantly predicted higher craving for online activities. *Conclusion:* According to the findings, desire thinking is likely initiated as a reaction to negative emotional states, depicting it as a possible coping mechanism. The resulting craving response is a possible indicator for its dysfunctional character since craving reactions can become hard to resist and are thus highly related to actual and potentially unwanted online behaviors.

Keywords: desire thinking, emotional reactivity, craving, Internet use

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S-8A2

Emotional Face Expression Recognition in Internet Use Disorder: task-based fMRI study

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Introduction: Growing literature indicates that Internet use disorder (IUD) is associated with the breakdown of functional brain networks. The effect of IUD on emotional face expression (EFE) recognition is not well understood, however behavioural investigations and fMRI studies of different addiction forms indicated the involvement of this function. *Methods:* The Emotional Face Assessment Task was used to probe cortico-limbic responses during EFE recognition. Blood-oxygen-level-dependent analysis and psychophysiological analysis were implemented to measure EFE-related functional brain changes in IUD. Self-reported questionnaires were used to assess IUD and social interaction anxiety (SIA) which is a frequent symptom in IUD. *Results:* Positive associations were found between the extent of IUD, SIA and functional connections related to attentional processes, emotional cognitive control and social cognitive functions. In addition, SIA plays a mediating role in the relationship between social cognitive processes and IUD. *Discussion:* Our findings highlight the involvement of social functioning, especially EFE recognition in IUD. Therefore, we emphasize that besides the brain's executive and reward systems, the social brain network might be the next candidate to be involved in the pathogenesis of IUD.

Keywords: Internet use disorder, social interaction anxiety, emotional face expression recognition, functional brain networks

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S-8A3

Personality traits in association with problematic internet use

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Background: Some of the factors described in the big five approach have been found to be associated with Internet Use Disorders (IUD). Furthermore, other personality-related constructs such as high impulsivity or low self-esteem have been found as risk-factors as well. Aim of this study was to investigate the interplay of these variables. *Methods:* The study is based on data collected via pro-active screening in vocational schools (n = 8.230) using the Compulsive Internet Use Scale (CIUS) with a low cut-off (21). Screening positive cases underwent a diagnostic telephone interview using a fully structured interview based on the DSM-5 criteria for Internet Gaming Disorder. Personality traits were assessed using the Big-Five-Inventory-10, Rosenburg Self-esteem Scale and Barratt Impulsiveness Scale-15. *Results:* The final sample consisted of 889 participants aged 16 to 29 years. Results of the univariate analysis confirm a significant negative association of conscientiousness and self-esteem as well as positive association with neuroticism, and impulsivity on the likelihood of problematic Internet use. In the multivariate regression model, the association of self-esteem, impulsivity and neuroticism proved significance, with neuroticism having the strongest association (OR = 1.282), whereas conscientiousness showed no significant relationship. *Conclusions:* Neuroticism proved as a stable factor in this sample, while conscientiousness might be better explained by low levels of impulsivity. Self-esteem might be a relatively independent factor besides other personality characteristics or mental comorbidities as shown in previous studies.

Keywords: big five, impulsivity, self-esteem

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S-8A4

Exploring the role of interoceptive awareness and alexithymia in problematic usage of the internet

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Background: Interoceptive awareness (IA) is the ability of mapping bodily modifications elicited by external or internal inputs, influencing emotions and behaviors. IA plays a central role in eliciting craving in patients with substance use disorders. Deficits in IA is linked to alexithymia, the difficulty in understanding emotions and discriminating them from bodily sensations. Until nowadays few studies have been done to investigate the role of IA and alexithymia in problematic usage of the internet (PUI). The aim of the present study was to explore these constructs in a population of adults, to find possible associations with PUI. *Methods:* The Internet Addiction Test (IAT), the Toronto Alexithymia Scale (TAS-20) and the Multidimensional Assessment of Interoceptive Awareness (MAIA) were administered through an online survey in a sample of 1057 adults aged 18-65 years. Logistic regression analysis was performed to study associations with PUI. *Results:* All the three internal constructs of TAS-20 scored higher among the participants with PUI ($p<0.001$). Some internal dimensions of MAIA scored lower in the group with PUI: "noticing" ($p=0.029$), "not-worrying" ($p<0.001$), "attention regulation" ($p=0.001$) and "trusting" ($p=0.001$). At regression analysis, younger age ($p<0.001$), a higher TAS-20 "difficult identifying feelings" score ($p<0.001$) and a lower MAIA "not-worrying" score ($p=0.004$) resulted significantly associated with PUI. *Conclusions:* The present study highlights the possible role of IA in PUI and strengthen the hypothesis that internet could be overused by those who have difficulty in identifying and expressing emotions. Longitudinal studies are needed to better understand the significance of thee constructs in PUI.

Keywords: problematic usage of the internet, interoceptive awareness, alexithymia

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S-8B1

The use of online methodologies in studying rare paraphilias: The cases of dacryphilia, eproctophilia and salirophilia

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Background: Back in 2012, I outlined the advantages, disadvantages, and other implications of using the internet to collect data from those people displaying sexually paraphilic behavior (Griffiths, M.D. [2012]. The use of online methodologies in studying paraphilias: A review. Journal of Behavioral Addictions, 1, 143–150.). *Method:* Using qualitative methodologies, this paper briefly outlines a number of case studies I have published featuring paraphilias that have never been recorded in the peer-reviewed literature previously including dacryphilia (sexual arousal from crying), eproctophilia (sexual arousal from flatulence), and salirophilia (sexual arousal from soiling or dishevelling their object of desire). *Results:* The findings demonstrate that even within what are probably rare sexual behaviours, sub-types are common. For instance, interviews with eight dacryphiles showed the existence of at least three sub-types of dacryphila. Findings also show that these behaviours sometimes appear to have compulsive and/or addictive elements but that seeking treatment for such behaviours is rare. *Conclusions:* The studies highlight the importance of online methods in the recruitment of individuals and the collection of data with sexually paraphilic behavior for academic study. It is concluded that there are many useful and practical advantages of using online research methodologies to examine sexually paraphilic behaviour particularly among very rare or niche non-normative sexual interests.

Keywords: sexual paraphilias, eproctophila, dacryphilia, salirophilia

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S-8B2

Female cybersex users: What characteristics of sexual motivations and personality traits?

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Cybersex includes all observable sexual activities, practiced on the Internet and dedicated to sexual gratification. It includes sex chats, online sex games, pornography consumption, etc. Cybersex could shift towards a compulsive use that would impact the quality and satisfaction of life of its followers. The aim of this research is to explore the profile of female cybersex users in the general population through their sexual motivations, their personality traits, and their quality and satisfaction of life. We recruited 293 women with a mean age of 23.60 (75.73% were heterosexual, 2.20% were homosexual, and 22.05% were bisexual). The majority were in a relationship. The questionnaire included the Compulsive Internet Use Scale adapted to cybersex, the Sexual Functions Scale, the Big Five Inventory-10-Fr, the General Health Questionnaire and the Life Satisfaction Scale. We used k-means cluster analysis, ANOVA, Bravais-Pearson simple correlations, and Pearson chi-squares. We distinguished (a) a cluster with women having low cybersex use, low scores in psychiatric disorders and better life satisfaction, and (b) a cluster with women with high cybersex use, high scores in psychiatric disorders and lower life satisfaction. Women with high cybersex use appear to be characterized by sexual motivations of novelty, dominance, recognition, and conformity, lower extraversion and conscientiousness traits, and greater neuroticism. The characteristics of female cybersex users remain poorly investigated. We provided results that allow the understanding of their profiles in terms of sexual motivations and personality traits. Further studies should be considered to complete our findings.

Keywords: female cybersex, compulsive cybersex, sexual motivations, personality traits

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S-8B3

Validation of family functioning scales in sexually compulsive patients in Brazil

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Background: Family Adaptability and Cohesion Evaluation Scale (FACES), Beavers-Timberlawn (BT), Global Assessment of Relational Functioning Scale (GARF) were conducted for the first time in sexually compulsive people to investigate the internal consistency, discriminant and convergent validity. *Methods:* 270 individuals (251 men and 19 women, mean age = 36, 67% Caucasian) responded to Mini International Neuropsychiatric Interview (MINI), Childhood Trauma Questionnaire (CTQ), FACES, BT, GARF. It was performed factor analysis on BT. The internal consistency was evaluated using Cronbach's Alpha coefficient. Convergent validity was evaluated using Spearman (Sp) correlations. Discriminant validity was denoted by depressions, suicide risk, humor, hypersexuality, abuses and negligence records through Mann Whitney test. *Results:* BT´s internal consistency was high (Cronbach's alpha = 0.88). BT Factor 1 (investigates Affection) showed moderate correlation with BT Factor 2 (investigates Relationship) and FACES Cohesion (Sp>0.5), weak correlation with FACES Adaptability (Sp>0.3) and strong with GARF (Sp>0.7). BT Factor 2 displayed weak correlation with FACES Cohesion (Sp>0.3) and moderate with GARF (Sp>0.5). FACES Cohesion showed weak correlation with FACES Adaptability (Sp>0.3) and moderate with GARF (Sp>0.5). BT Factor 1, BT Factor 2 and GARF showed properly discriminant validity on Suicide risk, Physic Abuse, Emotional Abuse, Sexual Abuse, Emotional Negligence and Physic Negligence (all $p \leq 0.05$). FACES Cohesion presented significance on Hypersexuality, Physic Abuse, Emotional Abuse, Sexual Abuse, Emotional Negligence and Physic Negligence. FACES Adaptability showed no significant validity. *Conclusions:* With the exception of FACES adaptability; the FACES cohesion, BT and GARF showed good properties to investigate family functioning in sexually compulsive patients.

Keywords: compulsive sexual behavior, psychometry, family functioning

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S-8B4

Love addiction, sex addiction and perceived social support: A research on a group of love addicts

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Background: Love addiction is increasingly gaining attention in academic literature, but so far has not been fully recognized as an independent nosological entity. Rather, it is often bundled with other conditions, above all sex addiction, despite the lack of data supporting such a clinical choice. Our study aimed to examine the relationship between love addiction and sex addiction, also considering the degree in which they are influenced by perceived social support. *Method:* Our study involved a clinical group comprising 497 participants undergoing psychotherapy for love addiction, and a 409-people control group. Participants were asked to complete an online questionnaire which, besides questions asking for several socio-demographic information, consisted of three tools: the Love Addiction Inventory, the Hypersexual Behaviour Inventory and of the Multidimensional Scale of Perceived Social Support. *Results:* The clinical group scored significantly higher on every LAI and HBI scale and lower on each MSPSS scale. All correlations between LAI and HBI scales resulted significant, although those displaying moderate effect sizes were more numerous in the control group. MSPSS correlated with LAI scales in both groups and with HBI in the control group only. *Conclusions:* The significance of our results lays in the fact that they help gaining a deeper understanding of the dynamics underlying love addiction and sex addiction. Although, in part, they resulted significantly correlated, they are to a larger extent independent one from the other, and the relationship between them appears to be influenced by several factors, among which is perceived social support.

Keywords: love addiction, sex addiction, social support

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S-8B5

Emotional dysregulation and attachment styles: An empirical research on a group of love addicts

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Background: "Love Addiction" is a behavioral addiction characterized by an obsessive need and a persistent search for closeness towards an object of love, perceived as indispensable for one's existence (Reynaud et al., 2010). Although in the literature it is often suggested that attachment issues and emotional dysregulation are at the root of this condition, no empirical research seems to have been conducted to confirm it (Antonelli et al., 2021). We aim to close this gap, through a study examining the relationship between love addiction, adult and childhood attachment, and emotional dysregulation. *Method:* Our research involved a clinical group of 155 women undergoing psychotherapy for love addiction and a 189-women control group. Participants were asked to complete an online questionnaire which, besides questions asking for several socio-demographic information, consisted of four tools: The Difficulties in Emotion Regulation Scale (DERS), The Toronto Alexithymia Scale (TAS-20), the Parental Bonding Instruments (PBI), and the Relationship Questionnaire (RQ). *Results:* The clinical group reported significantly higher levels of emotional dysregulation and alexithymia, parental control, and preoccupied attachment, and lower levels of parental care. Many different patterns of correlation, as well as eight causal models, among the several measures were observed in the two groups. *Conclusions:* The results seem to suggest that the development of love addiction is conditioned by negative experiences of childhood and adult attachment, as well as by the mediating role of emotional dysregulation and alexithymia.

Keywords: love addiction, emotional dysregulation, attachment styles

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S-8C1

The relevance of Game Transfer Phenomena in the context of Gaming Disorder

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Symposium summary: Background: Problematic video game playing can be addressed from two perspectives: gaming disorder (GD), focusing on excessive, dysfunctional/uncontrollable playing, or Game Transfer Phenomena (GTP), targeting how playing impacts players' perceptions, cognition and behaviours. Unlike GD, GTP are common among non-clinical players and usually do not provoke dysfunction. However, negative consequences occur when GTP manifests recurrently, under certain circumstances and with specific content. The relevance of examining GTP in the GD context is clear via i) the potential to identify factors that contribute to the maintenance of GD symptoms and relapse, ii) the resemblance of certain forms of GTP with sensory disturbances as side effects of hallucinogens/alcohol withdrawal and iii) the evident failure to inhibit sensory/cognitive game content and impulses towards game-related stimuli in everyday life. *Methods:* Five studies collected quantitative and qualitative data via online questionnaires, digital diaries and clinical cases. Participants were males aged 10 to 45. *Results:* The studies covered i) associations and comparisons between GD and GTP, ii) GTP frequency and association with psychopathological factors, iii) the mediating role of GTP on the relationship between GD and self-control, and emotion regulation, iv) the mediating role of GTP on game features (e.g. rewards) and motivation for playing that may maintain problematic video game playing, and v) the benefits of assessing GTP in psychotherapy. *Conclusions:* The implications and contributions of the studies covered in the symposium will be discussed in the GD context.

Keywords: Game Transfer Phenomena, Gaming Disorder, psychopathological factors, inhibitory control failures, videogame features, emotion regulation

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S-8C2

Predictors of Gaming Disorder and Game Transfer Phenomena: Psychopathological factors and gaming habits

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Background: Experiencing recurrent thoughts about playing and increases in cravings and brain activations when exposed to game-related stimuli are important underlying mechanisms of GD. Failures to inhibit thoughts, sensory perceptions, and impulses toward game-related stimuli when not playing have been reported by gamers. These phenomena are referred to as Game Transfer Phenomena (GTP). *Methods:* An online survey of 1,301 frequent gamers was conducted (83.4% male, mean age = 28.14±7.40). Correlation and linear regression analyses were conducted to examine the relationship between GD and GTP, and to identify predictors associated with GD and GTP from psychopathological factors and gaming habits. GTP were assess via a multidimensional instrument which measured cognitions, perceptual distortions, hallucinations, and dissociations. The Internet Gaming Disorder Scale was used to assess GD. *Results:* Only 3.5% fulfilled the criteria for GD. Most reported GTP (95%), which was correlated with GD. The GTP dimensions 'dissociations/mix-ups' and 'inner intrusions/misperceptions' and daily hours of gaming emerged as predictors of GD. Having a clinical diagnosis, having used drugs, and GD predicted 'inner intrusions/misperceptions'; having used drugs and GD predicted 'dissociations/mix-ups'; and GD predicted the GTP dimension 'outer intrusions/distortions'. *Conclusions:* The relationship between GD and GTP was confirmed, although not all dimensions of GTP predicted GD, while GD emerged as a predictor of all dimensions of GTP. Daily hours of playing was relevant for GD rather than for GTP. Psychopathological factors appear to be important only for some forms of GTP. The implications of the findings for GD are discussed.

S-8C3

Positive schizotypy and internet gaming addiction as predictors of Game Transfer Phenomena in daily life: A diary study

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Background: Large-scale survey studies of the Game Transfer Phenomena (GTP) on more than 5,000 gamers have found that approximately 90% of participants reported having some GTP experiences in the previous 12 months. In addition, a positive relationship has been

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reported between self-rated GTP frequency and gaming habits (e.g., playing frequency and session length), drug use, sleep disorder, and depression. However, the frequency of GTP in shorter time periods (e.g., 7 days) is not known as well as how it correlates with different indices of psychopathology (e.g., schizotypy) and other spontaneous phenomena (e.g., day dreaming, etc.). *Method:* A total of 38 gamers (32 males; mean age = 26.70, SD = 6.52) were asked to report GTP experiences by keeping a digital diary for 7 days. They also completed several questionnaires measuring the GTP frequency, internet gaming addiction, anxiety, stress, depression, schizotypal traits, as well as mind popping and day dreaming. Linear correlation and regression analyses were conducted. *Results:* Most of the participants (82%) recorded at least one GTP experience during a 7-day period. GTP experiences were reported as being triggered by external stimuli, occurring during automatic activities, under low levels of concentration, and were perceived emotionally neutral. In addition, scores of internet gaming addiction and positive schizotypal personality traits were significant predictors of GTP frequency when controlling for other variables.

S-8C4

Relationship between self-control dimensions, emotional regulation and problematic gaming: The mediating role of the Game Transfer Phenomena

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Background: Findings from previous studies suggest that deficits in self-control and emotional regulation contribute to the development of problematic gaming (PG). However, the relationship between these factors and players' gaming experience is not fully understood. In this context, an important factor related to PG is players' experiences associated with videogame experiences when not playing. Consequently, the study aimed to analyse the relationship between self-control dimensions, emotional regulation, and PG mediated by Game Transfer Phenomena (GTP). *Method:* The study comprised 358 video game players (179 females; age range from 18 to 35 years; M=22.36, SD=3.00 years). The severity of PG was assessed using the IGDS9-SF, and self-control dimensions were assessed using the 50-item Self-Knowledge New Sheet. The emotional regulation was assessed using the Emotional Regulation Questionnaire (ERQ). *Results:* The results showed that the relationship between PG and self-control dimensions, such as inhibition and adjournment, proactive control, and goal maintenance, was mediated by GTP. Additionally, GTP mediated the relationship between PG and emotional regulation dimensions such as expressive suppression. There was a mediation effect between inhibition and adjournment and PG via expressive suppression and GTP. A similar mediation effect was observed between goal maintenance and PG. *Conclusions:* The study results suggest that deficits in self-control and emotion regulation may contribute to a higher prevalence of GTP and thus lead to greater absorption in playing video

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games. More specifically, deficits in self-control may make it difficult to stop non-real-world gaming sensations and behaviours. Consequently, frequent GTP experiences may increase game craving.

S-8C5

Game Transfer Phenomena as a mediator between motives for gaming, game features and problematic videogame playing

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Background: Some of the important factors associated with the problematic videogame playing (PVG) development are the motives for using games. Also, the game itself may have features that support greater engagement and, thus, increase the possibility of developing PVG. In this context, greater game engagement may manifest in transferring sensations from the game to the real world (i.e., Game Transfer Phenomena, GTP). Consequently, the study aimed to investigate the mediating role of GTP in the relationship between motives for playing, game features, and PVG. *Method:* The study was carried out on a group of 675 video game players (340 female) aged from 15 to 45 years (M=31.74; SD=7.75). The IGDS9-SF was used to assess PVG. The transfer of game experiences was assessed with the GTP Scale. The importance of the video game features for the gamers was measured by a modified version of the Video Game Feature Taxonomy (VGFT). Motives for playing was assessed by the Motives for Online Gaming Questionnaire (MOGQ). *Results:* The findings showed that GTP mediated the relationship between PVG and the importance of game features such as rewards, presentation, punishment, and social features. Additionally, the relationships between PVG and motives for playing such as fantasy, social, coping, skill development, recreation and social were mediated by GTP. *Conclusions:* The findings suggest that GTP may mediate the relationship between motives for playing, game features and PVG. Specifically, they can provide a background to explain the relationship between game features and PVG.

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S-8C6

Proposed methodology for assessing Game Transfer Phenomena in clinical contexts

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Background: Players identified with gaming disorder tend to experience Game Transfer Phenomena (GTP; e.g. intrusive thoughts, imagery and hallucination-like phenomena with game content, perceptual distortions, dissociations and impulsive behaviours towards game-related stimuli). However, GTP is usually not addressed in patients with gaming disorders, and differential diagnoses are not considered GTP when dealing with psychotic symptoms involving videogame playing. *Methods:* Four clinical cases (males, 10−16 years old, playing time 6−10 h/day) illustrated GTP in clinical populations and exemplified the procedure for assessing GTP in clinical contexts. *Results:* Motives for consultation included confusion between fantasy and reality and dysfunctional videogame playing. Patients showed hallucinations and delusion with game content, tantrums when unable to apply game abilities to real life and compulsive attempts to induce GTP for counteracting playing reduction. The primary clinical diagnoses of patients include gaming disorder, depressive disorder, general anxiety, paranoid schizophrenia and autism. The methodology proposed for assessing and applying the GTP framework in clinical practice includes three phases: the identification and periodic assessment of GTP via a validated scale, clinical interviews examining the interplay between symptomatology and GTP and cognitive−behavioural techniques complemented by psychopedagogic material on GTP to modify cognition/behaviours *Conclusion:* Excessive, impaired control over gaming is core to gaming disorder, and experiencing GTP can contribute to the maintenance of symptoms and relapse. Assessing GTP in clinical cases involving gaming disorder and psychosis can serve as a psychopedagogic tool and support differential diagnoses.

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S-8D1

Problematic cyberpornography use in men and women: The role of desire thinking and craving

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Background: The present study aimed to investigate, in line with a recent adaptation of the I-PACE model, the relationship between the two components of desire thinking (DT), Imaginal Prefiguration (IP) and Verbal Perseveration (VP), and pornography craving (PC) in predicting Problematic Cyberpornography Use (PCU). Moreover, the present study tested whether the underlying mechanism linking DT to PCU differs between men and women. *Method:* Data were collected through an online survey. The analyses were run on a sample of 414 participants (mean age = 27.55 years, SD = 6.13; age range= 18 – 58; 53.6% men). Path analysis and a multi-group approach were used to test the relationships among variables and to explore gender differences. *Results:* The path analysis on the whole sample revealed that DT-IP was associated to PC ($\beta = .52$, $p < .001$) which, in turn, was associated to DT-VP ($\beta = .26$, $p < .001$) as proximal antecedent of PCU ($\beta = .46$, $p < .001$), above and beyond the effect of age, relationship status, and problematic Internet use (PIU). Two paths significantly differed between men and women: the path between DT-VP and PCU (which for women was weaker and did not reach the significance; Wald $\chi^2(1) = 10.40$, $p = .001$); and the path between PIU and PCU (not significant for women; Wald $\chi^2(1) = 9.60$, $p = .002$). *Conclusions:* The findings demonstrate the role of desire thinking in the mechanisms underpinning PCU in men and women and may aid the development of treatment and prevention strategies.

Keywords: problematic cyberpornography use; desire thinking; craving; gender differences

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S-8D2

The role of functional impairment in determining problematic pornography use: A latent profile analysis

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A recent study (Bőthe et al., 2020) has examined pornography use profiles, showing that high frequency pornography viewing is not necessarily a sign of problematic use. However, to better differentiate between engaged and problematic use, functional impairment should be considered. The present study aimed to determine profiles of pornography users based on problematic pornography use (PPU) items, pornography use frequency and functional impairment associated with pornography use. An online study was conducted on Croatian (N=681, female=49.7%) and Serbian (N=971, female=51.8%) community samples. PPU was measured by the 6-item Problematic Pornography Consumption Scale (Bőthe et al., 2018), pornography frequency by one item (1=never, 7=several times per day), and functional impairment by 3 items in the following domains: school/work, social life/free-time activities and family life/housework. Latent profile analysis was used to classify pornography users. Based on fit indicators and practical usefulness, a three-profile solution was selected in both Croatian and Serbian samples. The profiles were labelled as: non-problematic average frequency pornography use (80.7%/83.5%), non-problematic above average frequency pornography use (14.9%/13.7%), and problematic above-average frequency pornography use (4.4%/2.8%). Differences between the three profiles were found in terms of gender, religiosity, attachment anxiety and avoidance, as well as depression, anxiety, and stress. Functional impairment was the key differentiator between the profiles, which has implications for understanding and assessing PPU, as well as for clinical practice.

Keywords: problematic pornography use; latent profile analysis; functional impairment; PPCS

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S-8D3

Theory driven machine learning models for predicting symptoms of problematic pornography use and related psychological processes

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Literature shows that craving in interaction with specific coping styles correlates with the frequency and time of pornography use and pornography-related problems. Unsupervised machine learning methods help understanding clusters of users based on empirical data. Supervised machine learning methods help creating prediction models for further testing theoretical models. Based on the I-Pace model, we aim to demonstrate the value of machine learning for understanding problematic pornography use. We used a recently published dataset (N=1498, heterosexual males) containing data of using patterns of pornography, craving, symptom severity, and coping style. The unsupervised method was used to explore different clusters of pornography users. The supervised methods included multiple algorithms for regression and classification. The clustering showed four different user types: 1. Pornography users with low craving, low functional coping, low symptom severity and low use time; 2. users with low use time and low symptom severity, medium craving and high functional coping; 3. users with high craving and high symptom severity, medium use time and medium functional coping; 4. users with high craving, high symptom severity, high use time, and low functional coping. The supervised methods created reliable and fast models for the relationships between craving, use time, and symptom severity. The machine learning models are useful for data exploration and for identifying clusters of individuals based on specific combination of features. The theory-driven approaches are useful for validating theoretical models based on complex analyses. Resulting machine learning models are reliable for predicting central features.

Keywords: machine learning, pornography use, data exploration, pornography addiction, prediction

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S-8D4

Treating Sex Addiction in the Ultra-Orthodox religious Jewish community in Israel by strengthening intimate partner intimacy and trust

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Most addiction recovery programs in the world are based on the 12 Steps programs. However, these programs are not approved in the Ultra-Orthodox religious Jewish communities in Israel as some of the Steps contradict the religious beliefs of these communities. As about 20% of the population of Israel belongs to the Ultra-Orthodox communities, there is a need for a different way of dealing with addictions amongst these communities. Therefor a new recovery program is suggested that is based on the "Addiction as an Attachment Disorder" hypothesis (Flores, 2001), "Addiction as Self-Medication Hypothesis" (Khantzian, 1997), and "Addiction as a self-regulation Faliure" (Sayette & Griffin, 2011). To test this suggested treatment, first, 22 ex-drug addicts were questioned in depth about their interpersonal relations, before, during and after their addiction. Results showed that lack of intimacy and trust with their intimate partners and family was very significant in their addiction period, and that establishing intimacy and trust was very significate in their recovery period. In the next stage a pilot program was issued in the city of Bney-Brak which is the center of the Ultra-Orthodox communities in Israel. 15 Ultra-Orthodox sex addicts were treated with their wives in couple therapy with an emphasis on strengthening intimacy and trust. The results show that this recovery program was effective in reducing or totally eliminating the problematic behavior. Limitations and future research will be discussed.

Keywords: Sex Addiction, tust, intimacy

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S-8E1

Dating apps' use intensity and wellbeing: The mediating role of smartphone addiction and social media addiction in a cross-cultural sample

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Dating applications have become a global phenomenon with more active users every year worldwide. However, evidence on problematic use of online dating is still scarce, nor previous studies have included cross-cultural comparisons assessing wellbeing, media addictions, and online dating use intensity, given is a worldwide phenomenon. Therefore, the purpose of the present study was to investigate the role of media addictions (i.e., smartphone and social media) among wellbeing and online dating use intensity in a cross-cultural sample. A total of 1.099 active dating apps' users participated from the UK, Poland, and Indonesia. Findings indicated that anxiety and relatedness frustration predict online dating use via smartphone addiction in the whole sample and UK sample. Path analysis found that online dating use is predicted by relatedness frustration in all samples. Results are discussed with existing literature and limitation/concluding comments have been included.

Keywords: Problematic online dating use

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S-8E2

Association between psychosocial well-being and problematic social networking sites use among Finnish young adults: A cross-sectional study

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Background: There are over 2 billion social networking sites users worldwide and the amount of the users are rising rapidly. (Baumgartner et al., 2017; Hussain & Starcevic, 2020.) In Finland young adults are using SNS the most and are thus potentially more exposed to its effects (Baumgartner et al., 2017). For some people a pattern of problematic social networking sites (PSNS) use can be developed (Hussain & Starcevic, 2020). More knowledge is needed about how PSNS use is associated to young adult's well-being in psychosocial level and is there some background factors which are associated to PSNS use. Identifying those associations was the aim of the current study. *Method: A* cross-sectional study design was used. Data were collected with a national web-based survey from Finnish young adults (18-35 years old) (n=383) during autumn 2020. The questionnaire consisted of three areas: 1) background factors (e.g. gender, age, education), lifestyles, loneliness, quality of life; 2) use of digital technologies and SNS (e.g. frequency and volume of use of digital devices, problematic SNS, use of SNS during the COVID-19 pandemic); 3) psychosocial well-being (e.g. depression, social pressure). *Results:* The results will be announced in the conference. *Conclusions:* Conclusions will be announced in the conference. This research provides new information about PSNS use and its effects to young adults' psychosocial well-being. The results can be used in student and occupational health care and the results will help to identify factors which would cause PSNS use and the resulting disadvantages.

Keywords: social networking sites, problematic social networking site use, young adults

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S-8E3

Investigating the impact of Facebook activity, Time Spent on Facebook, Facebook addiction, and Emotional value on Life satisfaction

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Background: So far, research investigating the effect of Social network Sites (SNS) usage and addiction on life satisfaction has been inconclusive while the evidence on problematic use shows a negative effect. In the current study, we examine the effect of Facebook usage and duration on life satisfaction by introducing Facebook addiction (negative consequence of use) in concurrence with perceived emotional value (positive consequence of use) as mediators. *Method:* UK Facebook users (n=551, age M = 26.1, SD = 4.8, 51% Female), participated in a online survey about Facebook use scoring Facebook time spent (TS), Facebook Activity (FA), Facebook addiction (BFAS), Satisfaction with Life (SWLS), and perceived emotional value (PEV). Our PLS-model reveals an overall significant positive total effect of TS and FA on SWLS, whereas the effect of FA is mediated by the indirect paths than run via BFAS, PEV. The effect of TS is mediated by PEV and via FA itself. It shows that the direct significant negative effect of BFAS on SWLS is compensated by the direct significant positive effects of PEV on SWLS. *Conclusions:* Our finding supports the view that Facebook addiction resulting from Facebook usage influences well-being negatively, but that such an effect can be compensated by positive outcomes of Facebook usage like perceived emotional value.

Keywords: social media addiction, Facebook addiction, Facebook usage, Life satisfaction, perceived emotional value

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S-8E4

Instagram, Facebook and LINE, which one is highly related to Internet addiction?

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Purpose: SNS addiction is an emerging issue recently, literature indicated SNS addiction should be focused on diverse aspects. Therefore, which usage of SNS could be highly related to SNS addiction? The purpose of the present study was to examine the relationships among Facebook, Instagram, LINE and Internet addiction. *Methods:* Cross-sectional study was conducted by online survey. Two hundred and fifty nine eligible questionnaires were collected in this study. Each participant completed use of SNS use, FoMO scale and internet addiction scale. Four groups were classified by only Facebook users, only IG users, only LINE users and multiple users. Descriptive analysis, One-way ANOVA and LSD post-hoc test were to analyze the data. The significant level was set at 0.05. *The results:* 50.2% of participants reported to use Facebook, Instagram and LINE. 1.2% of participants only use Instagram; 6.6 % of them only use LINE; 2.3% of them only use Facebook. After several comparisons of One-way ANOVA, we found significant differences of Internet addiction among four groups, whereas no significant differences of FoMO. Post hoc test showed multiple users not only reported more severe IA than LINE users, but also than IG users. Unexpectedly, no significant differences of IA between Facebook users and multiple users. *Discussion:* multiple SNS user could be have higher risk for internet addiction than single users, besides, the possible mechanisms of single Facebook use, multiple SNS use and internet addiction should be examined in future.

Keywords: SNS use, Internet addiction, Facebook, Instagram, LINE

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S-8E5

Less Facebook – More well-being and a healthier lifestyle? An experimental longitudinal study

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Intensive Facebook use can negatively impact subjective well-being. It contributes to addictive tendencies and depression symptoms. The present study investigated whether an experimental reduction of daily time spent on Facebook can influence addictive Facebook use, well-being (life satisfaction, depression symptoms), and lifestyle (physical activity, smoking behavior). The investigation had a randomized controlled trial design with two groups: An experimental group (EG; N=140) and a control group (CG; N=146). The EG decreased its daily Facebook time over a period of 14 days (=experimental manipulation) for 20 minutes; the CG maintained its Facebook time. Data were collected at five measurement time points via online surveys (1. Day prior to the manipulation beginning; 2. One week after its beginning; 3. Day after the manipulation; 4. One month after manipulation; 5. Three months after manipulation). Repeated measures analyses of variance revealed significant group differences. Only in the EG, life satisfaction significantly increased, while addictive Facebook use and depression symptoms significantly decreased. Furthermore, only in the EG, the frequency of physical activity (e.g., jogging, cycling) significantly increased, and the number of daily smoked cigarettes decreased. The current findings demonstrate that less time spent on Facebook can contribute to the reduction of addictive use tendencies. It fosters well-being (increase of life satisfaction, decrease of depression) and a healthier lifestyle (increase of physical activity, decrease of smoking behavior) over the period of at least three months. Thus, programs that aim to reduce addictive tendencies and to protect well-being should focus on a conscious reduction of online time.

Keywords: addictive Facebook use, well-being, lifestyle, experimental longitudinal study

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S-8F1

Gambling disorder under dopaminergic medication – A Swedish register study

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The treatment with dopaminergic medication is a common approach in neurological diseases like Parkinson's disease, restless legs syndrome, and fibromyalgia, but can also be indicated for pituitary adenomas and in psychotic disorders. Lately, there has been growing evidence for an association between these drugs and an increase in behavioural addictions and impulse control disorders. In a cross-sectional study based on data from nationwide Swedish patient registers, we investigated if the diagnosis gambling disorder was more common in patients treated with dopaminergic drugs. With a large study population of more than 11 000 individuals, we were able to obtain reliable results representative for the total population in Sweden. We could confirm that patients with a dopamine agonist prescription (pramipexole or ropinirole) were more likely to be diagnosed with gambling disorder (odds ratio = 3.2). Similarly, a prescription for the dopamine modulator aripiprazole was associated with an increased risk for gambling disorder (odds ratio = 3.4). Given our results, we plan to examine the connection between impulse control and dopaminergic medication further. This will include for instance a new register study focusing on a possible dose-dependent relationship or variations between patients with different primary diagnoses such as Parkinson's disease or restless legs syndrome. Since impaired impulse control often results in major difficulties for the patients in daily life, it will be crucial to investigate a possible causal relationship to dopaminergic medication and eventually understand the molecular mechanism, perhaps located in reward-related learning circuits in the ventral striatum.

Keywords: dopamine agonists, Parkinson's disease, impulse control, register study

S-8F2

Understanding the phenomenology of gambling in the United Kingdom: A qualitative study on the experiences of gamblers' families

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This study focuses on understanding the experiences of family members of gamblers in the United Kingdom and the gambling consequences in their lives. This study aims to understand the experiences of gamblers' close family members and how they all experienced the

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gambling consequences that gamblers had instigated. Qualitative research through in-depth interviews was employed. Thematic analysis was used to gain a deeper insight into gambling. Nine female participants were interviewed based on a semi-structured questionnaire. The results of this study indicated that close family members of problem gamblers had suffered not only financial devastation but also harsh psychological and mental health damages. Furthermore, family members suffer from gamblers' abusive and violent behaviors. Addiction was a key factor of gamblers' habit; fear, anxiety, and depression were some of the health issues derived from gambling. Overall, gambling addiction leads to further addiction, crime, and also severe, family-relation sufferings. The study results suggest that the London Gambling Commission and regulating authority should change gambling policy, reduce gambling points, and limit gambling slot machines in food markets and community areas. More support is needed for family members affected by gamblers' addictive gambling behaviors.

Keywords: addiction, gambling problem, anxiety, stress, abusive behavior

S-8F3

Treatment for the concerned significant others of problem gamblers: A systematic review

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Accumulating research recognizes the extent of harms experienced by concerned significant others (CSOs) of gamblers. We will report the results of a systematic review of treatment for concerned significant others of problem gamblers. T, evaluate their potential benefits, and thematically describe treatment process. The Stress-Strain-Coping-Support-model (SSCS) was used as the theoretical framework. Database searches: MEDLINE, CINAHL Complete, Web of Science Core Collection, Social Services Abstracts, Applied Social Science Index and Abstracts, Cochrane Central Register of Controlled Trials, and APA PsycInfo (between 01/Jan 2011-10/Jun 2021). Other search methods were also utilized. Inclusion criteria: interventions for CSOs with CSO specific outcomes. The Evidence Project Risk of Bias Tool was used for assessment. Results of the findings will be reported, and the clinical implications will be discussed.

Keywords: systematic review, gambling, treatment, concerned significant others, affected others

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S-8F4

The effects of forced breaks on online gambling behaviour: Results from The Timeout Effects on Spending, Stress and Arousal Project (TESSA)

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Introduction: Responsible Gambling (RG) is a concept of various measures to prevent gambling-related problems. This includes, for example, mandatory breaks from gambling. By interrupting the continuity of gambling, a spatial and mental distance to gambling as well as a reduction of physical and psychological tension is achieved. However, the evidence on the impact and effectiveness of mandatory gambling breaks is very limited particularly for online gambling. The randomized controlled study 'Timeout Effects on Spending, Stress Arousal (TESSA)' investigates the effect of mandatory gambling breaks on stress, gambling behaviour and arousal in online-gambling. *Methods:* Randomised controlled experimental study. Participants without existing or past gambling problems are exposed to simulated online-gambling in a laboratory setting. In the experimental group, the game will be interrupted at regular intervals, while gambling in the control group will not be interrupted. In addition to physiological parameters for measuring arousal, the subjectively perceived stress and craving will be examined. Data collection will commence in December 2021. *Results:* It is expected that the subjectively perceived stress, craving and arousal will be reduced during breaks from gambling. *Conclusion:* Online-gambling has a particularly high risk-potential implying the need for comprehensive gambler protection measures. These must go beyond the present regulations provided in most countries worldwide. If there is evidence of their effectiveness, the legal basis for mandatory breaks from online-gambling is warranted.

Keywords: stress, arousal, gambling, mandatory break, responsible gambling

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S-8G1

Hidden pandemic: Handling behavioral addiction during COVID-19 chaos in Low Middle-Income Countries

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Symposium summary: Over the last few decades, the medical concept of addiction disorders has undergone tremendous development. Addictive disorders are currently considered a multifactorial chronic disease and have become a significant cause of global health problems and other psychiatric disorders. Not only drug addiction but also the number of behavioral addiction patients continues to increase. The outbreak of Coronavirus Disease 2019 (COVID-19) spread across the entire world has curtailed most individuals' daily activities and movements. In response, the COVID-19 pandemic lets individuals engage more with technology use, providing escapism to several activities (e.g., shopping, eating, gambling, gaming, doing physical exercise, watching pornography). These activities allow them to find some acute emotional relief, albeit pathologically. These behaviors happened by accessibility, availability, and the absence of prevention and management programs for excess use. The COVID-19 pandemic and the lockdown policies in several countries have created a new paradigm regarding the prevention of specific strategies for behavioral addiction, primarily due to the increase in internet use that leads to addiction. A standard is needed to manage behavioral addiction, both pharmacological and non-pharmacological, in a holistic and comprehensive manner. Besides, an instrument is needed to distinguish healthy gamers, problematic gamers, and gaming disorders in order to prevent overdiagnosis. Notably, the symposium will highlight the emerging issue of behavioral addiction such as gambling, gaming, and pornography in Low Middle-Income Countries during the pandemic, exploring global solutions to international problems in the field of addiction medicine. In this symposium, there will be one chair and four speakers.

Keywords: gambling, video games, pornography, addictive behaviors, internet addiction

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S-8G2

Gambling problems during the COVID-19 pandemic: The potential problems among youth

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Background: The development of gambling addiction overgrows in line with technological advances and an increasingly widespread internet network so that online gambling reaches various islands in Indonesia. Internet use is increasing during the COVID-19 pandemic and has an impact on mental health, in which some people are gambling to relieve stress. The number of patients with Gambling Disorder (GD) has been increasing in clinical practice. *Methods:* We distributed The Indonesian version of the South Oaks Gambling Screen (SOGS) via google form nationwide through the internet and social media from April 18 to May 15, 2021, to subjects (n=5810, age 18 to 59 years) selected using non-probability sampling and incidental sampling. We were looking for the prevalence of GD in Indonesia and divided subjects into two characteristics GD and non-GD. *Results:* GD prevalence was determined using the Indonesian version of SOGS with a sample size of 5810 and obtained 57 subjects with GD with a cut-off point of 8. The prevalence of GD in Indonesia was 1 %. Most of the subjects were male (73.2%), aged 18-25 years (53.3%). The most frequent gambling was betting on sporting events (16%). The most widely used devices for gambling practice are smartphones (67,4%). *Conclusions:* Internet use is increasing during the COVID-19 pandemic and has an impact on mental health. Some people were gambling to relieve stress. The prevalence of GD in Indonesia was 1%.

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S-8G3

Characteristics of gamers population among youth in Indonesia: The high sensitivity symptom using latent class analysis

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Backgrounds: Internet gaming disorder (IGD) is a rising health concern. Studies in Indonesia found that the prevalence of internet addiction in adolescents was 19% and in young adults 14% during the pandemic. Therefore, health workers need to recognize significant symptoms to diagnose; hence overdiagnosis does not occur. *Methods:* This is a cross-sectional study conducted from October to December 2020 in two universities in Indonesia using an online survey using the IGDT-10. The sociodemographic questionnaire is used to differentiate characteristics of gamers population such as the age of first gaming, weekday gaming duration, weekend day gaming duration, gaming community, gaming platforms, the purpose of playing online games, game genres, and negative consequences. Data were analyzed using SPSS version 22 and Linear Structure Relations version 8.8. *Results:* In total, 1265 respondents gave valid responses. The continuation and negative consequences were highly distinctive for a group of high risk of IGD. Deception and escape domain had the lowest sensitivity at 41.7% and specificity of 84.1%, respectively. The prevalence of IGD was 1.90% among youths. There were three groups with significantly different symptoms from this study: healthy gamers, problematic gamers, and gaming disorder. There were also associations between IGD and the characteristics of gamers population. *Conclusion:* The adapted IGDT-10 would prove beneficial for screening internet gaming disorders in the general population and primary healthcare setting since it satisfies all criteria deemed significant by DSM-5 and ICD-11 with a cut-off point of 5. The detected IGD rate was comparable to the global range, preventing overdiagnosis.

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S-8G4

Benefits and threats of online group DBT skill training for behavioral addictions

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Background: During pandemic, the prevalence of people with behavioral addiction related to internet use has increased tremendously. In order to ensure continuity of care, addiction treatment via telehealth is encouraged. As currently, there are also no guidelines on the management of internet addiction, we aim to determine the effectivity of online group Dialectical Behavioral Therapy (DBT), an adaptation from cognitive behavioral therapy (CBT), skill training to treat patients with internet addiction. *Methods:* This was a quasi-experimental trial design without matching. The subjects were divided into two groups, the group receiving DBT skill group training intervention and the control group receiving individual psychotherapy of CBT. An analysis of the results was carried out using the intention to treat analysis method, which was focused on the difference of IAT mean before and after treatment in each group (intervention or control) using an unpaired T-test. *Results:* There was a significant reduction of IAT scores and durations of Internet use post-intervention compared to pre-intervention in the experimental and control group. The subjects in both group also have increased motivation to change with higher score in the experimental group. However, there was no significant difference comparing the IAT score reduction, durations of internet use, and URICA score between experimental and control *Conclusions:* Online group DBT skill training is as effective as brief individual CBT in treating patients with internet addiction.

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MINI TALKS

MT-1A1

An individual difference model of problematic buying: Testing the role of automatic processes

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Background: The joint subsystems hypothesis (Corr, 2002) suggests that behaviour is influenced by the interactive effects of the behavioural inhibition (BIS; 'stop', conflict resolution) and behavioural approach (BAS; 'go', reward) systems. Dual-process models of addiction (Wiers et al., 2007) further point to the role of automatic processes (i.e., strength of cognitive associations) as proximal determinants of behaviour. Extending this work to problematic buying, we hypothesized that those with a strong BIS (high negative emotionality) and strong BAS (impulsive) would be at risk for elevated spending and that this effect would be accounted for by strong positive (and conversely weak negative) shopping associations. *Method:* A non-clinical community sample of adults (N=116, 75% women) completed self-reports and a lexical decision task (measure of automatic cognitive processes) in the lab. *Results:* A mediated moderation model was tested. An indirect effect of BISXBAS on amount spent in past 7-days as mediated by strength of negative (but not positive) shopping associations was supported. Examination of simple slopes revealed that high BIS, when coupled with high BAS, was marginally associated with weak negative shopping associations, which in turn predicted increased spending. This suggests that those high in BIS and BAS (high negative emotionality/high impulsivity) may be at risk for problematic shopping because of limited access to negative shopping associations; that is, they are unlikely to automatically activate negative shopping associations in-the-moment.
Conclusion: Recognizing the cognitive complexity of individual-level risk factors will allow us to refine models of aetiology and move us towards effective interventions.

Keywords*:* automatic cognitive processes; BIS/BAS; buying; shopping

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MT-1A2

Treatment outcome of an Outpatient Cognitive Behavioral Group Therapy on Buying-Shopping-Disorder: a pilot study

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Background: Controlled trials indicated that CBT may be effective in the treatment of buying-shopping disorder (BSD). This presentation aims at reporting preliminary outcomes of a 12-session outpatient group CBT for BSD in a natural setting. *Method:* The sample consisted of 33 patients (age Mdn=42 years, range 20-69; 78.8% women) with BSD (primary diagnosis) and comorbid mental disorders: any anxiety disorder (27.2%, including PTSD), any depressive disorder (81.8%), hoarding disorder (18.2%), any eating disorder (24.2%), any personality disorder (18.2%). Most patients reported less than 12 years of school education (72.7%). More than half of the patients were in a relationship (57.6%). Patients answered the Pathological Buying Screener (PBS) prior to (t1) and after treatment (t2) to measure changes in BSD symptomatology. *Results:* Prior to treatment, 93.9% of the sample scored above the PBS threshold for BSD, and after treatment 48.5%. Men were more likely to report PBS scores in the non-pathological range at t2 than women (85.7% vs. 42.3%, X2=4.16, p=0.04, φ=0.35). Paired sample t-test revealed a significant change in PBS score (Mt1=52.91, SDt1=9.10 vs. Mt2=31.48, SDt2=11.08; t(32)=9.76, p<0.001; d=1.70). Scoring below the PBS score at t2 was not associated with age (t(31)=0.48, p=0.637, d=0.17) and school education, partnership status or the presence of specific comorbid mental disorders (all p.s≥0.119, all φ.s≤0.11). *Conclusion:* The group CBT was effective in improving BSD symptoms. However, the data are limited by the small sample size, which might have contributed to the lack of significant results regarding the associations between treatment success and other variables.

Keywords: Buying-Shopping Disorder, Cognitive-Behavioral Therapy, predictors of treatment effectiveness

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MT-1A3

Tanning dependence – a case report

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Background: Defined as the physical and psychological dependence on sunbathing or on the use of ultraviolet (UV) tanning beds, this syndrome is still poorly defined in the literature, although case reports from dermatologists have been found in the electronic databases and some cases even had intense media exposure. *Methods:* A case report of a young woman, 25 years old, is presented, as she was evaluated in the Emergency Room (ER) for skin burning related to excessive UV exposure in a tanning bed. *Results:* This patient presented to the ER with mild, diffuse burning on her upper limbs, thorax and abdomen, installed after excessive exposure of the skin to UV radiation during a series of tanning sessions. The patient admitted she is a frequent user of this type of activity, and that this was not her first time reaching for help as a consequence of prolonged UV exposure. Although she never experienced profound skin burning, she was warned by her GP about the risk of skin cancer. She was referred to an individual regimen of cognitive-behavioral therapy (CBT) focused on cognitive distortions about the way she perceived her body. Although she continued to use tanning beds, she gradually decreased the frequency of the sessions, and choose massage hours and structured physical exercised instead. *Conclusions:* CBT addressing body dysmorphic beliefs may be helpful in patients diagnosed with repeated skin burning after prolonged UV exposure in tanning beds.

Keywords: tanning addiction, psychotherapy, case presentation, dysmorphophobia

MT-1A4

A review of current data about physical exercise addiction

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Background and objective: Although physical exercise is nowadays largely recommended by almost any health specialist to his or her patients, including psychiatrists for mitigation of metabolic adverse events of certain psychotropics or as an augmentative strategy for antidepressant treatment, cases of exercise addiction have been described in the literature. *Methods:* Data regarding exercise addiction were collected from the main medical electronic databases (PubMed, Cochrane, PsychInfo, Thomson Reuters/Web of Science), but also from the grey literature (main engines research, targeted websites, grey literature databases). All published papers between 2000 and 2021 were included in the primary selection, if they corresponded to the paradigm "exercise addiction"/ "exercise dependence"/ "physical exercise

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abuse" and "treatment"/ "diagnosis"/ "epidemiology"/ "measurement". *Results:* After filtering out the results according to the inclusion and exclusion criteria, only 15 papers were analyzed. Several models for defining exercise addiction have been suggested, based on the validated criteria for substance use disorders. A conservative estimation of the prevalence in the general population is about 3%. Two scales have been validated for this population. Only a few data about the utility of cognitive behavioral therapy have been found, but the interventions were poorly defined. *Conclusions:* There is still unclear how to best define exercise addiction without stigmatize certain professionals or patients who are supposed to exercise on a daily basis. Data about the treatment of this addiction is virtually lacking, only isolated reports being available. There are still two instruments that may be helpful for those who want to screen for this pathology in the general population.

Keywords: physical exercise addiction, epidemiology, standardized measurement, psychometric scales

MT-1A5

Are experiences of flow during gaming on smartphone associated with pathological profiles?

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Background: Flow has been pointed out as a relevant variable explaining gambling disorder. However, in other fields, flow has also been described as an adaptive psychological process. Research on the role of this psychological experience in gaming on smartphone devices is still nuclear. *Methods:* We administered to a sample of 236 Italian adults (M age = 27.80, SD= 11.72; 31.1% males) a battery of self-report questionnaires investigating the intensity of flow state during gaming on smartphone, the intensity of flow during immersion in natural contexts, mindfulness capacities and the frequency of gaming on smartphone and pathological dissociation. *Results:* Analyses showed that experiencing flow during gaming on smartphone was positively and significantly associated with experiencing flow during immersion in natural contexts and with the observing dimension of mindfulness capacity. In contrast, non significant association were observed between experiencing flow during gaming on smartphone and frequency of gaming on smartphone and pathological dissociation. *Conclusions:* These preliminary results suggest that experiencing state of flow during gaming on smartphone not appears related with psychopathological functioning. Also, the data support the distinction between pathological dissociation and flow states. Results are discussed in light of the limitations of the study, including the lack of measurement of potential confounding variables as such as the types of game used on smartphone and levels of gaming and smartphone use addiction.

Keywords*:* gaming, flow, smartphone

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MT-1B1

Risks & Challenges Program: Preventing behavioural addictions and dependencies

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Background: The literature supports the importance of prevention of psychoactive substances in college students, namely among first-year students. Although, few programs aim the intervention in behavioural addictions, such as gambling and gaming disorders. The purpose of this work is to present a Portuguese program, Risks & Challenges, and the experience of its implementation in the School of Health, Polytechnic of Porto. *Method:* The Risks & Challenges Program is an extracurricular, comprehensive, and multi-component competence enhancement-based preventive intervention and it is supported by solid theoretical bases. The program is aimed at students attending the first year of the university and is composed of eight two-hour weekly sessions, implemented in a group format. More recently, five sessions were included, directed to the Problematic Use of the Internet. The program addresses emotional, behavioural cognitive, attitudinal, and social contents, such as communication, problem-solving and decision making, or emotional regulation. Methodologically involves different interactive techniques, such as group dynamics. The program has a handbook that provides all the material, but facilitators must attend a specific training program. The processual assessment was made by the students considering three dimensions, organized in different items, on a Likert scale of four or five points. *Results:* The three dimensions assessed (i.e., general evaluation of the program; facilitators and structure) presented excellent results. The program was considered by most of the students as very good and fully meeting their expectations. *Conclusions:* The findings support the suitability of the Risks & Challenges Program, reinforcing the relevance of using this program in this context.

Keywords*:* prevention; behavioural addictions; dependencies; undergraduate

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MT-1B2

Not only for kids: Responsible gaming among adult gamers in China

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Background: The population of online videogame users in China has reached 553.5 million, with the majority aged 18 years or above. However, previous studies on responsible gaming (RG) and current legislations implemented in China have focused mostly on minors rather than adult gamers. This study aims to fill the research gap by exploring RG practices and awareness among Chinese adult video gamers. *Methods:* 22 adult frequent gamers (8 females) were recruited from gamer group chats and voluntarily participated in virtual in-depth interviews. Key questions included in the interviews: (a) understanding of RG; (b) RG practices and their perceived effectiveness; and (c) perception of Gaming Disorder (GD) and help seeking. Thematic analysis was conducted on the orthographic transcript. *Results:* While all the participants perceived a high prevalence of GD among adult gamers, about 90% of them viewed RG as an issue exclusively for minors. Some participants adopted self-management RG practices (e.g., setting an alarm) and believed that some RG functions in the games designed for minor gamers could also help adult gamers, with personalized settings and tailored messages. Moreover, while gamers perceived professional help for GD as an effective intervention, they found such services to be inaccessible. *Conclusions:* Our findings showed several discrepancies on RG and GD among adult gamers. Regulations of RG for game developers and harm-minimization strategies for adult gamers are called for. RG promotion should not only be implemented in games, but also in broader scope to the general public, focusing on both awareness and practices.

Keywords: Gaming Disorder, responsible gaming, adult gamers

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MT-1B3

Binge Gaming: A potential predictive concept for Internet gaming disorder

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Background: The binge concept has been used to guide preventive approaches, particularly for substance addictions. However, the relevance of this early indicator has not yet been explored for Internet Gaming Disorder (IGD). While approximately 18% of gamers (Dufour et al., 2016) are considered to be at risk for developing IGD, this study aims to validate and define what might constitute a binge gaming episode. *Methods:* Structured diagnostic interviews in adult clinical sample (n = 55) and in a community sample (n= 94) were performed to determine the optimal clinical cutoff points for the binge gaming concept.

Results: Two cutoff scores were determined using the receiver operating characteristics (ROC) curve to distinguish participants with IGD from those without problematic use. The first model suggested that a binge gaming episode length should be characterise by 9 hours of video game use during one sitting (specificity 94.1%, sensitivity 58.2%). On the other hand, when an individual spent more than 5 days per month doing a binge gaming episode of 5 hours or more, the potential risk of IGD were higher (specificity 90.4%, sensitivity 58.2%). The concomitant validity of these early binge thresholds was significant for a set of mental health outcomes. *Conclusions:* The binge gaming thresholds could be used as an early detection concept to discriminated the gamers at risk of IGD. This new indicator might also be used in epidemiological studies, and have potential utility in the prevention of gaming-related harm.

Keywords*:* binge gaming, Internet gaming disorder, indicator, prevention

MT-1B4

Digital Detox Retreat for young adults with problematic gaming and social media use tendencies

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Background: Digital gaming and social media use are common activities among young adults. Many of them also encounter problems associated with excessive use of these digital media, and are in need of support and concrete tools to control their online behavior and digital wellbeing. *Method:* A four-day Digital Detox Retreat provides a low-threshold in-

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tervention for young adults (18 to 29 years old) with problematic gaming behavior or social media use. The retreat is free-of-charge to the participants (max 12) who are selected based on their written applications. The program consists of lectures and psychoeducation (e.g., habits and addictive behaviors, goal setting and motivation), group assignments, supportive discussions, and outdoors/free-time activities (e.g., forest walks, escape room, mindfulness, sauna). Electronic devices are only allowed for 45 minutes per day, including night-time. *Results:* Based on the participants' self-assessments and comments, Digital Detox Retreats (3) have provided them with: i) knowledge of the relation between excessive media use and wellbeing, ii) new means to control gaming behavior and social media use, observe triggering events and understand gravings, and iii) feelings of joy as a result of being able to disconnect from digital devices and spend time with new like-minded friends. *Conclusions:* Digital Detox Retreat is a promising early intervention for young adults who are concerned about their gaming behavior or social media use and show motivation for improving their digital and non-digital wellbeing.

Keywords*:* digital detox, social media, gaming

MT-1B5

A cognitive group therapy for patients in case of Gambling Disorder: The utility of the dual-process model

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With respect to other addictions, few persons with a diagnosis of Gambling Disorder (GD) access treatment and there are high rates of treatment dropout. Thus, it is important to develop effective clinical interventions. In this study, we aimed at developing and verifying the efficacy of a cognitive therapy for patients with GD, in a group format. The dual-process model explaining GD was selected for developing the intervention, acting on protective cognitive factors (i.e., probabilistic reasoning ability) and risk affective factors (i.e., superstitious thinking) for cognitive distortions related to gambling (GRCDs) (Toplak et al., 2007). We aimed at reducing patients' GRCDs. Eight weekly, 2-h group sessions, conducted by psychologists and educators, were implemented at the National Health Drugs Services (Ser.D. C) of Florence (Zone 1). A pre- and post-test design was organized by administering the Gambling Related Cognitions Scale. Thirty-nine patients (79% males, Mage = 48.23, SD = 12.89) participated. The majority (78%) were regular gamblers and the gambling activities most frequently engaged were Slot-Machines (81%). Non-parametric tests showed a significant reduction of GRCDs ($p = .014$). Findings suggest the utility of employing the dual-process model in clinical treatments for GD.

Keywords*:* cognitive therapy, gambling disorder, cognitive distortions, GRCS, dual-process model

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MT-1C1

Higher difficulty regulating emotions and less guilt are associated with stronger severity of gambling addiction among gamblers

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Background: Risky and problematic gambling behaviors have been related to maladaptive emotional strategies which may contribute to maintain addictive behaviors. Accordingly, problematic gamblers should be likely to use less efficient strategies, as gambling decrease the valence level of emotions and to fill a felt boredom. The aim of this study was test whether chronic difficulties in regulating emotion, and feelings of shame was associated with the severity of gambling addiction. *Method:* We conducted an online with a final sample composed of 1520 participants which 68 % male, 32 % female, aged in mean of 51 years (SD = 14) who reported gambling at least once in the last 12 months. Typology of gamblers (CPGI), emotional regulation strategies (DERS-F), reflexive emotions (Tosca), self-efficacy (SEP) and socio-demographic were asked. *Results:* Compared with the group of low-risk gamblers, non-risk gamblers have less problems with emotional regulation, whereas risky gamblers and problematic gamblers reported having more difficulties to regulate negative emotions. Odds Ratio of feeling guilty was 17% higher in non-risk compared low-risk gamblers, while odds is 43% lower in problematic gamblers. We did not find any effect of self-efficacy. *Conclusions:* The study confirms that a higher level of problematic gambling seems to be associated with difficulties on emotional regulation and less guilt. Future studies and replications should confirm and define more precisely the role of negative emotional valence in the determination of problematic gambling. These results will allow for intervention leads with problem gamblers.

Keywords: gambling addiction, emotional strategies, guilty

MT-1C2

Gambling Among LGBTQ Populations: A Scoping Review

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Background: LGBTQ individuals have traditionally a higher proportion of mental health disorders than the general population. While we know a lot about their substance use, we know very little about their gambling habits. The objective of this study is to draw a portrait of the literature on gambling among LGBTQ populations.

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Method: This study is a scoping review using the framework developed by Arksey and O'Malley (2005) and refined by Levac et al. (2010). A specific search strategy using keywords related to "gambling" and "sexual and gender minorities" was conducted in 10 scientific databases: Academic Search Complete, CINAHL Plus with Full Text, Education Source, ERIC, MEDLINE with Full Text, APA PsycArticles, Psychology and Behavioral Sciences Collection, APA PsycInfo, Social Work Abstracts, and SocINDEX. To be included in the review studies had to both discuss specifically gambling among LGBTQ communities and be written in English.

Results: The preliminary search identified 403 articles. Screening and analysis are currently underway. Complete results will be presented at the 7th International Conference on Behavioral Addictions.

Conclusion: This scoping review will inform researchers and clinicians about gambling habits among LGBTQ populations and provide an in depth portrait of the literature published on the topic.

Keywords*:* gambling; LGTBQ; literature review

MT-1C3

Attentional social information processing in a population of recreational poker players

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Background and aims: The PERHAPS research program aimed to characterize the cognitive profile of poker players. The present study, included in the PERHAPS program, aimed to explore social information processing, especially attention allocation toward social stimuli.

Methods: Participants underwent a Posner cueing task, including social cues (faces), to assess attention allocation toward social stimuli. The study included two groups of participants: 30 recreational regular poker players (gambling at least three times a week at Texas Hold'em poker for at least three months) and 30 control participants (no gambling or gambling less than once a month). *Results:* The group of regular poker players displayed an enhancement of inhibition of return during the Posner cueing task. This means that, in valid trials (cue on the same side as the target), regular poker players took longer to answer to the already processed localization in supraliminal conditions compared to controls. Moreover, they displayed a lower cost index (higher reaction times for surprised faces than neutral ones in non-valid trials), showing more time to disengage from surprised faces than controls. *Discussion and Conclusions:* These results suggest that recreational regular poker players showed

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particularities in their cognitive functioning, particularly an enhancement of the inhibition of return phenomenon that normally permits not to process an already processed localization. Additionally, regular poker players displayed more time to disengage from surprised faces. These results support the idea that poker practice may be linked with enhanced attentional processing of social stimuli.

Keywords*:* poker, social information processing, social cognition, facial processing, gambling

MT-1C4

Assessing illness perceptions regarding gambling and gaming disorders

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According to the common-sense model, illness perceptions influence one's cognitive, affective, and behavioral responses to the corresponding illness. However, there is a lack of validated assessment tool for illness perceptions of either gambling disorder (GD) or Internet gaming disorder (IGD). This research project aims to address this gap by adapting of the Revised Illness Perception Questionnaire (IPQ-R) for GD and IGD and examining its psychometric properties in both cases. Two anonymous surveys were conducted: the GD questionnaire was applied to 690 university students (Mage=20), while a random sample of 1051 adults (Mage=40) was recruited for evaluating the IGD questionnaire. Confirmatory factor analysis results supported the original 7-factor model (i.e., timeline-chronic, timeline-cyclical, personal control, treatment control, illness-consequences, illness-coherence, and emotional representations) in IPQ-R for GD, but only 6-factor model (i.e., removal of timeline-chronic factor) for IGD. Despite this difference, both questionnaires and their subscales showed satisfactory internal consistencies. Their criterion-related validity was supported by the significant correlations between the subscales (including illness-consequences and illness-coherence) and stigma toward people with these addictions. We also found that gamblers/gamers had higher scores on illness coherence and lower scores on illness consequences than non-gamblers/gamers. Our results have given empirical support for using IPQ-R to measure illness perceptions of both GD and IGD. These tools are useful for not only testing the effects of various illness perceptions on individuals' responses (help-seeking behaviors) to GD and IGD but also evaluating preventive programs of these two behavioral addictions.

Keywords*:* illness representation, Illness Perception Questionnaire-Revised, online gaming, gambling, behavioral addiction

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MT-1C5

Cognitive factors that predict gambling fallacy endorsement and resistance

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Gambling fallacies (GF), a collection of erroneous beliefs about how gambling works, are one factor that contributes to the development and maintenance of gambling disorder. Large-scale longitudinal studies have demonstrated a bi-directional relationship between GF and problematic gambling. While GF endorsement increases as a function of gambling severity, gambling engagement also contributes to greater GF endorsement. Given this association, many gambling disorder prevention and treatment initiatives include efforts to correct these erroneous beliefs. For interventions to be efficacious and enduring, however, an understanding of the underlying factors that contribute to susceptibility is required. Yet, there is a relative dearth of research investigating what factors may contribute to GF susceptibility. To date, research has typically examined single cognitive constructs (e.g., cognitive style or probabilistic reasoning) in association with GF. Thus, the current study aimed to assess a broader spectrum of cognitive factors and the relative contribution of these factors on gambling fallacy endorsement. A sample of n = 90 Australian undergraduate students completed an assessment of GF and a cognitive battery that included cognitive style, probabilistic reasoning, maths ability, intuitive response suppression ability, and general intelligence. Univariate results indicate that GF endorsement was associated with lower probabilistic reasoning, lower affinity for rational cognitive style, inability to supress intuitive responses, and lower intelligence. Multivariate analysis indicated that resistance to GF was predicted by greater probabilistic reasoning, greater ability to suppress intuitive responses, and a rational cognitive style. Thus, education enhancing these targeted areas could substantially reduce susceptibility to gambling fallacies.

Keywords*:* gambling disorder, gambling fallacies, cognition, reasoning, probabilistic reasoning

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MT-1D1

ADHD and Social anxiety among gamers: Mediating role of motivations for playing and maladaptive gaming-related cognitions on internet gaming symptoms

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Context: Social anxiety (SA) and ADHD have to date not been conjointly study in a sample of online gamer. The first aim was to investigate the prevalence of SA and TDAH and the combination ADHD/SA among online gamers. The second objective was to consider the mediating role of motivation for playing and maladaptive cognitions in the relation between SA, ADHD and the severity of the Internet gaming disorder. *Methods:* 319 participants completed an online survey, mean age 26.2 (SD=0.4) and mostly male (n=215). The survey included the Internet Gaming Disorder Scale-SF (IGDS9-SF), the Motives for Online Gaming Questionnaire (MOGQ), the Maladaptive Gaming-Related Cognitions Scale (MGCS), the Adult ADHD Self□Report Scale (ASRS), the Social Interaction Anxiety Scale (SIAS) and the Social Phobia Scale Short Forms (SPS). *Results and discussion:* In the sample, 25.1% (n=80) of the participant reported a probable ADHD only, 10.7% (n=34) a probable SA only and 33.9% (108) a probable combination of ADHD and SA. Participants with a probable ADHD, SA or ADHD/SA reported significantly a higher IGDS9-SF score than gamers without disorders. The motivations fantasy, escapism and coping, and the four factors of MGCS (cognitive and behavioral salience, perfectionism and regret) partially mediated the relation between both SA, ADHD and IGD score. The role of motivations for playing and the maladaptive cognitions among gamers with probable SA and ADHD will be discuss. Replications of the study is required and further study are needed to better understand the prevalence of ADHD and SA among online gamer population.

Keywords*:* Gaming, ADHD, Social Anxiety, Motivations, Maladaptive Gaming-Related Cognitions

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MT-1D2

Comorbidity in trichotillomania and Attention-Deficit/Hyperactivity Disorder

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Background: Trichotillomania (TTM), a condition characterized by repetitive pulling out of one's hair, has often been compared to ADHD, as both disorders show elements of impulsivity and frequently co-occur. Previous research has suggested that individuals with comorbid mental illnesses are at an elevated risk for developing more severe symptoms, greater distress, and higher levels of disability. This study aims to uncover the differences among individuals with TTM and individuals with TTM and co-occurring ADHD. *Methods:* 280 adults diagnosed with TTM completed the Adult ADHD Self-Report Scale (AASRS) and MINI to assess ADHD symptomatology. Participants also completed clinical measures related to TTM severity (MGH-HPS, CGI-S), impulsivity (BIS), quality of life (QoLI), and psychosocial dysfunction (SDS). A series of independent sample t-tests were used to calculate differences in MGH-HPS, CGI-S, BIS, QoLI, and SDS scores among subjects with and without co-occurring ADHD. *Results:* Of the 280 participants, 48 met the clinical threshold for (17.14%). Participants with ADHD reported significantly higher scores in all first and second factor traits on the BIS: attentional impulsiveness, t(136)=-4.75, p=.000; motor impulsiveness, t(137)=-3.28, p=.001; non-planning impulsiveness, t(135)==4.55, p=.000. Interestingly, participants with ADHD did not report significant differences in TTM severity, quality of life, or psychosocial impairment. *Discussion:* The data suggest that adults with co-occurring TTM and ADHD are significantly more impulsive than adults with only TTM; however, these differences do not appear to affect individuals' quality of life, TTM severity, or functional impairment. Further research should aim should continue to explore comorbidity across compulsive and impulsive disorders.

Keywords*:* trichotillomania, ADHD, comorbidity, impulsivity

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MT-1D3

Hoarding symptoms in adult patients with attention deficit hyperactivity disorder

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Object: Hoarding Disorder (HD) has been long investigated in Obsessive Compulsive Disorder (OCD) but we have less information about HD in attention deficit hyperactivity disorder (ADHD). Several studies show the presence of hoarding symptoms in chil-dren with ADHD. Moreover, recent studies showed that inattention symptoms predict the severity of hoarding core dimension such as clutter, difficulty discarding, and acquiring. The aim of this study is to investigate the presence of hoarding symptoms in adult patients with ADHD. *Methods:* Fifty consecutive patients with a primary diagnosis of ADHD attending the Brain Center Florence and fifty patients with a primary diagnosis of OCD were included in the study. The assessment for both groups consisted in collection of demographic varia-bles and administration of a series of tests to determine the presence of symptoms of the ADHD spectrum (Barkley Adult ADHD Rating Scale, BAARS-IV), a test for OCD symptoms (Yale-Brown Obsessive-Compulsive Scale, Y-BOCS) and a test to investigate the presence of hoarding symptoms (Saving Inventory Revised, SI-R). *Results:* Preliminary analyses on the SI-R scale show that ADHD patients present a significant higher score than OCD patients. The re-sults with correlation analyses with ADHD symptoms and other clinical variables will be presented in subsequent final analyses. *Conclusions:* Adult patients with ADHD show greater problems in clutter, in difficulty of discarding and in acquisition respecting subjects with OCD. These preliminary data underscore the importance of considering accumulation symptoms as an important goal for the evaluation and treatment of adult patients with ADHD.

Keywords*:* ADHD, OCD, HD, Saving-Inventory Revised, Barkley Adult ADHD Scale IV, SPSS

MT-1D4

Parasomnias and sleep quality in adult patients with attention deficit hyperactivity disorder

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Background: Sleep disorder have been investigated in attention deficit hyperactivity disorder (ADHD). Studies in children and adolescents show a greater frequency of altered circadian rhythms and presence of several parasomnias. Sleep alterations in adult subjects are less in-vestigated. The aim of the present study is to investigate the presence of parasomnias in

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adult patients with ADHD and their impact on sleep quality and ADHD symptoms. *Methods:* Fifty consecutive patients with a primary diagnosis of ADHD attending the Brain Center Florence and fifty healthy controls (without history of psychiatric disorders) were included in the study. The assessment for both groups consisted in collection of demographic variables and administration of a series of tests to determine the presence of symptoms of the ADHD spectrum (Barkley Adult ADHD Rating Scale BAARS-IV), a test for the evaluation of sleep quality (Pittsburgh Sleep Quality Index PSQI) and an interview to investigate the current or previous presence of parasomnias (Munich Parasomnias Screening MUPS). *Results:* Preliminary analyses show that ADHD patients present worse sleep quality than healthy controls; regarding parasomnias, ADHD patients show a significantly higher number of parasomnias than healthy controls. All the results with correlation analyses with ADHD symptoms and other clinical variables will be presented in subsequent analyses. *Conclusions* Adult patients with ADHD have significantly lower sleep quality and greater current and prior presence of parasomnias compared to neurotypical controls. These preliminary data underscore the importance of considering sleep quality as an important target for the assessment and treatment of adult patients with ADHD.

Keywords*:* sleep quality, parasomnias

MT-1D5

Psychological factors associated with ADHD in behavioral addiction outpatients

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Objective: To determine the prevalence of attention-deficit/hyperactivity disorder (ADHD) among outpatients consulting in an addiction treatment center for a behavioral addiction, and to compare the patients with versus without ADHD in terms of different psychopathological factors that may explain this association (i.e., difficulties in emotional regulation, impulsivity, anxiety, and depressive symptoms). *Method:* This multicentric study included 50 outpatients seeking treatment for a behavioral addiction (gambling disorder, n=20; gaming disorder, n=12; sexual addiction, n=15; food addiction, n=13; compulsive buying, n= 11; others,

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n=3) in one of the three following addiction centers (University Hospital of Tours, APLEAT Orléans, AAF Chateauroux). After confirmation of the behavioral addiction by a clinician, the participants were assessed for ADHD diagnosis (DIVA interview), and they also filled out self-administered questionnaires to assess emotional regulation difficulties (DERS-36), impulsivity (UPPS-P), anxiety (HAD-A) and depression (BDI). We performed Mann-Whitney analyses on these variables to compare the individuals with versus without ADHD. *Results:* Adult ADHD prevalence was 24%. Behavioral addiction outpatients with ADHD had significantly higher scores than those without ADHD on "DERS-Goal-directed behavior" (p=.016), "UPPS-Sensation seeking" (p=.002) and "HAD-Anxiety" (p=.023). *Conclusions:* These results confirm the high prevalence of ADHD in outpatients consulting for different behavioral addictions. It also encourage clinicians to take care of negative emotions and emotional regulation difficulties for individuals with a co-occurring behavioral addiction and ADHD.

Keywords*:* ADHD; emotional dysregulation; impulsivity; anxiety; depression

MT-1D6

Dental anxiety as a risk factor for Facebook intrusion and substance abuse

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The aim of the study was to investigate the relationships between dental anxiety, Facebook intrusion, shame, and substance abuse. The sample consisted of 498 participants aged 16–69 years. The following measures were used: the Modified Dental Anxiety Scale, the Facebook Intrusion Scale, the Shame scale from the Test of Self-Conscious Affect, and a list of 18 most frequently used psychoactive substances. The results showed positive associations of dental anxiety with Facebook intrusion and the use of drugs without medical reasons or in doses higher than recommended. There were also indirect effects of dental anxiety on Facebook intrusion and the use of drugs without medical reasons or in doses higher than recommended through shame. The results highlight the significance of the problem of dental anxiety in the context of addiction risk. The findings of the study may be applicable in addiction prevention and treatment, focused on help in coping with the anxiety related to doctors' appointments.

Keywords: dental anxiety; Facebook intrusion; substance abuse; shame

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MT-1E1

The relation between BMI and inhibitory control in a context of anticipated reward

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It has been suggested that obesity may be characterized by a deficit of inhibitory control. However, studies have shown inconsistent results. Importantly, results of a recent study indicated that high Body Mass Index (BMI) is characterized by a deficit of inhibitory control in a food context. The main unresolved question we addressed was whether the BMI associated deficit of inhibitory control is specific to a food-context or whether it represent a deficit in a general reward-related context. In the current study, 46 participants (39% males and 61% females), filled out questionnaires and completed a go/no-go task measuring inhibitory control. The task consisted of three conditions that varied in terms of reward; a neutral condition (targets were colored-squares), a specific reward condition (targets were pictures of palatable food), and a general reward condition (money-related targets). We expected that higher BMI would be associated with poor inhibitory control for both reward conditions relative to the neutral condition. In contrast, results indicate that higher BMI was associated with poor inhibitory control in the food specific condition, but not in the money condition relative to the neutral condition. As money is a different type of reinforcer than food (learned, versus inherent), we repeated the experiment with a different operationalization of general-reward. Specifically, in this second study general reward was operationalized as target pictures of attractive opposite sex individuals. Preliminary results of the latter study do not indicate that high BMI is associated with poor inhibitory control in such operationalization of general reward.

Keywords: inhibitory control, body mass index, reward

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MT-1E2

Child-parent relationships as a factor in the emergence of food addiction in adolescents

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The purpose of the study: to establish the influence of child-parent relationships on the occurrence of food addiction in adolescents. We proceeded from the assumption that disharmonious styles of family education contribute to the formation of food addictions in adolescents. *Methods used*: “Eating Behavior Rating Scale”, designed to identify eating disorders. The questionnaire for parents "Analysis of family relationships" allows you to identify the type of pathological education and establish the causes of these violations.

We have conducted a study of the eating behavior of adolescents and styles of family relationships in their families. According to the first method, the following results were obtained: Differences between adolescents with and without food addiction were found on the following scales: the desire for thinness – 5.7 points for girls with addiction and 1.8 for adolescents without addiction. On a scale of bulimia – 4.2 points in girls with food addiction. In adolescents without addiction, this indicator did not appear at all. According to the second method, it was found that disharmonious styles of family education are used in 34% of prosperous families. In the group with eating disorders, disharmonious styles were found. Thus, families of adolescents with eating disorders in our sample are characterized by a combination of parental overprotection, fear of mistakes, ignoring needs, and lack of emotional contact. This may mean that teenagers are under psychological pressure from their parents, and some of them try to unconsciously compensate for their feelings of dissatisfaction either by changing their body self.

Keywords*:* eating behavior, parent-child relationships, food addiction, food addictions in adolescents, disharmonious parenting styles

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MT-1E3

Therapeutic management of food addiction

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Background and objective: The validity of the food addiction diagnosis is still a subject of debate in the literature, even if a descriptive framework exists, a largely used scale- Yale Food Addiction Scale- has been associated with good clinical properties, and a neurobiological basis for this disorder has been conceptualised. Palatable food availability may be responsable for changes in the mesolimbic dopamine system, as well as other substances or behaviors, previously associated with addictive properties. *Methods:* A narrative review focused on the available treatments for food addiction was performed through a search in the main electronic databases (PubMed, PsychInfo, Cochrane, EMBASE, Thomson Reuters) using the paradigm "food/eating disorder" or "food/eating dependence" or "food/eating addiction" and "treatment". Papers published between January 2000 and August 2021 were selected. *Results:* A large number of papers regarding this topic were found (n=320), but after applying the inclusion and exclusion criteria, only 8 studies remained. These trials were conducted on patients diagnosed with binge eating disorder but they had enough criteria to suggest also the presence of a food addiction. Opioid antagonists, mainly naltrexone, lisdexamphetamine dimesylate, serotoninergic antidepressants and cognitive-behavioural therapy have been associated with favourable results. *Conclusions*: There are not enough data to support clear-cut recommendations for the treatment of food addiction, the majority of data being extrapolated from the BED trials. More efforts are needed for the validation of a set of diagnosis criteria for food addiction, that may stimulate the trials focused on this pathology.

Keywords*:* food addiction, eating disorders, psychotherapy, opioid antagonists

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MT-1E4

Psychological correction of self-attitude of boys and girls with eating disorders

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The purpose of the study: theoretical, methodological and experimental substantiation of the program of psychological correction of self-attitude in people with a tendency to eating disorders. *Methods used:* Dembo-Rubinshtein self-assessment diagnostics; "Questionnaire of self-attitude"; EAT-26 food attitude test; "Eating Behavior Rating Scale".

The results obtained determine the development of a program for the psychological correction of the self-attitude of people with eating disorders. According to the results of the Self-Attitude Questionnaire, the scores for the average level of self-attitude increased by 9% and began to amount to 61%, a high level increased by 13%, and a low level of self-attitude was not detected. According to the results of the Dembo-Rubinshtein method, the difference between the slices for a low level of self-esteem was optimized, the average level began to be 48%, and a high level was detected in 26%. According to the results of the "Eating Behavior Assessment Scale" methodology, after the correction program, normal eating behavior is observed by 78%. Thus, we see that the indicator of normal eating behavior increased by 39%. According to the results of the EAT-26 methodology, the test of attitude to food intake was revealed; a low level of propensity to eating disorders began to prevail, corresponding to 56%, which indicates a decrease in eating disorders. After psychological correction work, for higher reliability, we tested the relationship between the results of the first and second quizzes.The result of our study was a program of psychological correction of people's self-attitude.

Keywords: eating behavior, tendency to eating disorders, psychological correction of self-attitude of boys and girls with eating disorders, development of positive self-attitude and increase in self-esteem, psychological correctional work

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MT-1E5

Research of creativity in the aspect of "socially acceptable" addictions

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The "socially acceptable" addictions include workaholism, sports addictions, relationship addictions, etc. It is hypothesized that practically any human activity can become an object of behavioral dependence under certain conditions. Perhaps the problem of "socially acceptable" addiction as excessive immersion in creative activity can be studied precisely in this aspect.

In our experimental study we used WAIS, Stroop color–word-interference task, Questionnaire of the formal-dynamic properties of individuality by Rusalov V.M., and 15 heuristic tasks. The sample was 92 students; average age was 23.5 years. We identified the relationship of creativity indicators (3 types of success in solving heuristic tasks: low (15–25 points, 19 people), medium (25–35 points, 44 people), high (35–45 points, 29 people) with intelligence indicators, flexibility/rigidity of cognitive control and "intellectual" temperamental properties: *1*. Low creativity is associated with 2 temperamental properties: "intellectual ergicity" (–0.507), i.e. "low level of intellectual abilities, low involvement in the mental activity'sprocesses" and "intellectual emotionality" (0.645), i.e. "strong anxiety about the discrepancy between the expected and actual results of mental work". *2*. Average creativity is associated with indicators of intelligence (verbal 0.362, non-verbal 0.427, general 0.454) and verbal indicator (0.361). *3*. High creativity is associated with intelligence indicators (verbal 0.516, general 0.531). So, low success in solving problems is associated with temperamental properties, average - with indicators of intelligence and flexibility of thinking (verbal indicator) and high - with indicators of intelligence. We cannot unequivocally state addiction at the level of high creativity, however, there is a gap between the "affective" and "intellectual" components.

Keywords: behavioral dependence, intellect, socially acceptable addiction, creativity.

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Effects of problematic internet use and internet-based activities on brain structure

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In the past few years, brain imaging techniques, such as MRI, have become an important method to study behavioral addictions. Problematic Internet Use (PIU) is considered as a behavioral addiction and many studies suggest that structural and functional alterations in the brain are possibly related to this phenomenon. In this current study, our aim was to identify structural changes accompanying PIU. 65 participants were recruited. Behavioral data was collected with the following questionnaires: Problematic Internet Use Questionnaire (PIUQ), Smartphone Application-Based Addiction Scale (SABAS), Screen Media Activity (SMA) and Social Networking Scores (SNS). MRI scans were performed and evaluated, linear regression analysis and Benjamini-Hochberg analysis were used. Results suggest that such brain areas are affected that are part of large brain networks such as Default Mode Network, Visual Network or Language Network. These findings highlight structural alterations that are might be related to PIU. Since the affected structures are often involved in other forms of addiction, it indicates that behavioral and substance related addictions may share similar neurobiological features.

Keywords*:* problematic internet use, MRI, structural brain imaging

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Investigating the Neurological Consequences of General Internet Addiction Using Resting State fMRI

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Information and communication technologies (ICT) are becoming an increasing part of our daily life. But this limitless availability can lead to general Internet misuse and dependence. Currently, general Internet addiction, smartphone addiction and social media addiction are belonging to the most prevalent behavioural addictions. Recent neuroimaging studies have begun to investigate these emerging behavioural addictions with functional magnetic resonance imaging (fMRI), and reported significant changes of the resting state brain spontaneous low frequency fluctuation of blood oxygen level-dependent (BOLD) signals in the intrinsic connectivity networks (ICN). We measured general Internet addiction, smartphone addiction and social media addiction with self-reported questionnaires with 72 (36 males, Mean ± SD: 24.69 ± 3.23) participants. Using group independent component analysis, we found six, previously identified resting-state networks that were examined for within-network and between-network differences in internet addicts and healthy control persons. Main differences were found in the language network, lateral visual network, medial visual network and occipital pole, the auditory network, sensorimotor network, and executive network. We also found functional connectivity differences with between network analysis in the occipital pole and auditory network. Compared to healthy participants, IA addicts showed negative association in all of these resting-state networks. Among the previous studies we firstly found the dysfunction in the language network. In combination with the findings, our study suggests that the possibility of Internet-, smartphone-, and social media addiction can cause a dysfunction in sensory and information processing, and also in important parts which are responsible for higher cognitive functioning.

Keywords: general Internet addiction, fMRI, resting-state networks

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The association between reinforcement sensitivity and substance use is mediated by individual differences in dispositional affectivity in adolescents

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Adolescence marks the onset of substance use experimentation and adolescents are particularly vulnerable to certain negative effects of substances. Reinforcement sensitivity is associated with substance use, though little is known about mechanisms underlying such association. Aims were to examine, (1) associations between behavioral activation (BAS) and behavioral inhibition (BIS) system sensitivity, positive (PA) and negative affectivity (NA), and alcohol use as well as tobacco, and marijuana use, and whether (2) associations are mediated by PA or NA. Participants were a community sample of N=125 adolescents (Mage=15.67 years; SD=0.93; 52% boys) who completed self-report measures. In mediation analyses, an association emerged between BIS sensitivity and alcohol use, mediated by NA (95%CIs [0.034; 0.390]); greater BIS sensitivity was associated with greater NA and greater NA was associated with greater alcohol use. An association also emerged between BAS sensitivity and marijuana use, mediated by PA (95%CIs [-0.296; -0.027]); greater BAS sensitivity was associated with greater PA and greater PA was associated with lower marijuana use. Finally, BIS sensitivity was associated with tobacco use through NA (95%CIs [0.023; 0.325]) and PA (95%CIs [0.004; 0.116]), with NA linked to greater, but PA linked to lower tobacco use. BAS sensitivity was also associated with tobacco use through PA (95%CIs [-0.395; -0.049]), with PA linked again to lower tobacco use. There are unique and shared effects of domains of reinforcement sensitivity on adolescent substance use and these vary with index of dispositional affectivity and type of substance considered.

Keywords*:* affectivity, reinforcement sensitivity, substance use, adolescence

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MT-1F4

Altered executive functions in work addiction

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Since work addiction can impair health and social functioning, understanding how work addiction is related to cognitive functions can be crucial. Behavioral addictions, such as gaming or gambling disorder, have been connected to weaker executive functions. Although many studies are investigating the cognitive mechanisms underlying these addictions, only a few research focus on work addiction. Previous studies using self-reported questionnaires showed rigidity, obsessiveness, and impulsiveness in the cognitive profile of work addiction. This study aims to go beyond these findings using reaction time-based tasks to measure working memory and executive functions. Participants were divided into high-risk (HWA) and low-risk for work addiction (LWA) groups based on their scores on the Work Addiction Risk Test. We used N-back, Digit Span, Counting Span, Go/No-Go, Wisconsin Card Sorting Task (WCST), Alternate Serial Reaction Time Task to assess cognitive functions. We found that HWA group showed impaired strategy planning as they had more perseverative errors compared to the LWA group on WCST. The HWA group also performed weaker on Counting Span, N-back, measuring working memory. No significant differences were found in other cognitive functions. These results contribute to a better understanding of the cognitive profile of work addiction. The impairment of perseverative functioning in work addiction may underlie the difficulty in disengaging from work.

Funding: The study was supported by the Hungarian National Research, Development, and Innovation Office (FK134807), and by the ÚNKP-21-1/ÚNKP-21-2 New National Excellence Program of the Ministry for Innovation and Technology from the source of the National Research, Development and Innovation Fund.

Keywords: work addiction, executive functions, working memory, perseveration, reaction time-based tasks

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MT-1G1

Psychological study of the influence of internet addiction on the perception of musicians

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The aim is to study the psychological aspects of the influence of the Internet addiction on the perception of musicians. The study involved 55 music university students at the age of 17-24. The following techniques were used Internet Addicted Behaviour Scale, Spielberg Anxiety Scale, Reisas Self-Confidence Scale.The experimental group was consisted of the students who suffered from the Internet addiction, the risk group was a borderline indicator and the control group were those who had no addiction to the Internet. During the studies it was observed that 48 musicians out of the total number could not imagine their life without surfing the Internet, 23 respondents (41.82%) have the Internet addiction. 25 respondents (45.45%) have a borderline indicator. 7 respondents of the control group were neutral to the Internet and exploit it only for educational purposes. The level of personal anxiety was the highest in the experimental group with the scale of 48.2 points. Once the Internet addiction was decreased so did the level of anxiety. In the risk group the scale was 43.4 points which is also considered as high, however in the control group it was lowered with the 21 points.
The indices of the experimental group's assertiveness depicted less than 30 points with the unsure answers of the participants. The score for a risk group was 48 points, which is high too, in which participants felt insecure rather than confident. The results of the control group were 92.3 points who felt self-confidence.

Keywords: Internet addiction, musicians, personal anxienty, assertiveness, influence of musicians

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MT-1G2

Can robots create emotional dependency in humans? A systematic review.

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Computer science and robotics have revolutionized the planet over the last century and have made possible the creation of artificial intelligence machines capable of simulating emotional states. These developments have given rise to the idea that emotional and affective relationships can be established with these devices. The objective of this work is to analyze the literature on human-robot interactions and to explore whether humans may develop dependency or addiction to robots. A Systematic review has been carried out based on a search of the ScienceDirect, PsycInfo and PubMed databases that yielded 21 publications. Robots are able to execute behaviors capable of provoking emotions, as well as decoding them; for their part, humans are able to interpret the emotions expressed by robots and to interact with them, generating positive social and affective relationships towards them and expressing empathy. The emotional and social relationship between humans and robots is influenced by characteristics of the robots themselves, such as their resemblance to human beings and the person's age and length of exposure. At present, however, the evidence that humans can develop emotional dependency on robots is inconclusive.

Keywords*:* artificial intelligence, emotions, emotional dependency.

MT-1G3

Behavioral addictions and substance use disorders comorbidity-therapeutic challenges for physicians

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Background: Behavioral addictions (BA) and substance use disorders (SUD) share common vulnerability factors and neuropathological mechanisms, which leads to a high degree of overlap between them. Even if the most visible entity is the SUD, the clinician should be advised to screen for BAs, which may be the trigger or just a comorbidity with the SUD.

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Methods: To formulate several good practice guidelines for the treatment of patients with BA and SUD dual diagnosis. *Results:* The detection of a specific SUD should lead to an active search using structured instruments for other SUDs and BAs. The same instruments should be used during the acute and maintenance phase of the treatment, in order to confirm remission and to detect early signs of relapse. Both psychological counseling or psychotherapy and pharmacological treatment should be recommended in patients with multiple drug- and behavioral addictions. SUD and BA should be addressed simultaneously, if possibble, in order to avoid the risk of therapeutic non-response or response delay. Other psychiatric disorder may be found in this population, therefore the use of a structured clinical instrument for diagnosis (e.g., MINI+) is indicated. A careful evaluation of the vulnerability factors is also recommended as a first step for the therapeutic management in patients with SUD and BA. *Conclusions:* Patients with both SUD and BA should be carefully monitored, using structured instruments throughout the duration of the treatment. Both conditions are recommended to be treated simultaneously, and the vulnerability factors approached during the combined, psychotherapy and pharmacological treatment.

Keywords: dual diagnosis, alcohol dependence, vulnerability, psychotherapy

MT-1G4

Measuring problematic mobile phone use with adolescents: The psychometric characteristics of the Problematic Mobile Phone Use Scale-10

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Problematic mobile phone use (PMPU) may be the biggest non-drug addiction of the 21st century. This requires that sound - and possibly brief - measurement instruments are available, especially for adolescents, who are particularly at-risk of PMPU. One of the most widely used short instruments to assess PMPU is the brief version of the Mobile Phone Problem Use Scale (MPPUS-10; Foester et al., 2015). However, its dimensional structure is unclear, and the growth of PMPU among youth requires to deeply test the MMPUS-10 psychometric functioning with adolescents. The goal of the present study was to investigate the psychometric proprieties of the MPPUS-10 in adolescents, by particularly focusing on dimensionality, and analysing reliability and validity. Participants were 686 adolescents (63% males, Mage = 17.08) attending high school in Italy. By referring to the unidimensional construct of behavioural addictions, through exploratory and confirmatory factor analyses, the undimensionality of the MPPUS-10 was supported (CFI = .94, RMSEA = .07), and corroborated by a multi-group cross-validation analysis. The internal consistency of the scale was good (Cronbach's α = .82; McDonald's ω = .82). As regards validity, the MPPUS-10 total score resulted to be significantly correlated with time spent on the mobile phone (r = .38) and risky

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use of the mobile phone (r = .28), and also with Internet addiction (r = .54) and Gaming Disorder (r = .40) symptoms. Overall, findings provide support for the adequacy of using the MPPUS-10 in adolescents to assess PMPU.

Keywords: mobile phone addiction, MPPUS-10, dimensionality, reliability, validity

MT-1G5

Problematic smartphone use: exploring, predicting, and moving forward

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Smartphones and other internet-connected devices provide immense opportunities to interact, collaborate, and connect. There are also immense opportunities for researchers to study smartphone behaviour and the underlying psychology of internet use. This talk will highlight what is already known about problematic smartphone use and where future research is potentially heading. It is argued that the use of statistical models, pattern detection, and machine learning approaches might help to further our understanding of problematic smartphone use. This talk will argue that researchers must focus on new methods of research and collaboration to improve our understanding of smartphone use.

Keywords*:* smartphone addiction, research methods, internet use, health

MT-1G6

Young, stressed, and blind-minded: An experimental investigation of the routes from loneliness to adolescent problem gambling

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Although loneliness, psychological distress, and mentalizing deficits have been identified as risk factors for problematic gambling involvement, to date, no studies has ever examined the interplay between these factors among adolescent gamblers. Moreover, the literature on the role of loneliness in adolescent gambling is scarce and no study has ever adopted the multidimensional model of loneliness that examines the construct in a more complex way. The present study assessed, for the first time, the role of negative affective states, mentalizing, and loneliness in adolescent gambling. The sample comprised 379 Italian adolescents

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aged between 16 and 19 years who completed the South Oaks Gambling Screen Revised for Adolescents (SOGS-RA), the Loneliness and Aloneness Scale for Children and Adolescents (LACA), the Depression Anxiety Stress Scale (DASS-21), and the Reflective Functioning Questionnaire (RFQ-8). The results showed that male gender, low scores on the LACA affinity for loneliness, and high scores on both the RFQ-8 Uncertainty about Mental States and the DASS-21 Stress subscales significantly predicted adolescent gambling severity. Based on the regression analysis results, data were submitted to path analysis. The path analysis showed that loneliness contributed to gambling severity directly, while stress contributed to gambling both directly and indirectly via hypomentalizing. The present study provides insight into the interrelationships between psychological distress, perceived loneliness, mentalization, and problematic gambling, demonstrating that an inaccurate mentalization has an important role in contributing to problematic gambling. The study also suggests that specific intervention on mentalizing could be effective in reducing problematic gambling among adolescents.

Keywords: gambling, adolescent gambling, loneliness, stress, mentalization

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MT-2A1

Think-aloud analysis of commonly used screening instruments for Internet use disorders: The CIUS, the IGDT-10, and the BSMAS

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Background: Despite growing interest of the Internet use disorders (IUD) and the constant publication of new screening instruments in the last years, the optimal assessment of problematic or pathological behavior on the Internet is still unclear. Existing screening instruments of Internet use disorders often suffer from lacking conceptual or methodological background. Aim of this study was to investigate individuals' cognitive processes when reporting and valuing their behavior on the Internet by responding common screening instruments. *Method:* Vocational students (n=30; 50% female, age M=22.4; SD=1.7) meeting an average of 2.9 diagnostic criteria (SD = 1.7; range: 0-7) for Internet use disorders according to DSM-5 took part in individual interviews which were based on the think-aloud approach. All participants answered the CIUS thinking out loud. Depending on the respective main usage activity, either the IGDT-10 or the BSMAS was answered. All interviews were audio-recorded, verbatim transcribed and content-analyzed. *Results:* Discrepancies between the item developer's intention and participants' responses were identified. There were difficulties due to ambiguous instructions, unclear time-frames (BSMAS, IGDT-10) and no information on the referring period (CIUS). As a result of misconceptions concerning the wording, participants often built mean values and conducted the assessments by referring to different Internet applications. *Discussion:* This study provides insights into young adults' cognitive processes underlying responses to the CIUS, the IGDT-10, and the BSMAS. A revision and specification of the instructions and individual items appears necessary in order to avoid overpathologization.

Keywords*:* Internet use disorders, screening instruments, content validity

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MT-2A2

Impact research of resilience and features of the coping mechanism on the development of addictive behavior

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Any socially acceptable behavior can become addictive under certain circumstances. At the same time, addiction can be a universal way of running away from real life.

We used The Ways of Coping Questionnaire method (cf. Folkman and Lazarus 1988), 13 types of Dependencies test of Ms. G.Lozova, The Resilience Scale RS-25 of Gale M.Wagnild and Heather M.Young. The selection consisted of 35 students, with an average age of 19.5 years. In the course of the research, the following results were obtained: the students showed an average level of the propensity for addictive behavior. The testees had high scores on the coping mechanism "runaway-escape" and scores below the average on the coping mechanism of "problem-solving planning". An interconnection was revealed by the indicator of moderate correlation (0.394) between the propensity for addictive behavior and the coping mechanism "runaway-escape". An indicator of the resilience and stress of personality management between the coping mechanism "runaway-escape" and planning for solving problems, an interconnection was revealed by the indicator of high correlation (0.443 *): *1.* Students with a coping mechanism in the form of "runaway-escape" have a high probability of addictive behavior; *2.* If a person in stress management has a low ability to problem-solve planning, then there is a high probability of avoiding problem-solving, which is an indicator of low resilience. Thus, it can be assumed that by developing resilience and forming effective coping mechanisms in personality stress management, it is possible to prevent the development of addictive behavior.

Keywords*:* addictive behavior, socially acceptable, coping mechanism, resilience, stress management.

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MT-2A3

Gambling Fallacies, problem gambling, and the role of pandemic specific factors

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Gambling Fallacies (GF) are a collection of gambling specific cognitive errors that lead to erroneous beliefs about how gambling works. While previous studies have demonstrated that gambling fallacies are one factor that contributes to the development and maintenance of gambling disorder, longitudinal studies have demonstrated that endorsement of these fallacies can fluctuates across time. The factors that influence changes in level of GF are less understood. The current study examined levels of GF in a national cohort of adults, with two aims: 1) examining the associations between GF levels and type of gambler (non-gambler, non-problem gambler, low-risk gambler, moderate-risk gambler and problem gambler), and 2) identifying the impact of COVID specific variables on GF endorsement. This sample (n = 2,790) was recruited from Leger Opinion's registered online panellists. Respondents completed a survey of gambling involvement and individual difference variables at 6-months intervals: baseline (6-months before the pandemic); during the nation-wide lockdown in Canada; and 6-months after the lockdown. The results of this study indicate that, while somewhat more prevalent among problem gamblers, GF are common among gamblers of all types. However, level of GF endorsement did vary significantly at each 6-month interval in this sample and multivariate analysis indicate that GF endorsement was a significant predictor of increased gambling severity category over time. Also, a bidirectional relationship was evidenced as problem gambling and greater gambling involvement were significant predictors of greater endorsement of GF. COVID specific changes in health and level of social interaction also significantly predicted greater GF endorsement.

Keywords*:* gambling disorder, gambling fallacies, gambling engagement, erroneous cognitions, COVID

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MT-2B1

Validation of the Internet Gaming Disorder Test (IGDT-10) in a sample of Quebec French-speaking adolescents and young adults

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Background: The Internet Gaming Disorder Test (IGDT-10; Kiraly et al., 2015) is a recent measure of gaming addiction using the proposed DSM-5 criteria. Given the lack of studies examining the validity of this instrument both with adolescents and young adults (specifically) and French Canadian samples, the current study aimed to document the psychometric properties of the French version of the questionnaire in a sample of Quebec adolescents. *Method:* A sample of 1851 adolescent and young adult online gamers (83.8% male) completed an online survey. A confirmatory factor analysis was conducted in order to confirm the unidimensional structure of the measure. Chi-square analyses and independent sample t-tests allowed to examine the relations between IGDT-10 scores and criterion measures including trauma, post-traumatic stress disorder symptoms, psychological distress and resilience. Lastly, Pearson chi-square analyses were used to compare the endorsement of each of the IGDT-10 criteria among players who were classified as addicted and those who were not. *Results:* The French version of the IGDT-10 showed adequate internal consistency (alpha = .63, dichotomous items) and analyses confirmed the unidimensional structure of the measure. Results of the chi-square and t-test analyses were as expected considering past literature. Exploration of criteria endorsement revealed as expected, significant differences on all items between gamers classified as addicted and those who were not. *Conclusions:* Overall, the French version of the IGDT-10 appears to show good psychometric properties, and associations with criterion measures support its overall validity.

Keywords*:* gaming disorder, validation, trauma, resilience, Canadian youth

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MT-2B2

The psychometric properties of the Gaming Addiction Scale in a sample of Portuguese college students

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Background: The recent inclusion of the gaming disorder in the ICD-11 brought a huge interest in this disorder. However, the assessment of behavioural disorders is still largely dependent on the instruments used. This study aims to describe the application of the Gaming Addiction Scale (GAS) to a sample of Portuguese college students and analyse its psychometric characteristics. *Method:* The scale comprises a total of 21 items and seven dimensions. Considering that this is a previously validated scale for the Portuguese adolescent's population, we tested the comprehension of the existing version with 30 college students. No modifications were done. After that, the scale was administered to 1047 Portuguese college students (M = 22.09, SD = 5.44), 610 females (58.3%), from different universities. *Results:* The original dimensions were integrally proven to be valid in the present sample. The GAS global scale presented high levels of reliability, with α values of α=0.94, and the same occurs in the different dimensions: salience α= 0.83, tolerance α=0.82, mood modification α= 0.82, relapse α= 0.73, withdrawal α= 0.82, conflict α= 0.73, problems α= 0.81). All composite reliability (CR) values are above the cut point value of 0.7 and all calculate average variance extracted values (AVE) are above the cut-point of 0.5. The confirmatory factor analysis showed that the single-factor model did not fit the data well, shunning common method variance concerns. *Conclusions:* The GAS revealed psychometric properties that indicate excellent validity and reliability in assessing gaming behaviours, among Portuguese young adults and adult college students.

Keywords: Gaming disorder; Gaming Addiction Scale; GAS

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MT-2B3

Gaming Rage Scale (GRS): Development and Validation

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The Rage while gaming is describe by the gamers as a loss of control during the game, involving a severe and impulsive reaction. On Internet website the rage is reported by many gamers. To date, few studies focus on the phenomenon of rage. The aim of this talk is to present the development and the validation of a scale designed to assess the manifestations of rage episodes and their frequencies. We created the 24 items of the GRS based on a qualitative study. A sample of 454 online gamers was divided in two samples of 227 participants. They completed an online questionnaire including GRS items, UPPS, Clinical Anger Scale, IGDT-10. First, we process a Principal Component Analysis (PCA) on the half of the sample. The PCA determine a two factors solution. The first factor merges 5 items related to anger and irritation (Cronbach's $\alpha = 0.82$), the second factors merges 5 items related to the reduction of the skills required in the game (Cronbach's $\alpha = 0.83$). Then a Confirmatory Factor Analysis (CFA) was performed in the second part of the sample, the model fit is good. The two factors moderately correlate, and they both positively, weakly to moderately correlate with the scores of Internet Gaming Disorder, Clinical Anger Scale, positive and negative urgency and perseverance. This scale has demonstrate a good validity and reliability. The GRS could be an interesting in clinical and research area to assess rage episodes, and help to their management in order to prevent Internet Gaming Disorder.

Keywords: gaming, rage, scale

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MT-2B4

Verification of the linguistic validity and feasibility of the Japanese version of the Gaming Disorders Screening Scale

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Background: For gaming disorders in young children, it is desirable to make assessments from both children and parents, but there is no parent-child pair screening scale in Japan. The purpose of this study is to clarify the linguistic validity and feasibility of paired gaming disorders screening scales. *Method:* We created Japanese versions of four (two pairs) gaming disorders screening scales (Gaming Disorder Scale for Adolescents (GADIS-A), Gaming Disorder Scale for Parents (GADIS-P), Internet Gaming Disorder Scale (IGDS), and Parental version of the Internet Gaming Disorder Scale (PIGDS)) according to the scale development guideline COSMIN. We conducted a questionnaire survey and an interview survey of 10 pairs of children aged 9 to 11 who attend child psychiatry and their parents. And, we analyzed descriptive statistics and correlations between IGDS and GADIS. In the interview, we asked about items that were difficult to understand in the questionnaire survey. *Result:* 10 children and 9 parents answered. The parent group had higher scale scores and the positive rate of gaming addiction than the child group. There was a positive correlation between IGDS and GADIS-A scores. In GADIS-A, there was an opinion that the word "digital game" was difficult to understand. *Conclusion:* It was shown that there was no problem with linguistic validity and feasibility. There was no problem with the response time compared to the general questionnaire survey. We corrected the word "digital game" to "game".

Keywords: gaming disorder, screening test, adolescent

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MT-2B5

Is the screening for behavioral addictions important for general practitioners?

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Background and objective: Screening for behavioral addictions (BA) is an important method to improve the prognosis of these patients by prevention of BA complications, decreasing personal and societal losses, and lowering the risk of these conditions to become chronic. General practitioners (GPs) may be involved in the effort of early detection and referral to a mental health specialist for treatment of these patients. *Methods:* To support the necessity of a policy that may improve the prognosis of BA patients by promoting the use of screening instruments by the GPs in populations with high risk for these disorders. *Results:* Data in the literature about screening policies for BA are sparse. However, when applied, these strategies detected high incidence of Internet addiction in students, for example, or for gaming addiction in people using Internet on a daily basis. Cell phone addiction or buying disorders are also BA associated with high personal and/or societal negative impact, so they should be included in the screening procedure. GPs are the in best position to initiate screening in targeted populations, because they have access to information from both patients and their relatives, and they interact with these potential patients on a regular basis. *Conclusions:* The importance of BA screening by the GPs cannot be overemphasized, due to its value to decrease the personal and societal costs by early detection and referral to a specialized intervention.

Keywords: screening, general practitioners, vulnerable populations, societal costs

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MT-2B6

Towards robust methodology of online surveys targeting gamers: Identifying psychosocial differences between participants giving access to their in-game data and those who don't

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World of Warcraft (WoW) is a popular Massively Multiplayer Online Role-Playing Games (MMORPG) in which players create an avatar that evolves and interacts with other avatars in a persistent virtual world. In a previous study about motivations to play MMORPG, participants were asked whether they agree or not to have their avatar monitored on the long run. The main aim of this follow-up study is to compare the profiles (e.g., involvement in gaming, psychological characteristics) of participants who agreed to provide their avatar with those who did not. Differences found will inform on potential bias and lead to recommendations for such kind of studies. In total, 1601 participants started the survey and 1059 participants aged 18 or older completed the entire survey. Among them 690 participants (65.2%) agreed to provide the name of their avatar, while 369 (34.8%) did not. Group comparison (avatar vs. no avatar) were performed on the following variables: age, sex, employment status, mean number of hours devoted weekly to WoW, motivations to play in online games (MPOGQ), excessive internet use (IAT), impulsivity (UPPS), personality (BIFI-10), self-esteem (SISE), positive and negative affect (PANAS), personality (BIFI-10) and encoding styles (ESQ). No variables of interests appeared to be statistically associated to the fact of providing or not the participant's avatar. This suggests, at least regarding those variables, that following on the long run the in-game behaviors of avatars is not biased comparing to the subjects who didn't agree to provide their avatar's name.

Keywords: online surveys, potential bias, gaming, World of Warcraft, avatar

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MT-2C1

Relationships between different types of affective temperaments and instagram addiction

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Background: Studies indicate that certain types of affective temperaments (cyclothymic, irritable and anxious) can be a risk factor for substance addiction. The relationship between affective temperaments and behavioral addictions has received relatively little attention from researchers. Instagram is a social network with apparently greatest addictive potential and the number of its users has been growing the most. The aim of this study was to examine the relationships between Instagram addiction (IA) and different types of affective temperaments. *Method:* The study sample included 332 students (61.9% female). Their mean age was 20.99±2.35 years. The Instagram Addiction Scale (IAS, Cronbach $\alpha = 0.88$ in the present study) and Temperament Evaluation of Memphis, Pisa, Paris and San Diego Autoquestionnaire (TEMPS-A, Cronbach $\alpha = 0.77$ in the present study) were administered. Items of TEMPS-A were constructed on the basis of the criteria for affective temperaments (cyclothymic, depressive, irritable, hyperthymic, anxious). *Results:* The mean score on the IAS was 28.61±9.75, with scores in females and males not differing significantly. Hyperthymic temperament was the only temperament that correlated negatively with IAS ($rs = -0.12$; $p<0.05$). Cyclothymic temperament correlated moderately with IAS ($rs = 0.38$; $p<0.05$), followed by anxious ($rs = 0.26$; $p<0.05$), depressive ($rs = 0.23$; $p<0.05$) and irritable temperaments ($rs = 0.11$; $p<0.05$). *Conclusions:* IA is associated to affective temperaments positively except for negative association with hyperthymic temperament. This may have further scientific and preventive implications.

Keywords: Instagram addiction; Instagram Addiction Scale; TEMPS–A

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MT-2C2

Social networking site stimuli elicit automatic approach reactions

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Background: Despite calls for compulsive social networking site (SNS) use to be recognised as a behavioural addiction, evidence for the addictive potential of SNSs is still widely contested. Importantly, addictions do not only change motivation at a conscious level but also entail modifications of implicit (unconscious) reward processing. For example, implicit approach biases to addiction-related stimuli have been linked to addiction severity in a range of established addictions. Yet few studies have investigated automatic approach motivation to SNS stimuli, and the present study sought to scrutinise its relationship to problematic SNS use behaviours. Method: In an online experiment with 390 participants (aged 18-30), we measured reaction times to increasing (= approach) vs decreasing (= avoidance) SNS and control logos, using a modified version of the task developed by Rougier et al. (2018). Results: Compared to control stimuli, SNS stimuli elicited significantly faster approach reactions within the whole sample. Furthermore, the difference between the approach RTs to SNS and control stimuli predicted self-reported SNS checking (β = -0.13) but was unrelated to SNS use duration and problematic SNS use scores. Conclusion: The observation of speeded approach reactions to SNS cues regardless of clinically relevant impairment (i.e., SNS addiction) suggests that the implicit imbuement of SNS logos with reward has become pervasive among young adults. While faster SNS approach tendencies appear to be associated with more frequent SNS checking, more research investigating approach-avoidance reactions in SNS users is needed to establish whether such responses might serve as a marker of 'SNS addiction'.

Keywords: Social networking site, approach motivation, implicit measure

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MT-2C3

Instagram problematic use and personality traits: the mediating role of usage motives and fear of missing out

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In recent years, Instagram has become hugely popular also among adults, but little is still known about the problematic Instagram use (PIU) affecting some members. According to the Uses and Gratifications theory, social networks users show different usage motives in selecting and joining in their virtual communities. Previous studies suggested that "Fear of Missing Out" (FoMO) plays a major role in developing problematic SNSs' use. Moreover, personality traits were already associated with addictive tendencies to Instagram, as for other social media (e.g., Facebook). The objectives of the present study were to examine the relationships between personality traits, Instagram problematic use, motives for using Instagram and FoMO, as well as exploring the mediating role of FoMO and usage motives between personality traits and PIU. A total of 362 Instagram users (n = 261, 55.1 % females; Mage = 27.88 years, SD = 8.78) completed an online questionnaire comprising the Instagram Addiction Scale (IAS), the Big Five Inventory (BFI-10), the Motivations for using Instagram and the FoMO scale. Findings highlighted that 50 (13.8%) participants showed a mild or moderate form of PIU. A mediation analysis pointed out that Consciousness has only a direct effect on PIU, whereas Emotional Stability was related to PIU when mediated by FoMO or Escapism motive. Results offer empirical evidences in the comprehension of Social network problematic use, suggesting that personality, specific usage motives and FoMO play a relevant role in developing the Instagram problematic use.

Keywords: Instagram Problematic Use, usage motives, FoMO, personality traits

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MT-2C4

Social Media Challenge: A one-week psychoeducation campaign to facilitate aware and controlled use of social media

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Background: Many people spend hours upon hours on various social media platforms every day. Social networking sites offer not only entertainment but also experiences of relatedness and autonomy and a medium to show one's competence. At the same time, excessive use of social media has been associated with feelings of anxiety and depression, isolation, procrastination and the fear of missing out. Psychoeducation and concrete means of support are needed to raise awareness about problematic social media use and help people get better control over their online behavior. *Method:* Social Media Challenge is a 7-day psychoeducation campaign that introduces six themes to improve controlled use of social media via daily email newsletters and social media posts. The themes are *i)* introduction to Social Media Challenge, *ii)* goal setting for a change in online behavior, *iii)* conscious observations of one's social media use, iv) dark design patterns, v) passive versus active use of social media, *vi)* 24 h social media break, and *vii)* future goals for social media consumption. Each newsletter also includes concrete exercises related to the specific theme. *Results:* The two Social Media Challenge campaigns carried out this far have reached over 150 subscribers each. After the campaigns many of the subscribers continued engaging with an open-access self-help material website. *Conclusions:* Social Media Challenge provides an easy and promising way to share information on the risks of excessive social media use and help people minimize the negative effects of online activities on their everyday lives.

Keywords: social media, SNS addiction, prevention

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MT-2D1

Anxiety and Compulsive Sexual Behaviour Disorder: A systematic review

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Background: The inclusion of the novel diagnosis of Compulsive Sexual Behaviour Disorder (CSBD) in the forthcoming 11th edition of the International Classification of Diseases has spurred increasing interest in the clinical profile of the disorder. Such attention has included a focus on potential comorbidities, risk factors, or symptoms related to such behaviours, including anxiety. This review aims to understand the relationship between anxiety and compulsive sexual behaviour in adults and adolescents, based on available quantitative studies. *Method:* A search of PsycInfo and PubMed was conducted for studies which quantitatively assessed a relationship between a measure of anxiety and of CSBD, including dissertations and published articles using clinical and community samples. Rather than a meta-analysis, a qualitative synthesis of the studies was conducted due to the variety of methods used within these studies. *Results:* Overall, 36, primarily cross-sectional, studies were identified. Synthesis of the studies resulted in a continued lack of clarity regarding the nature of the relationship between anxiety and CSBD, likely due to several factors, including inconsistent measurement of Compulsive Sexual Behaviour Disorder, a lack of gender diversity, and very little longitudinal data. *Conclusions:* A need for future research regarding the relationship between CSBD and anxiety continues to be apparent to allow clinicians, policy makers, and researchers to better understand how such presentations may interact. Future research must expand the use of longitudinal methods, increase the number of women and gender-diverse individuals sampled, and utilize a more comprehensive measure of CSBD to be able to fully understand this relationship.

Keywords: CSBD; anxiety; sex addiction

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MT-2D2

Sexual addiction: a maladaptive strategy to regulate mood and anxiety symptoms?

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Introduction: Sexual addiction is a behavioral pattern characterized by excessive, increasing, and uncontrolled frequency of sexual behaviors that persists despite negative consequences for individuals concerned (Grubbs et al., 2020; Demily & Thibaut, 2016). The current research aimed to study the relationship between emotional dysregulation, anxiety, depression, and sexual addiction. *Methods:* A total of 398 voluntary subjects (54% women, n= 215; 46 % men, n= 183) with a mean age of 29.08 years (±11.30) were recruited online through specialized forums. The participants completed questionnaires including socio-demographic data, assessment of sexual addiction (SAST-Fr), anxiety and depression symptoms (HADs) and emotional dysregulation (DERS-F). Since our data did not show normal distribution (Kolmogorov–Smirnov test), we computed descriptive analysis and nonparametric statistical tests. *Results:* In our sample, 22.4% (n= 89) of participants had a sexual addiction. In this group, 69.7% were men (n=62) and 30.3% were women (n=27). Our results showed higher scores for both depression ($z= 4.76$; $p<.001$) and anxiety ($z= 4.83$; $p<.001$) among the addiction group, compared to the non-addiction group. Furthermore, individuals with sexual addiction (versus without) showed significant higher scores in all emotional dysregulation factors. Finally, we found that SAST-Fr scores were correlated with anxiety, depression and emotional dysregulation. *Conclusion:* Despite the limitations of this study, particularly those related to the constitution of our sample, our results seemed to be consistent with previous literature on addictive disorders. Sexual addiction may be seen as a mean of regulating the emotional or mood and anxious symptoms. Finally, our research opens clinical and research perspectives.

Keywords: sexual addiction; emotion dysregulation; depression; anxiety

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MT-2D3

Differential relationships between Compulsive Sexual Behavior Disorder symptoms and sexual health

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Background: Compulsive Sexual Behavior Disorder (CSBD) is defined as a persisting for at least six months pattern of repetitive intrusive sexual thoughts, desires, fantasies, or behaviors. Previous research on the relationship between CSBD and sexual dysfunction (e.g.erectile dysfunction or difficulties to reach orgasm) gives mixed results. One potential cause which could explain discrepancies between studies is taking into account only a general level of CSBD symptoms' severity, rather than the effects of individual CSBD facets on sexual functioning. *Method:* We conducted two studies involving different samples: a convenience sample (n = 829) and a representative sample of the Polish adult population (n = 1541). In both studies, we assessed the severity of CSBD symptoms (Compulsive Sexual Behavior Disorder Scale, CSBD-19) and sexual functioning (Arizona Sexual Experience Scale, ASEX). *Results:* We have found that different symptoms of CSBD led to opposite effects on sexual functioning. Higher severity of negative consequences arising from one's sexual behavior and engagement in sexual behavior despite deriving little or no satisfaction from it predicted hypofunction in the sexual domain (described as weaker sex drive, more difficulties in sexual arousal, greater difficulties in vaginal lubrication/penile erection, less ability to reach an orgasm and less satisfying orgasms). On the contrary, higher intensity of struggling to reduce sexual behavior and sexual activities being a central focus of one's life predicted hyperfunction. *Conclusions:* Our results suggest that taking into account distinct CSBD symptoms rather than the general level of CSBD severity gives more insight into potential sexual dysfunction.

Keywords: compulsive sexual behavior disorder, sexual health, sexual dysfunction

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MT-2D4

Evaluating Links Between Symptoms of Compulsive Sexual Behavior Disorder, Substance Use, and Behavioral Addictions: Results from a U.S. Nationally Representative Sample

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Background: The recent inclusion of Compulsive Sexual Behavior Disorder in the ICD-11 has spurred a cascade of new research into out-of-control sexual behaviors. However, much remains to be discovered regarding the appropriate classification of CSBD and its relationships with other disorders. The present work seeks to understand more fully one such set of relationships: namely, the relationships between CSBD and other addictive disorders. *Method:* In March, 2022, a weighted, nationally representative sample of adults (N = 2,500) in the United States will be collected. Alongside a variety of measures of compulsive sexual behavior and problematic pornography use, we will also assess substance use problems (using the NIDA-ASSIST-2), gambling disorder symptoms (using the PGSI), and gaming disorder symptoms (using the IGDT-10). *Results:* Using a variety of statistical methods, the present work will examine how symptoms of CSBD and PPU will relate to a variety of other addictive behaviors at the population level. By extending this research to a weighted, nationally representative sample, we will be able to test the degree to which CSBD relates to a variety of recognized addictions. *Conclusions:* The results of the present work will allow us to draw inferences about the total clinical profile of CSBD. Though controversies regarding the nature of CSBD (i.e., impulse control disorder vs. addictive disorder) are likely to continue for the foreseeable future, understanding how CSBD relates to other recognized addictions will provide greater insights into appropriate ways to understand CSBD both in research and in practice.

Keywords: CSBD; substance use; addiction

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MT-2E1

The use of mobile devices by children under 6 years old in Poland

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Background: The use of the Internet, smartphones, tablets, smartwatches by small children is under-investigated. However, some studies show that, if used excessively, it may have a negative impact on a child's development. The aim of this study was to investigate the use of mobile devices by children under 6 in Poland. *Method:* 2000 participants took part in the study - parents of children under 6 years old. The sample was representative with regard to age, sex and place of residence of children. *Results:* Over 50% of children use mobile devices and the percentage increases with age. Children usually use mobile devices alone or under the supervision of parents. Mobile devices are given as a reward or taken away as a punishment but in general, parents treat them as a substitution for their attention. The use of mobile devices is mainly related to the lack of time. Parents are mainly afraid of age-inappropriate content. Parents notice various negative consequences of their children use of mobile devices such as disturbed sleep, being the anxious or compulsive need for the device. There is a correlation between how early children initiate the use of mobile devices and how technologically advanced parents are (the more advanced parents are, the older age of technological initiation of their children *Conclusion:* This study shows a great need for information-based campaigns explaining how to use mobile devices safely and what to do in order to avoid negative developmental consequences for children

Keywords: mobile devices, children, compulsive use

MT-2E2

Screen media dependency among pre-school children in Kuala Lumpur and its associated factors

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Introduction: Earlier and prolonged screen media exposure to young children is associated with negative health concerns. Not much is known about screen media dependency among preschool children. This study aimed to measure its prevalence and associated factors among preschool children in Kuala Lumpur. *Methods:* A cross-sectional study was carried out at registered preschools in Kuala Lumpur. 300 parents of preschool children aged 4 to 6 years old who fulfilled the inclusion and exclusion criteria were recruited via simple random sam-

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pling. The newly developed Screen Dependency Score (SDS) assessed their dependency on screen media. Descriptive and bivariable statistics were analysed using IBMSPSS version 27. *Results:* The prevalence of screen media dependency among preschool children in Kuala Lumpur was 65.7%. Multiple logistic regression found that a preschool child who used a smartphone [OR (95% CI) 2.735 (1.244 - 6.013), p-value 0.012], whose parents used screen media to resolve quarrel among their children [2.855 (1.187 - 6.868), p-value 0.019], children who had more than 2 hours screen time over the weekend [2.261 (1.058 - 4.830), p-value 0.035] and children with television in their bedroom [5.562 (1.591 - 19.442), p-value 0.007] were found to be more likely to have screen media dependency. Meanwhile, active co-use as a parental mediation strategy was found to be protective [0.505 (0.302 - 0.845), p-value 0.009]. *Conclusion:* Screen media dependency among pre-school children is a public health problem that needs to be addressed. It is hoped that these findings will create more awareness and provide the basic data needed to create preventive measures.

Keywords: Screen media, dependency, preschool, children, Malaysia

MT-2E3

Psychological correction of adolescents' Internet addiction by means of Art therapy

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The aim of our study was to determine the effectiveness of art therapy in the psychological prevention of Internet addiction in adolescents with certain personality traits. We believe that if Internet addiction is formed in adolescents with low self-esteem, self-doubt, personality anxiety, impulsivity, then its psychological prevention is possible using an art-therapeutic psychological and pedagogical program for the prevention of Internet addiction in adolescents. A total of 55 adolescents (13–14 years old) - active Internet users took part in the study. Of these, 26 are girls and 29 are boys. In our study, we used such techniques as: 1. Scale of Internet-addicted behaviour (Chen Internet addiction Scale, CIAS), tested and adapted for Russian subjects V.L. Malygin and K.A. Feklisov – was used to identify adolescents' Internet addiction or addiction to it. 2. The teenage version of the multifactorial methodology of R.B. Kettle – was used to identify the personality traits of adolescents with Internet addiction or a tendency to it. 3. Questionnaire "Teenager and social networks" (O. A. Sevastyanova). According to the results of a study using the Chen Internet Addiction Scale (CIAS) methodology, it was found that 47 adolescents (85.5% of the total sample) are at risk of having or being addicted to the Internet. At the same time, according to the Questionnaire "Teenagers

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and Social Networks", only 36% of teenagers admit that they depend on the Internet. Teens consider social networking opportunities to be positive effects, and potential health problems negative.

Keywords: Art therapy, internet addiction, psychological and pedagogical program, adolescents.

MT-2E4

Influence of emotional behavior of parents as a means of protection against mobile addiction in children

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Mobile addiction poses a threat to both physiological and psychological health of a person. The age of mobile addiction has dropped so much that toddlers and preschoolers use mobile devices more dexterously than adults. There can be many reasons for the emergence of mobile addiction, but one of them is the lack of emotional support from the parents. In many cases, when a parent does not fully or insufficiently invest his emotions in a child, at some point the child may leave him in the world of electronics. *Purpose of the research:* to study the relationship between emotional behavior of parents and mobile addiction in adolescents. *Techniques:* • Test for telephone addiction (L. Yurieva, T. Boyabot) 1 Methodology "Child-parent relations in adolescence". (P. Troyanovskaya) • Test questionnaire "Your parenting style: rejecting, disapproving, non-interfering or emotional educator" (John Gottman) The study involved adolescents (N1 = 25) and their parents (N2 = 25). As a result, it was found that many study participants are prone to mobile addictive behavior. The majority of 60% of adolescents showed signs of a high likelihood of addiction. An insignificant correlation was found between mobile addiction and the emotional attitude of adolescents to their parents ($p\ 0{,}05<0.146$). This means high smartphone addiction in teens disrupts emotional distance from their parents. Between the mobile dependence of adolescents and the positive emotional behavior of the parents, the statistical significance was also insignificant ($p\ 0{,}05<0.176$). Since mobile addiction has become a way of life, even parents have stopped noticing the smartphone-dependent behavior of teenagers.

Keywords: mobile addiction, emotional behavior, teenager, emotional attitude, psychological health

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MT-2E5

Deficit of cognitive resources in unsocialized conduct disorder of children and adolescents (lies, stealing, truancy)

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Background and aims: Child behavioral dependencies are often undifferentiated, particularly, they manifest themselves as behavioral disorder. They hinder a child's socialization. The research aim is to understand whether cognitive processes can be resources to cope with behavior problems. *Methods:* The sample included 25 adolescents (M=12,6 years) with the clinical diagnosis "unsocialized conduct disorder" and no mental retardation (ICD-10) who exhibit isolated/complex disorder symptoms: lies, stealing, truancy, runaways. Their cognitive processes were assessed. *Results:* A lower speed of perception, poor descriptions of perceived images, inconsistency of perceptual and verbal processes are identified. The respondents have a low level of mental performance and willpower. Immediate memory is good but long-term memory indices are decreasing, possibly caused by low social motivation. Teenagers are characterized by challenged abstraction, think self-centered, reliance on their experience, and are "tied" to specific features. Their mental processes slow down and lack focus. They prefer to simplify tasks, not to perform them themselves, and are not critical of the results. Their cognitive activity is not encouraged, selfish motives and needs are prevailing. We identified deficient cognitive resources if compared to the standard among adolescents with behavioral disorders which is the purpose of psychotherapy. *Funding:* The study was funded by RFBR (research project № 20-013-00435a).

Keywords: cognitive resources, unsocialized conduct disorder, children and adolescents

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MT-2E6

Anxiety sensitivity mediates relations between anxiety and problematic smartphone use severity in Chinese adolescents early in the COVID-19 pandemic

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Risk factors for problematic smartphone use (PSU) have rapidly become an important area of research due to the prevalence of smartphones and functional impairment associated with PSU. Our aim was to examine anxiety sensitivity (AS) as a mediating variable between both depression and anxiety with PSU severity. Participants (N = 4,752) from junior and senior high schools in Tianjin, China completed a web-based survey with measures of depression, anxiety, AS, and PSU. Inferential analyses revealed significant differences between males and females on PSU severity (η=.02). Results of structural equation modeling indicated good model fit (CFI=.956; TLI=.954; RMSEA = .05), and that anxiety was positively associated with AS when adjusting for depression (β = .951, S.E. = .043); and AS was significantly associated with greater PSU severity, adjusting for age and sex (β = .474, S.E. = .013). Additionally, AS mediated relations between anxiety and PSU severity (β = .451, S.E. = .024). Current findings are consistent with theoretical models of problematic internet use (I-PACE) and previous research linking AS to other kinds of behavioral addictions (e.g., smoking, alcohol use).

Keywords: problematic smartphone use, anxiety sensitivity, anxiety, depression, COVID19

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MT-2F1

Videogame user differences according to the game they play

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Background: Studies about gaming behaviors are rapidly accumulating, but research addressing the potential impact of game structural characteristics on psychological outcomes have been scarce. The current study aimed to address this limitation in an indirect way by studying and comparing different groups of videogame players based on their main game genre played (Battle Royale, MMORPG, MOBA, other) as well as other game usage variables. *Method:* An international sample of 2620 players (90.1% male) completed an online survey assessing multiple game-related and psychological variables. A latent class analysis performed on the game usage variables allowed to distinguish groups of players with unique characteristics. *Results:* Four player profiles were identified as the best solution. Descriptive analyses showed that each class contained 100% of players from each respective main game genre. Subsequent polynomial regression analyses allowed to further distinguish the four player classes on multiple psychological aspects. *Conclusions:* Taken together, these results show support to the idea that players of different videogame genres show different play characteristics as well as personal characteristics and motives to play.

Keywords: gaming, structural characteristics, game genre, person-centered analysis

MT-2F2

Game genre, bodily dissociation experiences and Internet gaming disorder symptoms: is there an association?

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There are various types of games and many authors have suggested that their differences may have different addictive potential. In particular, some games provide the opportunity to immerse in a virtual world and project dimensions of oneself onto in-game characters. As projecting oneself into an avatar might increase dissociation from one's bodily self, this study aims to investigate whether IGD symptoms and bodily dissociation vary depending on the most frequently used game genre. 715 highly engaged online players (71.5% men; mean age 29.75 ± 7.48) recruited in player communities completed a survey that assessed game genre, bodily dissociative experiences, and IGD symptoms. The results showed significantly higher levels of IGD symptoms among multi-player online battle arenas (MOBA) and massively multiplayer online role-playing games (MMORPGs) players relative to multi-player

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online shooting players (MOFPS) (F(2,712)=6.68, p<.001; Cohen's d MOBA-MMOFPS: 0.33; Cohen's d MMORPG-MMOFPS: 0.24), whilst MOBA players report significantly higher bodily dissociative experiences compared to MORPG and MOFPS (F(2,712)=3.15, p<.05; Cohen's d MOBA-MMORPG: 0.195; Cohen's d MOBA-MMOFPS: 0.21). However, differences on body dissociation disappear at high levels of IGD symptoms (F(2,183)=0.99, p = n.s.), with problematic players showing high body disconnection, regardless of the type of game most frequently used. On the one hand, these results could be explained by the fact that MOBAs players can change avatars every time they play. On the other hand, our findings highlight that high engagement in online games has the potential to disconnect a player from his body, regardless of the type of game used.

Keywords: Internet Gaming Disorder, game genre, Body Dissociation, game type

MT-2F3

Impact of problematic video gaming and action computer games on proactive and reactive cognitive control

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Background: In the players' cognitive functioning context, the negative effects of problematic video gaming (PVG) and action computer games on cognitive control were noted. However, there are very few studies that simultaneously examine the effects of these factors on cognitive control. Consequently, the current study aimed to verify the relationship between problematic video gaming, action computer games and cognitive control in light of the dual mechanism of the cognitive control model. *Method:* The study involved 549 video game players (278 female) aged from 18 to 38 years (M=22.15 years, SD=2.96) who completed the IGDS9-SF, characteristic gaming questionnaire (CGQ) and participated in the experimental phase of the study. Based on the IGDS9-SF score, the participants were selected into two groups: 1) PVG and 2) non-PVG. Based on the CGQ, the participants were selected into two groups: 1) action video game players (AVGP) and 2) non-action video game players (NVGP). The AX-CPT task was used to assess proactive and reactive control. *Results:* The results showed that the error rates were higher for NVGP than the AVGP group only in the AY-sequence. Additionally, the A-cue bias was higher in NVGP than in the AVGP group. There was no difference between PVG and non-PVG groups in error rates and A-cue bias. *Conclusions:* The results may indicate that playing action computer games was associated with lower levels of proactive control. In contrast, no relationship was found between PVG and cognitive control. This study was supported by a grant (UMO-2019/32/C/HS6/00340) from the National Science Center, Poland.

Keywords: problematic video gaming, cognitive control, proactive control, action video games

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MT-2F4

Pavlovian and instrumental conditioning in the early stages of gaming disorder and buying-shopping disorder

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Background: The ability of conditioned stimuli to evoke drug seeking plays an important role in the development and maintenance of substance-related addictions. In the course of addiction, and especially under the influence of stress (Schwabe & Wolf, 2009), such cue-elicited drug seeking may take form of stimulus-response habits that are insensitive to reward devaluation (Everitt & Robbins, 2016). Similar mechanisms may underlie behavioral addictions, however studies examining these relationships are sparse. A paradigm which allows studying the influence of conditioned stimuli on instrumental reward-seeking is the Pavlovian-to-Instrumental Transfer (PIT) paradigm. Mostly used in the study of substance-related addictions, the paradigm has only recently been adapted to online-gaming and online-shopping (Vogel et al., 2018). Using the PIT paradigm, the project presented here investigates whether stress increases cue-conditioned instrumental responding in early stages of gaming disorder and buying-shopping disorder. Furthermore, by implementing a devaluation procedure, it should be clarified if the behavior demonstrated is more in line with habitual or with goal-directed behavior. *Method:* Participants are individuals with risky gaming behavior, individuals with risky buying-shopping behavior and two matched control groups. After learning of the conditioned responses, participants undergo a stress or control condition, before performing the remaining phases of the PIT paradigm. Instrumental responding in the presence of application-related cues will be compared between the groups. *Results & Conclusion:* Preliminary data will be presented and discussed. *Funding:* The study is carried out in the context of the Research Unit ACSID, FOR2974, funded by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) – 411232260.

Keywords: Pavlovian-to-Instrumental Transfer paradigm, gaming disorder, buying-shopping disorder

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MT-2G1

From passion to love addiction: the role of attachment styles

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Background: A growing number of studies investigated the nature of the relationship involved in the subjective experience of romantic relationships also delineating new constructs as such as Love addiction. The distinction between romantic passion and pathological love (i.e., love addiction) is still not established and an ongoing matter of debate. The attachment theory has demonstrated its utility in shedding light on both couple dynamics and behavioral addiction and therefore appears a useful theoretical framework from which examine the topic. *Methods:* We administrated to a sample of 307 (33.6% males; M age =29.51; SD =11.75) adults the Attachment Style Questionnaire (ASQ), the Love Addiction Inventory (LAI) and the Passionate Love Scale (PLS). *Results:* Males and females mostly differ on almost all variables investigated in the study. The subscales measuring anxious attachment of the ASQ correlated positively and significantly with PLS total score and with most of the LAI subscales whereas avoidant dimensions were only correlated with the withdraw LAI subscale. Finally, we found the relationship between passionate love and love addiction was positively moderated by insecure styles of attachment (i.e., discomfort for closeness, preoccupation for relationships and need for approval). *Conclusions:* Gender appears to importantly impact the manifestation of love addition and future research should consider this potential confounding variable. The possibility to identify a specific psychological profile corresponding to love addiction is still under investigation but attachment theory seems helpful to delineate a limit between normal and pathological love.

Keywords: Love addiction, Attachment, questionnaire

MT-2G2

Parental Bonding in Body Focused Repetitive Behaviors

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Background: One means of understanding the effect of developmental factors on psychiatric disorders is by examining perceived parenting behavior in the childhood of individuals with trichotillomania (TTM) and skin picking disorder (SPD) (i.e., body focused repetitive behaviors (BFRBs)). We hypothesized that adults with BFRBs would show higher scores on dimensions of "care" and "overprotection" and predicted that a majority of BFRB adults would have parents with "affectionate constraint" based on combined care and protection scores. *Methods:* We

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assessed demographic and clinical differences in 184 adults between the ages of 18 and 65 with TTM (n = 43) and SPD (n = 75), and both (n = 66). The Parental Bonding Instrument measured "care" and "overprotection." Results were compared across groups and with normal control data using independent sample t-tests. *Results:* Individuals in the BFRB group had significantly lower maternal and paternal care scores compared to controls. The most common parenting patterns in BFRBs were maternal and paternal affectionless control (low care/high protection). From our sample, only 27% reported optimal maternal parenting and 28% reported optimal paternal parenting. *Conclusions:* These data suggest that maternal and paternal low care may be associated with BFRBs. The nature of this relationship should be further explored, as these results do not necessarily imply causality. Identifying perceived familial relationships may provide direction for clinicians in developing tools to address the burden caused by BFRBs.

Keywords: parental bonding, trichotillomania, dermatillomania

MT-2G3

Examining the perceptions of adolescents regarding their fathers in with Internet gaming disorder

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Background: Identifying protective and risk factors associated with Internet gaming disorder (IGD) is one of the important ways to develop prevention and treatment strategies for IGD. Previous research has shown that the father's role, one of the familial factors, is associated with IGD. Therefore, this study examines how fathers of adolescents with internet gaming disorder (IGD) are perceived in familial and it is discussed whether the role of the father in father-child relationships can mediate the increase of IGD characteristics in adolescents. *Method:* In-depth interviews were conducted with 31 participants between the ages of 12 and 18 (23 male, 8 female) diagnosed with internet gaming disorder. The data obtained from the interviews were analyzed using narrative analysis. *Results:* The narrative of the "authoritarian, uninvolved, and distant father" was identified as the dominant narrative of adolescents with internet gaming disorder (IGD). Adolescents, who reported that they had distant relationships with their fathers and were being rejected by their fathers, stated that they were able to interact more easily with other people through online games in their narratives. *Conclusion:* Considering the current technological age, being a distant, uninvolved, and authoritative father can lead to harming communication with adolescents and these paternity practices can result in excessive online activities. Therefore, interventions for adolescents may be more effective in some cases if they can address paternal influences on problem gaming with the active co-participation of fathers.

Keywords: behavioral addictions, gaming disorder, parental attitude, fatherhood

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MT-2G4

Compassion, gratitude and mindfulness: Their role across different gaming contexts

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Background: Even though gaming addiction received a growing interest from the scientific community in the last years, few is known regarding the role of protective factors played in excessive gaming as well as their link with different gaming contexts. Considering the relationship between gaming disorder and interpersonal problems, positive emotional states elicited by relational triggers as such as compassion and gratitude may be involved in pathological gaming. *Methods:* We administrated to a sample of 248 Italian adults (M age = 31.20, SD= 12.45; 34.4% males) a battery of self-report questionnaires including the The Social Media Use Questionnaire to investigate the frequency of gaming in four different contexts (i.e., alone, on the smartphone, with other people online, with others people in the room), the Compassionate Engagement and Action Scales, the Five Facets of Mindfulness Questionnaire and the Gratitude Questionnaire. *Results*: Analyses showed different patterns of associations between protective factors and gaming frequency across context. Frequency of gaming alone was negatively predicted by levels of compassion received, frequency of gaming with someone else in the room was negatively predicted by both compassion received and compassion for others whereas gaming with someone else online and gaming on smartphone were both additionally predicted by gratitude levels. *Conclusions:* Protective factor as such as compassion and gratitude appear central variables to investigate in order to clarify the mechanisms underlying gaming involvement. Moreover, different psychological profiles may be associated with different gaming contexts.

Keywords: gaming, mindfulness, compassion, gratitude

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MT-2G5

Emotional coping resources of co-dependent women

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Background and aims: Dependence in a family creates a personally significant difficult situation for co-dependents. They become susceptible to an addict's mood and behavior and stress caused by anxiety for their life and their struggle to recover. They cope with stress in a certain way. The research aim is to study female co-dependents' coping behavior and its correlation with their emotional intelligence. *Methods:* Mayer–Salovey–Caruso Emotional Intelligence Test (1998), Ways of Coping Questionnaire (Folkman &Lazarus, 1988). The study involves of 30 women aged from 32 to 55 in close relationships with a substance addict. *Results:* Female co-dependents prefer such coping strategies as positive reappraisal, self-control, seeking social support, planful problem solving. Accepting responsibility, distancing, confrontative coping, and escape-avoidance coping strategies are less preferable in the group. The emotional intelligence data indicate a lower level of one's emotional regulation, a vague awareness of one's emotions, a low ability to interpret emotional information and use it to solve life problems. The correlation between individual Emotional Intelligence characteristics and coping strategies is identified ($p \leq 0.001$): if co-dependents` ability to identify their own and others' emotions and maintain their emotional state enhances, they are less likely to choose distancing; if the ability to identify emotions and use to solve problems improves, the respondents prefer positive reappraisal. It stimulates the process of "facing" with a real life situation, changes one's perception of it, and creates a resource for further coping efforts.
Funding: The study was funded by RFBR (research project № 20-013-00435a).

Keywords: emotional intelligence, coping resources, co-dependent women

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MT-2G6

‘Escape Route’, ‘Constant Reboot’ and ‘Tamagotchi’ as triumvirate of phubbing

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The determinate of phubbing is internet addiction penetrating all young people’s life spheres. Internet addiction is negatively correlated with friendliness, conscientiousness, extroversion, openness and neuroticism, asshown by foreign researchers (Zamani, 2011; Kayis, 2016, Zhou, 2016). Method.525 young Kostroma citizens (72,4% male, 27,6% female) participated in a survey about smartphone addiction. We used Phubbing scale (Karadağ, 2015) with Interpersonal Dependency Inventory, IDI (R. M. Hirschfeld, 1977). Factor analysis was performed by dominant component analysis (varimax raw). Results.Having studied the results of factor analysis, we concluded the following. Factor 1 ‘Escape Route’ includes statements ‘I’m busy with my mobile phone when I’m with friends’ – 0,708, ‘My eyes start wandering on my phone when I’m together with others’ – 0,666, ‘My mobile phone use increases day by day’ – 0,674. The impossibility of maintaining emotional connections and lack of self-confidence cause ‘absent presence’ and escape route. Factor 2 ‘Constant Reboot’ embraces ‘emotional support from others’ – 0,649 with a negative ‘I am always busy with my mobile phone when I’m with my friends’ – 0,472 and ‘I’m busy with my mobile phone when I’m with friends’ – 0,415. The young shuffle virtual and real companions constantly rebooting emotional lines. Factor 3 ‘Tamagotchi’ unites statements ‘My phone is always within my reach’ - 0,619, ‘When I wake up in the morning, I first check the messages on my phone’ - 0,567 and the negative ‘lack of self-confidence’ – 0,417. Smartphones are becoming the youth’s constant companions always needing attention (a virtual pet).

Keywords: phubbing, smartphone addiction, partner neglect, addictive behavior, victim of phubbing

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