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Contents

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PLENARY LECTURES

PL-1

Reconceptualising reducing gambling harm: How to encourage consumer engagement in lower-risk gambling?

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Efforts to reduce gambling harm have typically focused on providing support for those individuals experiencing severe problems, such as self-exclusion and/or treatment. Gambling harm prevention has generally included public health messaging to increase awareness of gambling risks or the low odds of winning. Few initiatives have sought to understand consumer's perspectives and develop tools and resources that would be useful for those who want to continue to gamble, but in a way that does not lead to harm.

Many gambling harm minimisation tools have been developed such as deposit limits and activity statements or personalised feedback. However, there is low voluntary uptake of these with research suggesting they are not considered relevant by most customers. This presentation will discuss how we can reconceptualise efforts to facilitate lower-risk gambling with consumer-centric methodologies.

Keywords: gambling, harm reduction

PL-2

Early interventions in Internet Use Disorders

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Background and aims: In recent years, empirical evidence on effective treatments for Internet Use Disorders (IUDs) has increased. At the same time, first empirically sound studies on brief interventions for IUDs have been published. Approaches like Screening and Brief Intervention (SBI) are well known from studies in substance use disorders. Aim of the presentation is to review the current evidence of such approaches for IUDs. *Methods:* A narrative literature review was performed and current ongoing studies will be presented. *Results:* As a prerequisite of SBI, sound screening tools are necessary. Although numerous questionnaires have been developed for different IUDs many of them show weaknesses and there is a lack of gold standard tools. Cognitive behavioral approaches as well as other forms of interventions show effectiveness. The number of sound studies, however, is still limited. Other interventions such as telephone counselling based on Motivational Interviewing could not prove efficacy. In particular in young age groups, digital interventions are promising and

some large-scale studies are currently underway. *Conclusions:* The field of early interventions based on screenings and subsequent brief interventions for IUDs is developing. While more robust studies are needed, these approaches are of particular public health importance.

Keywords: internet use disorder, interventions

PL-3

Natural history and relating factors of internet gaming disorder in Korean children and adolescents

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The iCURE (internet user Cohort for Unbiased Recognition of gaming disorder in Early adolescence) study is school-based Prospective cohort study to see the natural history of internet gaming disorder (IGD) among elementary students in the 3rd and 4th grades and middle-school students in the 7th grade in Korea. A total of 2,319 children and adolescents enrolled between March 2015 and August 2017. Recruitment took place at the school level. Follow-ups were conducted at 12 and 24 months. Follow-up rates were 95% (n = 2,206) at 12 months and 92% (n = 2,129) at 24 months. This study examined factors associated with severity, incidence and/or persistence of IGD during 2-year follow-up in children and adolescents.

Severity of the IGD features was assessed by the Internet Game Use-Elicited Symptom Screen (IGUESS), a self-reported questionnaire based on the DSM-5 IGD criteria. Participants with IGUESS scores ≥ 10 were considered to be at high risk for IGD (HIGD). Time spent playing on-line games, game types, depressive symptoms, trait anxiety, attention deficit hyperactivity disorder (ADHD) symptoms, social support, openness of communication with parents, attachment to parents and potential confounders were assessed by self-report.

A total of 175 (7.5%) students were classified as HIGD cases upon initial assessment. The independent risk factors of incidence of HIGD included playing on-line games for ≥ 240 minutes/day, playing multi-player games, depressive symptoms and ADHD symptoms [adjusted rate ratios (aRRs) = 2.03, 1.63, 2.04, 2.53, respectively; all P < 0.05]. Factors related to changing IGD severity scores were playing on-line games for 60–239 minutes/day, playing single-player on-line games, higher attachment and social support [adjusted incidence rate ratio (aIRRs) = 1.38, 1.22, 0.86, 0.87, respectively; all P < 0.05]. Independent predictors of persistence of HIGD were playing on-line games for ≥ 240 minutes/day and ADHD symptoms (aRRs = 2.63, 2.14, respectively; all P < 0.05).

Among adolescents in South Korea, the existence of ADHD symptoms and spending more than 4 hours per day playing on-line games were associated with the occurrence or persistence of high risk for internet gaming disorder. There will be an additional introduction to the results derived from ICURE study in this plenary session.

Keywords: gaming disorder

PL-4

Passion and addiction: Theory and research

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Addictive behaviors are associated with the misuse and overuse of substances such as alcohol or drugs, or even the over engagement in other types of activities such as online shopping and exercising. Of interest, research reveals that not everybody develops addiction for such activities. The goal of this keynote is to provide an explanation for such findings. I first present the Dualistic Model of Passion (Vallerand, 2015) which suggests that the way in which a person engages in an activity one is passionate about has a great impact on the development of addiction. Specifically, it is proposed that obsessive passion (a passion that gets out of control) puts the individual at risk of developing an addiction toward an activity. Conversely, it is proposed that harmonious passion (a passion that remains under the person's control) is not associated with addictive behavior. This is because obsessive passion provides a compensatory mechanism that allows the individual to make up for what is missing in one's life whereas HP adds positivity to one's life. I present the results of numerous studies in the fields of drinking and drug use, gambling, video games, and physical activity that confirm these hypotheses. Finally, some directions for future research are provided.

Keywords: passion, harmonious passion, obsessive passion, addiction

PL-5

Clinical characteristics and treatment interventions for gaming disorder

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Background: Gaming disorder (GD) causes serious health and social issues. The global prevalence of GD is estimated to be around 3% and rising. Research on GD has been advancing, in response to this situation, particularly upon the inclusion of the disorder in ICD-11. However, research based on clinical samples is still limited. This presentation will cover various data derived from treatment seekers and will review existing literature on related topics. Method: Subjects are treatment seekers with problematic gaming usage who visited our center. Temporal profile of age distribution was analyzed, and information on clinical characteristics, including GD symptoms and comorbid psychiatric disorders, was obtained using semi-structured interviews and self-reported assessment instruments. For inpatients, the physical impact of GD was also assessed, comprising monitoring of physical strength and biochemical markers in the

blood. Results: There has been a steady increase in the rate of treatment seekers aged 12 years old or younger. Subjects showed relatively high rates of functional issues related to gaming. The concordance rate on diagnoses between ICD-11 GD and DSM-5 Internet gaming disorder was relatively high. The most prevalent comorbid disorder was attention deficit hyper activity disorder (ADHD), followed by autism spectrum disorder (ASD). There were GD-related symptoms that were better explained as being related to ADHD/ASD. GD was associated with low physical strength and aberrant data related to blood coagulation, pulmonary function and bone mineral density. Dynamic biochemical changes in the body occurred during the recovery process of GD. Conclusions: The results of our study have identified several potential future actions to improve our understanding and treatment of GD.

Keywords: gaming disorder, clinical characteristics, comorbidities

PL-6

Gambling and addiction in the eyes of Chinese people

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Many Chinese people regard problematic and uncontrolled gambling as merely a misconduct but not a disease. In both the mainland and Macao, where is the only city in China operating casinos legally with the world's largest gambling revenue, empirical data were collected for investigating how those common beliefs (i.e., illness representations [IR]) about gambling disorder relate to Chinese people's gambling-related cognitions/behaviors. Guided by the Common-sense Model (CSM), an experiment was conducted to test whether activation of the threat would lead to more cognitive resource (i.e., attention) to the information related to gambling disorder. We further conducted surveys to provide empirical support that the multi-dimensional measure for IR (i.e., the Revised Illness Perception Questionnaire) was applicable to behavioral addictions, including gambling disorder. Major dimensions of IR (e.g., timeline cyclical, treatment control, and emotional representations) were replicated for gambling disorder in our Chinese samples. Moreover, we examined whether and how these IR were associated with risk of gambling disorder. For example, our behavioral data gave evidence for significant an association between IR and risk taking via the Balloon analogue risk task. Our survey data also revealed four different IR groups varying in gambling patterns, using latent profile analysis. These data support extending the application of CSM to preventive and treatment programs for gambling disorder in Chinese people.

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

PL-7

WHO panel discussion - How to take advantage and avoid risk for public health approach to behavioral addictions?

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(Introducer: Hae Kook Lee; moderator: Chul Jung Kim; panelists: Marc Potenza, John Saunders, Vladimir Poznyak, Kristiana Siste, Sang Kyu Lee, Joel Billieux)

Since the incorporation of the Behavioral Addiction section into the ICD-11 in 2019, the WHO has taken the lead in orchestrating public health initiatives targeting health issues stemming from behavioral addictions. Throughout this process, diverse concerns have been raised by both academic and industry stakeholders. However, these engagements have facilitated the healthcare and public health systems to strategize effective responses to this emerging health challenge. The COVID-19 pandemic is over, but the current mental health status has deteriorated due to prolonged infectious disease stress, social distancing, and the ensuing economic panic. These mental health problems can be closely related to the increased behavioral addiction problem as access to digital platform-based entertainment, which emerged as an alternative during the COVID-19 period, rapidly increased. Therefore, in this session, the moderator and panelists share their most updated opinions on "Can public health strategies for behavioral addiction, which is emerging as a health problem in a new era, be an appropriate strategy?" and "What needs to be done to properly intervene?"

Keywords: ICD-11, behavioural addiction, mental health, public health approach

SYMPOSIA AND PARALLEL SESSIONS

S-1A1

Recent updates in Gaming Disorder treatment and brain-based mechanisms

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Keywords: Gaming Disorder, treatment, gaming, addictive behaviours, review

S-1A2

Treatment for gaming disorder: An overview of the evidence

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Background: The evidence for treatments for problem gaming and gaming disorder has greatly increased over the last two decades. This work has informed treatment services for gaming and Internet-related problems, with specialist centres across countries including Japan, South Korea, China, Germany, the United Kingdom, United States, and Australia. This presentation will discuss treatment approaches for gaming disorder and summarise recent developments in the evidence base. *Methods:* This talk will draw from case reports, commentaries, and reviews, including systematic and meta-analytic reviews, on gaming disorder treatment, with a focus on recent work. This will include some reflections on the practical challenges presented by the COVID-19 pandemic to treatment services. *Results:* The evidence base is growing steadily, as more clinical trials have been published in recent years. Cognitive behavioral therapies have received the most attention and appear cautiously regarded to be the most effective approach. There are unresolved questions concerning the optimal length of treatment (e.g., number of sessions), the nature of longer-term gains (i.e., durability of treatment response), comparability of individual versus group therapy, and implications for comorbidity (e.g., depression, anxiety, and ADHD). *Conclusions:* The formal recognition of gaming disorder in the ICD-11 reflects the clinical realities of individuals and families in need of interventions to address problem gaming. Although there have been improvements in the overall evidence base for GD treatment, particularly for CBT, there remains a need for funding and resources to support further clinical trials to develop models of best practice for problem gaming treatment.

S-1A3

(Internet) Gaming Disorder: Brain mechanisms and implications for treatment development

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Background: The DSM-5 and ICD-11 constructs of internet gaming disorder (IGD) and gaming disorder (GD), respectively, have facilitated identification and treatment efforts related to problematic gaming. Nonetheless, studies supporting empirically validated treatments are scarce. Improved understanding of brain-behavior relationships related to IGD/GD should help promote treatment advances. *Methods:* Treatment-related and neural data on IGD/GD will be presented. Studies considered will include neuromodulatory and behavioral approaches that consider brain-behavior relationships. Findings will be placed within the context of theoretical frameworks. *Results:* Neuroimaging studies suggest involvement of cortical-striatal circuitry in IGD/GD. Neuromodulation of the dorsolateral prefrontal cortex in individuals with IGD has been linked to alterations in regulation of emotion and craving, suggesting that prefrontal control over emotional states and motivational drives may help people with IGD. Training to link negative emotions with gaming and positive emotions with non-gaming activities has been associated with reduced compulsivity and alterations in cortical functioning, including in the insula and fronto-striatal paths. Gender-related differences in cue-reactivity suggest that approaches may operate differently in males and females. *Conclusions:* The use of brain imaging may help advance intervention efforts in IGD/GD, with a goal towards progressing to personalized approaches.

S-1A4

Treatment of gaming disorder in Japan

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[2]Tokiwa Hospital

Background: The prevalence of probable gaming disorder (GD) among young people in Japan, based on a representative group of 10-29-year-olds, was estimated to be 5.1% in 2019 and rising. In this study, we have attempted to clarify the current situation on treatment responses for GD. *Method:* We conducted four surveys to identify: 1) specialist treatment medical facilities for GD, 2) characteristics of treatment seeking patients, 3) treatment programs and issues related to treatment at these facilities and 4) facilities for child and adolescent psychiatry. *Results:* Responding to the increasing demand for treatment, the number of medical facilities providing specialist treatment has steadily grown to approximately 90 in 2020, but even this has been insufficient to meet demand. A further survey has revealed a three-fold increase in the number of patients visiting these facilities between 2015 and 2019. Patients with GD, who

are unable to access these facilities have few options other than to visit child and adolescent psychiatrists or pediatricians without relevant expertise in addiction treatment. Indeed, almost 90% of child and adolescent psychiatrists anticipate treating increasing numbers of patients presenting with GD as their primary complaint. *Conclusions:* To tackle increasing problems associated with GD, concerted efforts are necessary, including increasing the number of treatment facilities capable of providing high quality treatment, capacity building of professionals, and expansion of social resources supporting the recovery of GD. This will require the collaboration of the relevant stakeholders and more proactive governmental leadership.

S-1A5

Can playing Dungeons and Dragons be good for you?
Tabletop role-playing games to mitigate social anxiety and reduce problematic gaming

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Background: Gamers with poor self-concept, high social anxiety, and high loneliness are at risk of problematic involvement in massively multiplayer online role-playing games (MMORPGs). There is a research gap concerning treatment approaches to cater to socially anxious MMORPG gamers with problematic patterns of gaming involvement. This study tests the feasibility and initial efficacy of a structured protocol in which socially anxious online gamers are exposed in offline social skills and exposed to real-life social interactions while playing a tabletop role-playing game. *Methods:* The experiment lasts 10 weeks and involves 10 sessions organized within 3 modules in which participants play the tabletop role-playing game Dungeons and Dragons. Each module deploys one written role-playing scenario designed to challenge the players in game terms, as well as to involve them in a story based on maturing relationships with other characters and on solving challenges by social means and investigation. Our study uses an experimental single-case design with multiple baselines across groups (4 groups of 5 gamers with problematic MMORPG use and social anxiety) and a 3-month follow-up. Outcomes assessed include social skills, self-esteem, loneliness, assertiveness, and gaming disorder symptoms. *Results:* Ethical clearance has been obtained. Results are forthcoming as data collection will conclude in July 2023. Results will be available at the time of ICBA2023. *Conclusion:* Our proof-of-principle study has the potential to provide pilot data that are likely to be used to develop new types of interventions that may be more accessible and engaging for persons having a problematic involvement in MMORPGs.

S-1B1

Treatment experiences of gambling disorder in Korea

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In 2000, I established gambling clinic at Kangbuk Samsung Hospital in Seoul. I have been treated above one hundred pathological gamblers per year (total above 1,000 persons). I'd like to discuss the clinical characteristics of gambling disorder patients in Korea and also make public about treatment experiences focused on 8 weeks group session based on CBT, modified to fit our clinical situation. At the first visit, the patients are interviewed and also taken semi-structured interview for investigating comorbid disease. Based on this interview, pharmacotherapy is recommended to the patient. If I considered the patient as an excitement-seeking type gambler with high urge, than I usually selected an anti-craving agent, such as naltrexone. The mood stabilizer or antidepressant (mainly SSRI) have been often used based on comorbid disease or symptom. I usually recommend individual or group cognitive behavioral therapy (CBT) according to the motivation and preference of the patient. If possible, I recommend all patients to take part in Gamblers Anonymous (GA). Our CBT is composed of 8 sessions (every week) and one family session. Each sessions are entitled as follows: 1. Introduction: what is addiction? Self-introduction. Why do the gambling disorder patients refuse to receive treatment? 2. Common cognitive distortion and cognitive restructuring. 3. Advantages and disadvantages of gambling. Opening financial problems: financial debt and emotional debt. 4. Resolution of craving: Avoiding high risk situation and relapse. 5. Gambling related personality problem. Self-respect training. 6. Relationship with family members. 7. Stress management and communication strategy. 8. Termination: My life after 10 years; letter for myself and my family. The initial stage is focused to provoke the motivation. The middle stag is focused to the alternative activities instead of gambling. And the latter stage is focused to new life after discontinuing gambling. During 2000 to 2012, about two hundred PG finished group CBT, and drop-out rate was less than 10%. After 8-week CBT, the follow up treatment is done continuously at the out-patient clinic, with averagely single visit per a month.

Keywords: gambling disorder, clinical experience, group therapy, CBT

S-1B2

Treatment of gambling and gaming disorders in Japan

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In tandem with the legalization of casinos in Japan, the Japanese government established the Basic Act on Measures against Gambling Addiction in 2018, which marked the true start of the treatment response for gambling disorder (GBD) in Japan. The extent of the treatment gap for GBD is a serious issue in this country. The main treatment modality is a CBT-based program, and a standardized program developed by our center has been widely used in the clinical context. The results of a recent multi-treatment center study on the effectiveness of GBD indicated favorable treatment outcomes. Consultation services provided by mental health and welfare centers, which have been established in each prefecture and in large cities in Japan are gradually expanding. Similarly, while the number of facilities providing recovery support is limited these are gradually increasing. Back in 1989, Gamblers Anonymous was launched in Japan and is now available throughout the country. Unlike GBD, a basic act has not been developed or even considered for gaming disorder (GMD). While the number of facilities providing specialized treatment has constantly increased since 2011, this has failed to keep pace with the growing demand. Moreover, these facilities are unevenly distributed and concentrated in urban areas, limiting access for many people. Various treatment programs have been developed, including CBT-based day-treatment, inpatient, and camp programs. At our center, capacity building for treatment experts has been undertaken since 2014, with support from the government. To tackle increasing CMD-related problems, concerted efforts are required by a range of sectors.

Keywords: gambling disorder, gaming disorder, treatment

S-1C1

Comparing general self-esteem and self-esteem related to video game use in the development of problematic gaming

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Introduction: Unfolding the individualized experience during gaming is essential to achieve a better understanding of how video gamers value and perceive themselves in different settings. In this study, we aimed to shed light on the self-esteem construct in everyday life versus self-esteem in gaming and examine its relation and variation across different psychological characteristics, personality features, and gaming-related variables. *Method:* An online survey was administered to 14,740 video gamers (Mage=24.14 years, SDage=7.0, 89.3% males) in 2020. A series of one-way analyses of variance were conducted to assess differences between reported self-esteem scores in everyday life and gaming using the original and adjusted Rosenberg Self-Esteem scale, respectively. *Results:* Video gamers that scored low on self-esteem in everyday life but high on self-esteem in gaming endorsed more gaming disorder and attention-deficit/hyperactivity symptoms, as well as depression symptoms, spent more time gaming, tended to choose multiplayer online games, and their motivation to play reflected the wish to escape the real world and immerse in a virtual one. In addition, they showed elevated levels of competitiveness and lower sociability. The combination of having low self-esteem both in everyday life and in gaming demonstrated a similar adverse trend, although remarkably milder. Discussion and *Conclusion:* The current findings highlight the differences between general self-esteem and self-esteem related to video game use and emphasize the need to distinguish between different types of video gamers and consider risk propensity to decrease the likelihood of gaming becoming a harmfully compensating activity.

Keywords: self-esteem, problematic gaming, gaming disorder, video games, risk propensity

S-1C2

Problematic gaming, social withdrawal, and escapism: The Compensatory-Dissociative Online Gaming (C-DOG) model

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Background: The ICD-11 recognized Gaming Disorder as a persistent pattern of uncontrolled gaming that impairs functioning in various domains. From a process-based perspective, problematic gaming has been described as a push toward compensatory in-game behaviors motivated by psychosocial and emotion regulation difficulties. In this context, escapism has emerged as a main reason for immersion in virtual experiences and, in association with dissociative processes, a key construct sustaining problematic gaming. This echoes the recent sociological observation that social isolation is the preferred way through which post-modern individuals express distress. However, current understanding of escapism in videogames is inadequate and lacks a consistent theoretical framework. Method: critical review of literature on compensation, dissociation, and escapism. *Results:* Adopting an environmental view on gaming, we hypothesized a continuum between compensatory and dissociative involvement in gaming that corresponds to the degrees of connection/rupture between physical and virtual environments, and related parts of individuals' self. In this perspective, compensatory gaming is characterized by a homeostatic connection between the physical and the virtual environment, whereas dissociative gaming is determined by the disruption and discontinuity between the two environments and the respective parts of consciousness, memory, identity, and body representation. *Conclusions:* Examining existing frameworks and measures, three qualitatively different psychological processes could operationalize the continuum: Active Escapism would represent the psychological movement of the compensation; Escape/avoidance would hold an intermediate position while Pathological Dissociation could stand for the extreme disconnection between physical and virtual selves. Future implication of the model for research and clinical practice will be discussed.

Keywords: problematic gaming, gaming disorder, dissociation, escapism, escape, compensation

S-1C3

How gaming passion contributes to the definition and diagnosis of problem gaming: A combined person-centered and supervised machine-learning analysis

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Even if for most people playing video games is a non-problematic leisure activity, a minority of users show excessive use associated with negative consequences (e.g., addiction symptoms, psychosocial maladjustment, sleep interference) and functional impairment. The current study first aimed to identify psychological factors that contribute to discriminate highly involved (but healthy) gamers from problematic gamers. To this end, we used a cluster analytical approach to identify different groups of gamers (i.e., clusters) based on their profiles of passion towards gaming (using the Dualistic Model of Passion). Second, the present study explored, using supervised machine-learning, how gaming disorder symptoms, assessed within the substance use disorder framework (e.g., tolerance, withdrawal), might be linked to harmonious and/or obsessive passion for gaming. Symptoms related to harmonious passion should not be considered as gaming disorder symptoms. Three distinct clusters of gamers were identified based on their passion profiles, including potentially problematic gamers, engaged gamers, and casual gamers. Based on supervised machine-learning algorithms the results suggest that specific gaming disorder symptoms (salience, mood modification, tolerance) are predominantly related to harmonious passion, whereas others (withdrawal, conflict, relapse) are more directly related to obsessive passion. Our results support the relevance of person-centered approaches to the treatment of problematic gaming.

Keywords: gaming disorder, obsessive passion, harmonious passion, impulsivity, gaming motivations

S-1C4

In Real Life: Gaming typologies and their association with problematic gaming and health outcomes

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Online gaming accounts for the biggest share of the digital media market, generating ~US$21.1 billion in 2020. Engagement in this popular pastime has only increased in light of COVID-19. While most gamers report positive outcomes associated with online gaming, many experience problems. Online game styles can vary, and various individual factors can predict problematic gaming. It is important to understand how these factors can be healthy for some, but unhealthy for others. To identify who may be susceptible to problematic gaming, this study aimed to: (1) develop typologies of gamers based on their boredom proneness, escapism, and coping style, and (2) compare these typologies on problematic gaming and health-related variables to determine their association with negative effects. Cross-sectional survey data were collected (N = 913) and K-means cluster analysis was performed to establish the gamer typologies based on eight subscales of the trait measures for boredom proneness, escapism, and coping style. A three-cluster model was produced: Low Problematic Gamers, Average Problematic Gamers, and High Problematic Gamers. High Problematic Gamers were characterised by the highest boredom proneness, escapism, and disengaged coping. High Problematic Gamers experienced worse health-related outcomes when compared with other clusters, despite engaging in similar gaming behaviours to Low Problematic Gamers. This study is the first to identify distinct gamer typologies that differ in relation to problematic gaming and health outcomes. The findings convey the importance of an engaged coping style and highlight a risk of pathologizing adaptive behaviours with addiction measures of problematic gaming.

Keywords: Internet Gaming Disorder, coping, escapism, online games, problematic gaming outcomes

S-1C5

The effect of motivations on playing between MMORPG and RTS players in Taiwan: the results from a cross-sectional study

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Until today, literature indicated the effect of the type of game and motivations for playing were significantly related. However, a small study examined the differences in these motivations for playing between MMORPG and RTS players. Therefore, the purpose of the present study was to compare MMORPG players, RTS players, and other game players in terms of time for playing, motivations about enjoyment, flow, positive attitudes, and intention to use among MMORPG, RTS, and other games. *Methods:* A cross-sectional study was conducted. We recruited 175 participants from websites or social networking sites. They were asked to complete the questionnaires about time for play and motivations for playing (flow, positive attitudes, enjoyment, and intention to use). *Results:* our results found that a higher proportion of MMORPG players reported playing games for at least 2-3 hours, and RTS and other games did not have significant differences. Then, we found substantial differences in the motivations about flow, enjoyment, positive attitudes, and intention to use among the three groups and significant differences in positive attitudes between MMORPG players and other games. *Conclusions:* unexpectedly, the no significant differences in motivations between MMORPG players and RTS players. The effect of social functions could be compared with the three groups further.

Keywords: motivation, MMORPG, RTS, the time for play

S-1D1

Prevention policies for gambling and gambling-related harm in Italy: A survey among gamblers and mental health professionals

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Background: Gambling disorder is an increasing phenomenon worldwide. To date, many international governments have adopted restrictive measures to contain and prevent the transition from social to problematic behaviours. The aim of this observational, cross-sectional study was to explore the views from both gamblers and mental health professionals on prevention strategies for GD and gambling-related harm. *Methods:* A questionnaire was disseminated in gambling halls, online, and in outpatient and inpatient units. The only inclusion criterion was to have gambled at least five times in the last year. The questionnaire investigated views about a wide range of preventive strategies for gambling and related harm proposed by different European governments. The sample was then subdivided in people with GD, transitioning/problem gamblers and non-problem/social gamblers according to the South Oaks Gambling Screen (SOGS). Data from mental health professionals were collected with a different questionnaire disseminated through an online survey. *Results and conclusions:* A total of 261 active gamblers were included in the study. Seventy-nine of them could be classified as participants with GD. The most helpful preventive policy according to gamblers was the creation of exclusion registers. The differences between the groups were not significant apart from a proposal regarding the possibility of inserting betting limits, limitations of opening hours for gambling halls, and the fixing of minimum distances between gambling halls and meeting centres. Data from professional workers confirmed the relevance of exclusion registers and showed the importance of adequately informing people about the risks of gambling.

Keywords: gambling disorder, prevention, harm reduction, survey, epidemiology

S-1D2

Pictograms to aid laypeople in identifying the addictiveness of gambling products (PictoGRRed study)

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Background: The structural addictive characteristics of gambling products (SACGP) are important targets for prevention, but unintuitive. We aimed to develop pictograms that illustrate the main SACGP and to assess their impact on identifying the addictiveness of gambling products (GP) by laypeople. *Methods:* We conducted a 3-step study: (1) use of a Delphi consensus method among 56 experts to reach a consensus on the 10 SACGP to be illustrated by pictograms and their associated definitions (P+AD), (2) development of 10 P+AD, and (3) study in the general population to assess the impact of exposure to the P+AD (n = 900). French-speaking experts from the panel assessed the addictiveness of GP (n = 25), in which the mean of expert's ratings was considered as the true value. Participants were randomly provided with the P+AD, or with a standard slogan, or with neither (control group). We considered the control group as representing the baseline ability of laypeople to assess the addictiveness of GP. Each group and the French-speaking experts rated the addictiveness of 14 GP. The judgment criterion was the intraclass coefficients (ICCs) between the mean ratings of each group and the experts, reflecting the level of agreement. *Results:* Exposure to the P+AD doubled the ability of laypeople to assess the addictiveness of GP (ICC = 0.28 vs. 0.14 (Slogan) and 0.14 (Control)). *Conclusions:* Laypeople have limited awareness of the SACGP. The pictograms developed herein represent an innovative tool for universally empowering and selective prevention.

Keywords: gambling, prevention, structural addictive characteristics, pictogram, risks, addictiveness

S-1D3

Gambling prevention in schools: A focus group study

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Gambling problems are an evolving issue with students and youth. Many new forms of gambling such as online gambling, esports betting, and skins trading have changed the landscape of how students gamble. Students who participate in gambling-like activities have a higher chance of developing gambling problems later in life than those who are not exposed to these activities at a young age. School-based prevention programs for gambling have the potential to reach young people who are susceptible to gambling problems. This qualitative focus group study aimed to inform future gambling prevention programming in schools.

Methods: This study used a client centered approach using focus groups with adults who currently experience problems with gambling. Problematic forms of gambling, online gambling, and the convergence between video gaming and gambling was explored. Transcript data was analysed using Braun & Clarke (2006) thematic analysis. *Results:* Strategies for prevention and intervention of problem gambling for students are discussed under two main themes: 1) youth-related interventions and 2) gambling-related messaging. Recommendations made by the participants will be discussed. Discussion and *Conclusions:* Findings uncovered in this study can be applied immediately to gambling prevention interventions in schools. Further government-related concerns raised in this study call for accountability for student protection, especially in the climate of increased convergence between gambling and video gaming.

Keywords: gambling, prevention, youth, focus groups, gaming

S-1D4

Efficacy of a product-centered gambling harm prevention program for adolescents and youth in educational settings

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Background: Gambling prevention programs usually require large investments of time and resources that hinder their generalized implementation in real environments. This study aims to examine the relative effectiveness of two brief interventions focused on providing information on the risks and harms associated with gambling products. *Method:* 450 participants were randomly assigned to either an interactive methodology condition (n=238; 56.7% men) or to a psychoeducation condition (n=212; 61.8% men). Both groups received a single 50-minute intervention session. Although both interventions had the same content, the first condition used trivia games and group discussion interactive tools, while the second used an expository methodology. Measurements of gambling attitudes, misconceptions, knowledge, and intention were taken at three moments: pre-intervention (T1), post-intervention (T2), and one-month follow-up (T3). Additionally, specific gambling behaviors were recorded at T1 and T3. *Results:* Participants in both conditions showed a decrease in gambling frequency, amount of money spent gambling, problematic gambling symptoms severity, and misconceptions at follow-up. They also showed stronger beliefs about the lack of profitability of gambling and increased knowledge about probability and functioning of gambling products (all p values <0.001). Bayesian analyses provided moderate to strong support for this overall effect (All BF10 >10), as well as for the lack of between-group differences in efficacy (All BF10 <0.3). *Conclusions:* Informing adolescents and young adults in one session about risks and harms of gambling products in educational settings could be useful in modifying both gambling behavior and cognitive moderator variables underlying problem gambling, regardless of the methodology used.

Keywords: gambling prevention, gambling harm, educational institutions

S-1E1

Behavioral addictions trajectories in adult patients with attention deficit hyperactivity disorder (ADHD): A one-year follow-up 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 showed a high comorbidity between substance-related disorders, behavioral addictions (BAs) and ADHD. However, on a few data exist on the natural trajectories of BAs in ADHD patients. Thus, the of this study is to investigated the trajectories of BAs in a sample of adult patients with ADHD treated with methylphenidate and longitudinally assessed before treatment and after 1 year of treatment. *Methods:* 17 adult ADHD outpatients consecutively recruited at the Brain Center Firenze were assessed at the baseline (before starting methylphenidate) and at one-year follow-up on both ADHD and behavioral addictions symptoms. ADHD symptoms were assessed through a clinical scale (the Barkley Adult ADHD Rating Scale-IV) and a neurocognitive test (the Continous Performance Test – III, CPT-III). 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 analyses showed that BAs symptoms (especially internet addiction symptoms) seem to improve over a one-year follow-up period in a sample of pharmachologically-treated ADHD patients. Conclusion: treating ADHD seem to improve also BAs comorbidities. However, future larger studies should better investigate the exact impact of ADHD pharmachotherapies on BAs.

Keywords: ADHD, behavioral addiction, methylphenidate, long-term outcome, internet addiction

S-1E2

Creativity in ADHD. Comparison of creative and non-creative subjects, in a sample of adult ADHD patients: clinical and neuropsychological characteristics.

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Background: Creativity is defined as the ability to create with the intellect, generating ideas that are both novel and useful. Previous studies indicate that creativity benefits from de-focused attention and reduced ability to ignore task-irrelevant stimuli in the environment. Thus, people who are easily distracted, such as those with ADHD, may be more creative than people who do not experience such symptoms. _Methods:_ in our sample of adults with ADHD, we defined creative people as those who have published books, short stories or screenplays, those who study or engage in art-related activities (visual arts, music, acting). We compared creative and non-creative ADHD based on demographic variables, psychometric and neuropsychological tests. Psychometric tests evaluated depressive symptoms, ADHD symptoms, presence of Behavioral Addictions. Neuropsychological evaluation assessed attention, executive functions (inhibitory and interference control and working memory. _Results:_ Our preliminary results show, in a sample of 176 adult ADHD patients, the presence of 12,5% of creative subjects of which 86% are women. The results of the comparison between creative and non-creative subjects in neuropsychological assessment will be presented. _Conclusion:_ ADHD is a debilitating disease, yet it also has some positive sides that need to be highlighted and investigated.

Keywords: ADHD, creativity, neuropsychology

S-1E3

Sex differences in longitudinal patterns of internet use and predictive factors among a general population sample of children and adolescents

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Background: Despite a growing number of research in the field of internet addiction (IA), our understanding of sex differences in the patterns of longitudinal changes in IA status and predictive factors for certain transitional patterns of IA remains lacking. _Methods:_ Data were prospectively collected in a general population sample of students aged 9 – 12 years in Japan for 2 years from 2016 to 2018. IA was assessed annually using the Young Diagnostic Questionnaire, and depressive symptoms and neurodevelopmental traits were assessed in 2016 alone. We employed latent transition analysis to identify transition patterns of internet use over the two years separately for boys (n = 2,736) and girls (n = 2,693). To identify if depression and neurodevelopmental traits could predict certain patterns of internet use status, multinomial logistic regression analysis was performed. _Results:_ The stability rates of IA class membership were 35.6% in boys and 61.2% in girls among students with IA status at baseline. The conversion rates from non-IA to IA status were 5.5% in boys and 6.5% in girls. Depression was associated with the "persisting IA" pattern in both sexes. Autism spectrum traits were identified as another predictive factor for this pattern only in girls. Hyperactivity/ impulsivity and depression were associated with the "conversion to IA" pattern in both sexes. _Conclusion:_ Girls were more likely to maintain IA status than boys. Addressing challenges with social communication and interaction in addition to depressive symptoms may play a critical role in altering the pattern of maladaptive internet use, especially in girls..

Keywords: internet addiction, latent transition analysis, child and adolescent

S-1E4

The Impact of Game Transfer Phenomena on cravings in IGD-ADHD adolescents

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Background: The adolescent prefrontal cortex, combined with ADHD, has even greater vulnerability to cravings (sugar, gaming, etc). Game Transfer Phenomena (GTP) may exacerbate these cravings in adolescents with comorbid Gaming Disorder (GD). GTP is defined as recurrent sensory or cognitive intrusions, such as seeing images or hearing sounds from games, changes in perception, or in self-agency. *Methods:* Two clinical cases of GD-ADHD diagnosed males, ages 14 (P14) and 15 (P15), demonstrated the influence of GTP on cravings to play. Measures include: GTP Scale, IGD-20, Conners Scale, daily reporting on cravings. *Results:* Both patients reported GTP events that had varying influences on cravings to play. Each patient's most frequently-occurring GTP event also triggered the most craving. For example, moving from dark to well-lit rooms after playing triggered visual hallucinations for P14, increasing their craving to play. P15's most frequent GTP was an auditory misperception of the "Victory" sound from Fortnite. This was triggered by their sibling's white noise machine, causing a "rush of excitement" and a strong desire to maintain this emotion. P14 and P15's reported cravings and incidents of parent discipline were positively correlated. *Conclusions:* Analysis suggests that GTP can induce cravings that are highly difficult for those with ADHD and GD to control. GTP presents as cue-induced craving, maintaining a dysfunctional cycle: Initial GTP experience, euphoric recall of gaming, craving to play, and then immediate, impulsive play. It is therefore crucial for clinicians to assess GTP in individuals with ADHD and GD to better understand and address these cravings.

Keywords: gaming disorder, ADHD, Game Transfer Phenomena, cravings

S-1E5

Management of Gambling Disorder with Attention Deficit Hyperactivity Disorder: A case report

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Gambling Disorder (GD) is becoming a concern in Indonesia. It's gained attention along with an increasing number of cases found, even though gambling is illegal. The prevalence of GD in Indonesia is 1%, online being predominant. This condition is reinforced by rapid growth and easily approved online loans. The management of GD in Indonesia is currently inadequate. Several challenges include difficulty in money management, non existed inpatient rehabilitation and government regulations that have not been able to suppress the practice of gambling. GD becomes complex when accompanied by psychiatric comorbidities. One of them is Attention Deficit Hyperactivity Disorder (ADHD) which has high comorbidity with GD. People with ADHD are more likely to experience GD with greater severity. The current case is a 23 years old single male with GD and ADHD. The patient has been on therapy for eight months with a frequency of once a week. During the therapy process, some difficulties were encountered resulting in three relapses. He shows non-compliance with some of the treatment agreements and financial restrictions are hard enough to apply. Cognitive Behavior Therapy was given but the outcome was unsatisfactory. He is on mindfulness therapy accompanied by cognitive therapy at present. Unfortunately, only a minimum of money management could be applied. Taking the current case as an example of the GD treatment approach, it is necessary to have national strategies to support gambling disorder management in Indonesia.

Keywords: gambling disorder, ADHD, mindfulness, cognitive therapy, psychosocial treatment

S-1F1

Lonely online: A social model of digital media addiction
A study in 21 countries

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Digital media addiction limits face-to-face communication, which can have negative effects on the subjective wellbeing of individuals. However, the effect of digital media addiction on subjective wellbeing has not been adequately explored, and it is recommended in the literature that the role of mediating variables related to social life should be investigated. These include loneliness and satisfaction with relationships. The current study investigated whether loneliness and satisfaction with relationships explained the link between people's digital media addiction and their sense of flourishing. A sample of 6,434 respondents from 21 countries (Mage = 25.92 years, SD = 9.78; 65.5% women) took part in a cross-sectional survey study. The study included a comprehensive evaluation of digital media addiction using several measures. The following scales were applied: the Adapted Mobile Phone Use Habits,

the Internet Addiction Scale, the Facebook Intrusion Questionnaire, the Phubbing Scale, the De Jong Gierveld Loneliness Scale, the Relationship Assessment Scale, and the Flourishing Scale. A two-level path analysis showed that loneliness and satisfaction with interpersonal relationships fully mediated the link between digital media addiction and flourishing on the individual level. This suggests that digital media addiction may affect flourishing only through its impact on loneliness and satisfaction with interpersonal relationships.

Keywords: digital media addiction, flourishing, loneliness, satisfaction with relationships

S-1F2

The Emergence of #SocialMediaAddiction in Indonesia: A nationwide survey

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Background: Worldwide, Internet and social media has shown vast growth in numbers over a short period of time from 3.42 billion in 2016, among 31% are social media users, to 4.54 billion in 2020, among 49% use social media. In Indonesia, a similar pattern with a highly significant number is seen with internet users increase from 175.4 million in 2020, with 59% are social media users, to 204.7 million in 2022, among an alarming 93% are social media users mostly aged from 18-34. This increase has many risks biopsychosocially including social media addiction. In spite of the potentially high risk of addiction, to date, there are no social media usage regulations in Indonesia. *Methods:* National-wide survey perform on the beginning of 2023 including college students through an online survey including demographic data including gender, social media usage, and the Indonesian version of Social Media Disorder Scale (SMDS) and focus group discussion. *Results:* The expected results will be prevalence of social media addiction and the demographic and pattern of social media usage pattern in Indonesia. *Conclusions:* The significant number of social media users in Indonesia may lead to an expected serious problem of social media addiction. Documentation of the pattern of social media usage and the issue of addiction nationwide may aid the government in developing policies and guidelines that can prevent and treat social media addiction nationwide.

Keywords: Social Media Addiction, Indonesia, college students, social media usage, nationwide survey

S-1G1

Dissecting the impact of addiction and suicide scenes of flourishing movies and drama series on the global audience

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Symposium summary: Binge watching is greatly popular during pandemic and persists until now. It has been reported that binge watching is a form of internet addiction as it causes significant impairments for those who fulfilled the criteria for behavioral addiction. This phenomenon is still a controversial topic for its inclusion to behavioral addiction. It is important to differentiate problematic and pathological binge watching. Asian drama fever further globalized the problem. We could not deny the effects they have to way of thinking or daily life of the watchers. Apart from that, the inclusion of sensitive topics, such as substance use disorder, gambling disorder, and suicidal behavior, affects daily behavior of the viewers. The content of the movie or drama watched might be used to educate people about a specific culture or topic. By knowing the attitude towards messages of those topics among global viewers, we may know the possibility and effectivity of utilizing the media for harm reduction program.

Keywords: binge watching; gambling disorder; harm reduction; alcohol use; suicide

S-1G2

The addiction of a new era: Down the rabbit hole of binge watching

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Background: During the Covid-19 pandemic, social isolation and lockdown, one of the activities that many people liked was watching Asian dramas. Some people watched the series too much just to fulfil their desires. There were some people who had negative consequences but still chose to watch it. According to definition binge watching is impulsive behaviour of the user consume one episode after the other, even completing a season of a web series at a time in order to curb curiosity. The study aims to determine the characteristics of binge watchers and explore the relationship between those characteristics with those in other behavioural addiction. *Methods:* A nationwide survey was conducted. It comprised of modified

version of binge watching addiction questionnaires and sociodemographic questionnaires. We promoted the survey using social media; and respondents with inclusion criteria of adults aged between 18 to 59 years, watched any drama series within the last 12 months, and had internet connection to fill in the online survey were included. *Conclusions:* Binge watching during the Covid-19 pandemic shows the characteristics of addiction. Further studies should be conducted to explore the impact of this behaviour on the daily activities of the watchers.

S-1G3

Attitudes towards scenes of substance misuse and suicide among global viewers of Asian drama

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The global rise of the "Korean wave" has been also through dramas, which are mostly spread on the Web and through streaming services which became dominant especially during the Covid-19 period. However, little is known about addiction to Korean dramas (K-drama), which might be an example of binge watching addiction.

South Korea has one of the highest rates of alcohol consumption and one of the highest rates of suicides. K-drama also presents messages about alcohol cultural norms, binge drinking, alcohol-related problems and suicide attempts beside harm reduction services as replacement drivers and hotline which located in places where people may commit suicides.

The purposes of the present study are as follows: (a) evaluation of the addiction to K-dramas among adults global viewers of K-drama; (b) examine the Attitudes towards messages of alcohol and suicides risks and harm reduction as reflected in K-dramas; (c) examine the differences in addiction to K-dramas and attitudes towards messages of alcohol and suicides risks and harm reduction between K-drama fans in Israel and Indonesia.

S-1G4

Utilizing popular media: Implementation of behavioral addiction harm reduction strategies in movies and dramas

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Watching drama series or movie is a recreational activity for most people in any cultures. Whether binge watching is included as behavioral addiction remains a controversial topic. As this phenomenon becomes more common worldwide after the pandemic, health practitioners might actually benefit from it. Scenes in movies or dramas are often very memorable. It could be possible that pathological behaviors, such as gambling and gaming, are reconstructed through the means. This study aims to determine the effectiveness of harm reduction strategies via movie or drama scenes. A survey was conducted consisting of sociodemographic questionnaire, Internet Addiction Diagnostic Questionnaire (KDAI), South Oaks Gambling Scale (SOGS), and Pittsburgh Sleep Quality Index (PSQI), as well as several questions related to video clips that was shown in the survey. The last part of the survey measured attitude towards behavioral addictions after watching the video clips. Harm reduction strategies involving movies and dramas are effective to increase the awareness of behavioral addiction's danger to oneself.

S-1H1

Compulsive cyberporn and relationships with coercive sexual manipulation: is there any risky association?

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Cyberporn seems to be more addictive than other classic porn supports (e.g. magazines). Beyond its addictive risk, it would be linked to the highlighting of sexual performances without consideration of relationships and human encounters. The literature showed associations between cyberporn and the attitudes, beliefs, and sexual preferences of its users. Women most exposed to porn videos appear to be more likely to normalize rapes and violence against women. Research demonstrated that users of pornographic material are more likely to commit sexual assault. These observations invite us to think about Rape Myths Acceptance (RMA), sexual consent, and their place in the practices of compulsive cyberporn users.

This study aimed to explore links between compulsive cyberporn use, RMA, and Relationships with Coercive Sexual Manipulation (RCSM), committed and endured, in a cyberporn users sample. The sample was constituted of 1584 participants (1000 men; 557 women; 27 non-binary). Participants were assessed using Compulsive Internet Use Scale adapted to cyberporn use, Acceptance of Modern Myths about Sexual Aggression scale, and Sexual Experiences Survey. We used Student's t-test, Bravais-Pearson simple correlations, Spearman correlations, and Mann-Whitney test. Results showed that compared to men with no committed RCSM, men with committed RCSM presented more compulsive cyberporn use and greater RMA. Women with committed RCSM presented more RMA and no difference in cyberporn use compared to women with no committed RCSM. Participants with endured RCSM did not present any difference compared to those with no endured RCSM.
These results reveal links that should be more investigated through sexual and psychological variables in future research.

Keywords: cyberporn, compulsive cyberporn, rape myths acceptance, relationships with coercive sexual manipulation

S-1H2

Online sex addiction and its dimensions: A network perspective

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Background: This study aims to explore the dimensions of online sex addiction from a network theory perspective, that is, how Craving, Loss of Control, Mood Management, Conflict, Tolerance, and Withdrawal symptoms are mutually interconnected, and which experiences and behaviors bridge the symptom clusters. *Methods:* 2,518 adult internet users (Mage = 32.73; SD = 9.62; 73.2 % males) filled out the Short Internet Addiction Test Adapted to Online Sexual Activities (s-IAT-sex; Wéry et al., 2016) that captures the Craving and Loss-of-Control dimensions. Additional 15 items were developed measuring Mood Management, Conflict, Tolerance, and Withdrawal symptoms. A network model was estimated based on 27 items. *Results:* Craving and Loss of Control were highly interconnected, while other dimensions formed unique clusters except for Conflicts and Tolerance. The need to seek sexual stimuli elsewhere when lacking access to sexually oriented sites bridged Tolerance and other Withdrawal symptoms with s-IAT-sex. No edges between the Conflicts and Mood Management clusters were identified, while getting into trouble with the law because of online sexual activities was linked to the tolerance cluster. *Conclusions:* The network perspective represents a promising framework for explaining the internal structure of sex-addiction-related experiences and for testing the items that may ameliorate existing sex-addiction scales. We identified new items capturing addiction symptoms that are not included in the s-IAT-sex and that have the potential to broaden the outreach of sex addiction measurement toward key symptomatology.

Keywords: sex addiction, network theory, behavioral addiction symptoms, measurement

S-1H3

Cyberporn use and Rape Myths Acceptance: Are we dealing with risky associations?

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The literature reported links between pornography and Rape Myths Acceptance (RMA). The most exposed participants to pornography would be desensitized by its content and minimize rape and violence against women. Studies associating cyberporn use and RMA remain

scarce. Few studies have linked compulsive cyberporn use to RMA, or to attraction to particular pornographic images, or to moral incongruence related to cyberporn use. This study aimed to explore links between RMA and compulsive cyberporn including arousing pornographic styles and pornography moral perception (moral incongruence) in a cyberporn users sample. The sample comprised 1584 participants (1000 men; 557 women; 27 non-binary). Participants completed the Compulsive Internet Use Scale adapted to cyberporn use, Acceptance of Modern Myths about Sexual Aggression scale, and answered questions about their amount and frequency of use, preferences, and moral perception of pornography. We conducted Bravais-Pearson and Chi-Square correlations, k-means non-hierarchical clustering, and Student's t-test. We identified two types of cyberporn user, "low-risk" and "high-risk". Compared to the low-risk group, the high-risk group had higher rape myth acceptance scores, were more aroused by scenes depicting domination, humiliation, submission, and young people, had higher compulsive cyberporn use scores, spent more time and had more frequent use of cyberporn. Analysis showed that men in the high-risk group had a stronger negative moral perception of pornography than men in the low-risk group. We also found that some pornographic styles had stronger associations with compulsive cyberporn use and RMA. The present study provides current data on cyberporn use and its association with RMA. Further studies should explore variables mediating these relationships.

Keywords: cyberporn, compulsive cyberporn, Rape Myths Acceptance

S-1H4

Compulsivity and Porn Recovery – Challenges for Adolescents Education Programs

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Background: A program aimed at reducing problematic pornography amongst Year 10 students was conducted between August 2019-March 2020. It was observed that that those with higher levels of compulsivity struggled to change viewing frequency, despite an increased desire and effort to do so. This study aims to examine how the compulsivity factor in pre and post intervention analysis relates to levels of student pornography viewing, as well as other causal factors behind their viewing behaviours. *Methods:* Structured Equation Modelling was used to explore the mediating effect compulsivity had on the relationship between negative attitudes to pornography and viewing frequency. Correlation analysis between compulsivity levels and potential causal factors were also explored. *Results:* Multiple-regression analysis showed that compulsivity had a very strong influence on pornography viewing. SEM pathway analysis confirmed that the significant direct effect that compulsivity had on pornography viewing offset the direct effect any increased negative attitudes (about pornography) had on actual pornography viewing (in post intervention subjects). Additionally, data

supports the case that compulsive pornography use meets similar conditions identified in the DSM-5 for Internet Gambling Disorder, qualifying it as an actual behavioural addiction. *Conclusion:* Compulsive behaviours impeded efforts to reduce pornography viewing in some students, limiting the potential effectiveness of education programs to change behaviour. Other preventative strategies, including therapies targeting addictive behaviours, to support adolescents with pornography behaviour problems, should be explored

Keywords: compulsivity, pornography, adolescent

S-1H5

Scrutinizing problematic sexual behavior and pornography use: A clinical case from a Global South country and narrative review

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Background: Problematic pornography use (PPU) is becoming an alarming issue even in Indonesia, with unique behavioral concerns than compulsive sexual behavior disorder (CSBD). Here a case study and a narrative literature review are presented to identify differences between PPU and CSBD from a Global South perspective. Methods: A case presentation and systematic literature searches in PubMed and Scopus. *Results:* Mr. A, 32 years old, had uncontrolled sexual impulses with multiple extramarital partners, resulting in marital instability and personal distress. He was diagnosed with CSBD, which was remitted after therapy. Subsequently, he began consuming online porn with initial satisfaction but shifted to negative reinforcement. The behavior was accompanied by intense craving that heightened after erotic stimuli, irritable mood upon failure to access porn, preoccupation (e.g., fantasizing about porn when playing online games), diminished control (e.g., during work), and multiple deception attempts. Evidence suggests that PPU, particularly online, shares differences with substance addiction but highly overlaps with addictive behaviors, which was not evident for overall CSBD. These shared theoretical underpinnings include impulsivity-to-compulsivity transition, cue-reactivity, craving, and cognitive inflexibility. The overlap extends further to comparable neurobiological activation during resting-state and post-stimuli. However, others have contended the lack of tolerance and withdrawal aspects and proposed CSBD as more of a sexual health disorder. *Conclusions:* The behavioral transition of Mr. A highlights potentially distinct perceptions between sexual activities and porn consumption. The illustrated PPU portrayed core addictive behavioral mechanisms. Additional empirical studies are pivotal in elucidating PPU and CSBD nosology.

Keywords: pornography, sexual, addiction, compulsive, nosology

S-2A1

Aspects of diversity in compulsive sexual behaviour disorder and problematic pornography use

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Symposium summary: With the inclusion of Compulsive Sexual Behavior Disorder (CSBD) in the eleventh revision of the International Classification of Diseases (ICD-11), there is growing interest in the role of CSBD and problematic pornography use (PPU) in diverse samples. Diversity may include consideratioon of populations from outside of WEIRD (Western, Educated, Industrialized, Rich and Democratic) countries or studies extending beyond White, heterosexual men from the community. CSBD and PPU often co-occur with other disorders, and understanding better these relationships in clinical samples is important for optimizing treatments. The present symposium presents cutting edge examinations using multiple methodologies. Professor Marc N. Potenza will present findings from 1,273 individuals seeking treatment for opioid use disorder of whom close to 5% screened positive for PPU. Dr. Ewelina Kowalewska used functional magnetic resonance imaging and an Incentive Delay Task in 29 heterosexual women with CSBD and compared them to 20 heterosexual women without CSBD. Ms. Magdalena Wizła will present findings of three studies investigating links between perceived social support, CSBD, and PPU, with one study focusing explicitly on sexual minorities. Dr. Jannis Engel will discuss connections between compulsive sexual behavior and personality maladjustment in 47 men with CSBD and 38 matched healthy controls. Ms. Gretchen Blycker will present findings on the impact of CSBD/PPU on romantic relational systems. Collectively, these studies provide important innformation relevant to the phenomenology of CSBD and PPU, with implications for optimizing interventions.

Keywords: addictive behaviors, diverse samples, compulsive sexual behavior in women, co-occurring disorders

S-2A2

Problematic pornography use in individuals seeking treatment for opioid use disorder

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Background: The United States is experiencing an opioid epidemic. Opioid use disorder (OUD) often co-occurs with behavioral addictions like gambling disorder. However, little is known regarding the prevalence and correlates of problematic pornography use (PPU) among people seeking treatment for OUD. *Method:* From October 2018 to March 2020, 1,273 individuals seeking OUD treatment were screened for PPU by completing the Brief Pornography Screen (BPS), an instrument validated in clinical and community samples for assessing PPU across multiple jurisdictions. *Results:* Among the sample (mean age=37.9+10.5 years; range 18-73), 13.8% of individuals acknowledged some PPU symptomatology (BPS score > 1), with 4.3% screening positive for PPU (PPU+; BPS score > 4). Individuals screening positive for PPU (PPU+) versus negative (PPU-) scored higher on measures of impulsivity (total UPPS-P (20-item) score 43.0 + 8.8 SD: PPU+: 49.2 + 6.7; PPU-: 42.6 + 8.7 ($p<.0001$), with differences seemingly attributable to higher scores on positive urgency (PPU+: 10.3+2.9; PPU-: 7.8 + 3.1; $p<.0001$)), negative urgency (PPU+: 11.8 + 2.7; PPU-: 10.1 + 3.2; $p=0.0001$)) and sensation-seeking (PPU+: 11.2 + 2.9; PPU-: 9.5 + 3.1; $p<.0001$) forms of impulsivity. Additional measures assessing other clinical characteristics (e.g., related to pain, self-harm, trauma and other factors) are planned for presentation. *Conclusions:* Individuals seeking treatment for OUD often have symptoms of and screen positive for PPU. Among individuals with OUD, those with versus without PPU appear more impulsive, and the nature of this relationship (e.g., with respect to other clinically relevant variables including treatment outcome) warrants additional investigation.

S-2A3

Neural mechanisms underlying Compulsive Sexual Behavior Disorder among women

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Background: Majority of neural data on Compulsive Sexual Behavior Disorder (CSBD) comes from heterosexual, Caucasian male samples. Given the recent inclusion of CSBD in ICD-11, the insufficient knowledge of this problem among women, and increasing number of women reporting CSBD symptoms, greater research is needed to explore gender differences and similarities in neural and psychological mechanisms underlying this disorder.

Method: Using functional magnetic resonance imaging (fMRI) and Incentive Delay Task, we examined brain reactivity towards erotic and monetary stimuli among 29 heterosexual women with CSBD and 20 heterosexual women without CSBD. Before fMRI measurement participants took part in a structured clinical interview conducted by a psychologist, as well as series of self-report assessment including CSBD, sexual activity, anxiety, impulsivity, alcohol and substance use. *Results:* Differently than male populations who mostly struggle with compulsive pornography use, for majority of women with CSBD the dominant issue was engaging in casual sexual contacts, compulsive masturbation, and recurrent fantasizing. We analyzed BOLD responses to erotic and monetary cues in 12 regions of interests (ROIs) identified in previous research as differentiating males with CSBD form healthy controls.

Conclusions: During the presentation we will describe these findings along with self-reported data on sexual activity and trait-level variables collected over the clinical and questionnaire measurements preceding fMRI.

S-2A4

The relation of perceived social support, minority stress, and sexualized drug use to compulsive sexual behavior: evidence from 3 samples in Poland – convenience, nationally representative, and sexual minority

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Background: Previous research has shown that factors like the strength of social bonds can significantly influence sexual behavior. However, we lack studies investigating how social support contributes to Compulsive Sexual Behavior Disorder (CSBD) both in the general population, as well as in vulnerable groups. *Method:* We conducted three self-report online studies to investigate the links between perceived social support, CSBD, and problematic pornography use (PPU). In Study 1 (n1=807, convenience sample) we collected preliminary data; in Study 2 (n2=1526) aimed at results' replication in a representative adult sample. In Study 3, we focused on sexual minorities (n3=210) and additionally explored the role of minority stressors (internalized sexual stigma, discrimination experiences, and sexual orientation disclosure), and sexualized drug use (more prevalent in sexual minorities). In analyses, we adjusted for gender, age, sexual orientation, and sexual activity frequency. *Results:* In Studies 1 and 2, general social support protected against CSBD ($\beta1$=-.15, $\beta2$=-.10) and PPU ($\beta1$=-.12, $\beta2$=-.09, all p values ≤.001) The results for domains of social support, however, largely differed between the two studies. In Study 3, social support negatively predicted CSBD ($\beta3$=-.18, p≤.05, while experiences of discrimination ($\beta3$=.15, p≤.05) and sexualized drug use ($\beta3$=.32, p ≤.001) were risk factors for CSBD. Internalized sexual stigma ($\beta3$=.17, p ≤.05) predicted greater PPU severity. *Conclusions:* We provide evidence for the supporting role of perceived social support and minority stressors in problematic sexual behavior development both in the general population as well as in sexual minorities. Relationships require further exploration to design group-specific therapeutic interventions.

S-2A5

Personality dimensions of compulsive sexual behavior disorder

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Background: Compulsive sexual behavior disorder (CSBD) is characterized by recurrent, intensive, and excessive preoccupation with sexual fantasies, urges, and behaviors that can lead to clinically relevant levels of distress and adverse consequences for affected individuals. Earlier research has established a connection between sexual phenomena, such as compulsive sexual behavior, and personality features. The present study applied the dimensional approach of personality maladjustment presented in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) to connect compulsive sexual behavior to personality maladjustment. *Method:* We investigated 47 men suffering from CSBD and 38 matched healthy controls regarding personality maladjustment using a 100-item version of the Personality Inventory for DSM-5 (PID-5-FBF). *Results:* The men with CSBD showed higher levels of personality maladjustment regarding all PID-5-FBF domains (negative affect, detachment, psychoticism, antagonism, and disinhibition) and significantly differentiated from healthy controls in the level of subordinate facets. Furthermore, disinhibition was a significant predictor of CSBD. *Conclusions:* Personality maladjustment, especially disinhibition, is highly associated with CSBD. Thus, treatment of CSBD should focus on disturbances of interpersonal functioning.

S-2A6

Identifying Symptoms of CSBD/PPU in a Romantic Relational System

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Background: Symptoms and consequences of Compulsive Sexual Behavior Disorder (CSBD) or Problematic Pornography Use (PPU) may first emerge in a relational context, therefore an increased understanding of interpersonal experiences and dynamics in a romantic relational system warrants further investigation. Addictions not only impact the person suffering with the disorder, but also significant others. However, when the addiction involves the integral nature of sexuality there are significantly different and unique consequences that sets this dynamic apart from being intimate with a person with any other addiction or compulsive behavior. *Method:* This presentation will include a review of research focusing on pornography use and compulsive sexual behaviors and the effects on romantic relationships, including sexual and relationship satisfaction. Sociocultural influences which may contribute to the normalization of experiencing symptoms of CSBD/PPU in romantic relationships will be elucidated by research findings, as well as through clinical case examples. *Results:* Impersonal approaches to sex, devaluation of intimate sex and communication, a gendered pleasure and orgasm gap, empathy reduction, power and control dynamics, expectations for a partner's sexual compliance or avoidance of partner sex, and the blaming of the non-CSBD/PPU partner for sexual and relational problems are among the many symptoms identified in relational dynamics occurring with a partner with CSBD/PPU. *Conclusions:* More research is needed to explore the interaction effects between the addiction enabling phenomena of denial and dishonesty operating with the CSBD/PPU partner and relational dynamics. Future research assessing for CSBD/PPU may benefit by including collateral information regarding the relationship or partner's experiences.

S-2B1

Why is it important to respect age recommendations in video games?

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Background: Games are one of the great learning and educational tools, and in recent years, video games have proven their worth as well. However, excessive or inappropriate use of video games can lead to the manifestation of a persistent and dysregulated pattern of involvement associated with negative consequences and functional impairment. The adaptation of content according to age could be a key element in this regard, as some studies have associated patterns of problematic gaming with frequent and intensive use of video games designed for adults, as well as finding higher rates of bullying and cyberbullying among problematic consumers of games with adult content. *Methods:* An online survey was conducted among students in Compulsory Secondary Education in Spain with a sample of 41,507 adolescents (M = 13.81, SD = 1.32). Data were collected through an online survey: Sociodemographic questions, gaming habits and specific instruments for the screening of gaming addiction (GASA), bullying (EBIP-Q) and cyberbullying (ECIP-Q). *Results:* Relatively high rates of problematic gaming (3.1%), bullying (19.9%) and cyberbullying (12.2%) were found, in addition to detecting that 54.7% of adolescents who regularly play video games play titles labelled by the Pan-European Game Information as not recommended for under-18s (PEGI-18). On all three scales, the rates are significantly higher among those who play video games for adults, even tripling in early adolescence (12-13 years). *Conclusion:* From a public health perspective, our results suggest that video game content are taken into account in education and preventive actions.

Keywords: bullying, cyberbullying, PEGI-18, gaming

S-2B2

Relationship between Internet use and Internet addiction among children: The role of Internet literacy

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Background: With the increasing pervasiveness of the Internet, children's Internet use has increased exponentially. Due to the ongoing cognitive and social development processes, children are more vulnerable to Internet addiction, therefore the role of Internet literacy is increasingly recognized. In this study, a conceptual model was proposed to investigate the relationship between Internet use of different purpose and duration, Internet literacy and Internet addiction among children. *Method:* The present study was carried out with 2,276 children studying in primary, middle and high schools in East China. Sociodemographic characteristics, Internet use, Internet literacy scale and Internet addiction scale were used in the study. Descriptive statistics and structural equation modeling analysis were applied. *Results:* The model summary fit values showed that the proposed research model fit the data well. The results demonstrated a significant relationship between Internet use and Internet addiction. The duration of Internet use significantly, positively, and directly affected Internet addiction. With different dimensions of Internet literacy required, entertainment-oriented Internet use had positive impact on Internet addiction, while education-oriented Internet use exerted negative effects on Internet addiction. As for Internet literacy, knowledge and skills for Internet (positively) and Internet self-management (negatively) significantly influenced the likelihood of Internet addiction. *Conclusions:* The findings suggest that Internet overuse increases the risk of Internet addiction in children, while entertainment-oriented rather than education-oriented Internet use is addictive. The role of Internet literacy is complicated, with critical Internet literacy preventing the development of Internet addiction among children, while functional Internet literacy increasing the risk.

Keywords: Internet addiction, children, Internet literacy, Internet use

S-2B3

Does the use of mobile devices by preschool children differentiate their cognitive functioning?

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Aim: The project aimed to verify the relationship between the use of mobile devices by children aged 4-6 and their cognitive functioning (inhibitory control, attention and non-verbal memory). The ability to inhibit unwanted reactions is a key skill related to self-control and is often indicated as deficient in children using mobile devices at an early age.

Participants: 750 children aged 4 – 6 years old (equal distribution between age and sex), within which 600 children were using mobile devices with different frequencies and 150 did not use mobile devices. 750 parents (1 parent per child). *Materials (parents):* SCREENS-Q questionnaire adaptation (Klakk et al., 2020) *Materials (children):* The peanut task (Morra, 1994) measures non-verbal (visual) memory and The Child Flanker Task (Christ et al., 2011) measures inhibitory control and attention. *Results:* The use (and lack of it) of mobile devices does not differentiate the cognitive functioning of children ages 4-6. High screen times in children, Lower parental supervision, more frequent use to regulate child's emotions were significantly related to poorer cognitive functioning of children. Public health strategies should be focused on education of caregivers as competent and knowledgeable mediators for their children's media use and further development of habits, with focus on the need for children to have frequent parent–child interactions.

Keywords: mobile devices, children, cognitive functions

S-2B4

GamE: An e-Health intervention to self-manage gaming with an aim to prevent gaming disorder

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Background: There are limited evidence based interventions for management of gaming disorder. Moreover, interventions for prevention of gaming disorder are even rarer. Prevention focused interventions are known to be cheaper from a public healthcare funding perspective, decrease morbidity, enhance quality of life and well-being, increase the productivity of the workforce, and decrease the burden on the healthcare services.

About the intervention: GamE (Gaming disorder prevention E health intervention) is a digital intervention aimed at prevention of gaming disorder among students. The intervention is offered as a self- paced and self- directed activity. A total of four modules are included: basics of addiction; basics of gaming disorder; screening and identification of gaming disorder; and prevention and management of gaming disorder. Each module had its own set of such activities. *Focus of presentation:* The current presentation shall offer an overview of the intervention. It shall also offer information on the findings of the RCT where this intervention was tested among a set of students. The results of the RCT shall be shared. Also, the proposed plan for scaling up and dissemination of the intervention shall be shared at the conference. *Methodology:* The study participants were recruited from a university college. The participants were randomly allocated (non-blinded) to the intervention arm in batches of 10. The assignment to the intervention arm was carried out in a total of four waves (wave I-IV). The data were analyzed using SPSS version 20 (IBM Corp, Armonk, NY). The questionnaire results between the intervention arm and the waitlist control arm were compared using the repeated measures ANOVA with Greenhouse-Geisser correction. The effect size (partial $\eta2$) for the different domains were calculated. *Results:* The understanding of the concept of gaming, understanding of difference between gaming and gaming disorder, understanding of adverse effects associated with gaming disorder, understanding of screening of gaming disorder and self-help techniques of regulating gaming disorder increased more in the intervention group than control (all $p < 0.001$). The knowledge about gaming and gaming disorder significantly increased in the intervention group as compared to control ($p < 0.001$). The effect size of the intervention for these domains was in the range of small to medium.

Keywords: Gaming disorder, prevention, intervention

S-2C1

Experienced gratification and compensation as key mechanisms in specific addictive (online) behaviors

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Background: Beyond gaming and gambling disorders, problematic online buying/shopping, pornography use, and social-networks use are considered potential further disorders due to addictive behaviors. Current research aims to identify key mechanisms of these disorders to generates a better understanding of potential convergences and differences of these addictive behaviors. It is assumed that the experienced gratification of needs and compensation of deficits play a crucial role. We address the relevance of both components as well as their interplay with further reinforcement mechanisms in the development and maintenance of specific addictive (online) behaviors. *Method:* We used two newly developed questionnaires capturing experienced gratification and compensation. We surveyed more than 1000 participants who answered all questions regarding their preferred online activity. Moreover, constructs assessing craving experiences, use expectancies, person's characteristics, and symptom severity were used. *Results:* For all types of specific addictive disorders, experienced gratification and compensation were associated with symptoms of specific addictive behaviors. Moreover, the components were also linked to further affective and cognitive constructs such as experienced craving, use expectancies, and impulsivity as well as person's core characteristics, indicating an important role in the development and maintenance of addictive behaviors. *Conclusions:* The results highlight the importance of gratification and compensation in different online addictive behaviors. Future studies should identify specificities of the involvement of gratification and compensation in different addictive online behaviors as well as during the addiction process. The questionnaires should be used in longitudinal studies to shed light on the proposed shift from gratification to compensation during this process.

Keywords: behavioral addictions, problematic Internet use, gaming disorder

S-2C2

The effect of gratification, compensation, use expectancies and habits in the development of specific internet use disorders: Preliminary results from longitudinal data

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Background: The I-PACE model predicts that the interaction of gratification, compensation, use expectancies and habits are related to the severity of symptoms of specific internet use disorders, e.g. gaming disorder. We assume that over the addiction process, the level of experienced gratification decreases while the level of compensation increases, potentially leading to a habitual use of the internet application whereas avoidance and reward use expectancies have reinforcing effects. *Method:* We collected data (N=197), including a clinical interview in a laboratory setting (t1) with a subsequent 6-month follow-up survey (t2) for gaming, online shopping, social network use and online pornography use. Differences in gratification, compensation, use expectancies, habitual use and symptom severity were assessed for both time points (t1, t2). Additionally, we asked in t2 about a behavior change and treatment-seeking motivation within the last 6 months. *Results:* Overall, every main measure decreased from t1 to t2. About 14% sought professional help. The models of gratification, compensation, use expectancies and habits predicting symptom severity are similar in t1 and t2. Intra- and inter-subject measures show that a higher symptom severity of specific internet use disorders is accompanied by a higher level of avoidance use expectancies, lower level of gratification, higher level of compensation and a higher habitual use. *Conclusions:* Gratification and compensation play a central role in the process of developing and maintaining a specific internet use disorder. Therefore, coping with negative feelings and reducing the habitual use of internet applications may be beneficial approaches for interventions.

Keywords: specific internet use disorders, gratification, compensation, use expectancies, habit

S-2C3

Pavlovian-to-Instrumental Transfer and Outcome-Devaluation Effects in Internet Gaming Disorder

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Pavlovian-to-Instrumental Transfer (PIT) effect, described as the promotion or discouragement of instrumental behavior by appetitive or aversive Pavlovian conditioned stimuli, plays an important role in the development and maintenance of addictions. Substance use disorders studies have shown the behaviors of addicted individuals are more susceptible to the influence of Pavlovian cues than those who recreational use. The transfer may be related to stimulus-response associations that are insensitive to outcome value. Besides, incentive salience attribution makes addiction cues transformed into "wanted" stimuli that influence behavior. Evidence for PIT effects in Internet gaming disorder (IGD) remains insufficient. The adapted PIT paradigm in this study examined effect of monetary instrumental behavior by monetary Pavlovian cues (specific PIT effects) and internet game cues (general PIT effects). The behavioral changes following outcomes devaluation were measured. A total of 42 adults with IGD (18 females, Mage = 22.29 ± 2.96) and 38 healthy control (HC) participants (16 females, Mage = 22.92 ± 2.88) were included. The results showed participants with IGD have stronger specific PIT and general PIT effects, compared with HC. Specificly, inhibitory instrumental behavior of participants with IGD is affected by appetitive cues. The general PIT effect was only correlated with liking for game cues in HC group, which may reflect the separation between liking and wanting of addictive cues in participants with IGD. Although the devaluation sensitivity did not differ in the two groups, sensitivity was negatively correlated with the degree of addiction in participants with IGD. In conclusion, participants with IGD have a greater deviation in instrumental behavior than HC, which may be related to the development and maintenance of addiction.

Keywords: Internet Gaming Disorder, Pavlovian to Instrumental Transfer, Outcome Devaluation

S-2C4

Interrelation among severity of internet addiction, callous-unemotional traits and social anxiety in adolescents

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The purpose of this study was to investigate the interrelation among callous-unemotional traits including dark triad personality traits, social anxiety and the severity of Internet addiction (IA) in adolescents. PARTICIPANTS. 1134 adolescents, school students, 573 females (50.5%), the average age 16 ± 0.89 years (M $\pm$ SD). MEASUREMENTS. Chen Internet Addiction Scale (CIAS), Short Dark Triad (SD3), Inventory of Callous-Unemotional Traits (ICU), Liebowitz Social Anxiety Scale (LSAS), Brief Fear of Negative Evaluation Scale-Revised (BFNES-R), Positive and Negative Affect Schedule (PANAS). Data were analyzed using Mann-Whitney criterion and Spearman ratio. RESULTS. 62 participants (5.5%) had a minimal risk of IA, 953 participants (84%) had a moderate risk of IA, 119 participants (10.5%) had a high risk of IA. The total score of CIAS positively correlated with the lack of empathy and remorse (ICU, $p = 0,024$), the lack of emotional expression (ICU, $p < 0.001$), the tendency to manipulation and exploitation of others (SD3, $p < 0,001$) and tendency to antisocial behavior, impulsivity (SD3, $p < 0,001$). The severity of IA was positively related to the fear of negative evaluation (BFNESR, $p < 0,001$), the social anxiety (LSAS, $p < 0,001$) and the negative affect (PANAS, $p < 0,001$) Also the total score of CIAS negatively correlated with the insensibility towards others 'emotions (ICU, $p = 0,022$) and the positive affect (PANAS, $p < 0,001$). CONCLUSION. Improving ability to identify one's feelings, reduction of fear of negative assessment, maintaining positive affectivity can be specific targets of psychological intervention for IA

Keywords: internet addiction, callous-unemotional traits, social anxiety, adolescents

S-2C5

The Granada Assessment for Cross-domain Compulsivity (GRACC): A scale for the operationalization and measurement of compulsive behavior across activity domains

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Background: Although main theoretical models of addiction place compulsivity at the core of addiction chronification and maintenance, the behavioral addictions (BAs) scientific community is still far from reaching an agreement on how compulsive behavior should be defined and measured. This study capitalizes on neurocognitive learning theories to develop and validate a scale to measure compulsive behavior across activity domains. *Method and Results:* The Granada Assessment for Cross-domain Compulsivity was developed in three steps. First, a systematic review was conducted to identify different operationalizations of compulsivity in the field of BAs, and a pool of 90 items was selected to capture these operationalizations (GRACC90). Second, this 90-item scale was validated in two samples of people who regularly participate in gaming (n=319) and gambling (n=312) activities. The scale resulted to be unidimensional and structurally invariant across samples, and predicted gaming and gambling severity, poorer quality of life, and negative affect, to similar degrees in both samples. And third, the 18 items with the highest factor loadings were selected to formulate a brief scale (GRACC18). The GRACC18 was validated in the initial two samples, and with new samples of 356/304 individuals participating in gaming/gambling activities. *Conclusions:* The GRACC is a valid and psychometrically sound instrument to measure compulsivity across behavioral domains. It suggests that compulsivity is best defined by inability to resist strong urges, inability to cut the activity despite awareness of net imbalance between harm and reward, and interference and cognitive hijacking by thoughts and images of the problematic activity.

Keywords: gambling, video gaming, compulsivity

S-2D1

Development trend and lability in interpersonal relationships toward adolescents: linkages to internet addiction

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Internet addiction (IA) is a serious problem among adolescents. Based on previous studies, close relationships with significant others are considered as crucial developmental contexts for adolescent IA. Of note, interpersonal relationships are not static, but instead evolve and change over time. Beyond the overall rate of change in development trajectories, changes in interpersonal relationships also contain "ups and downs", characterized by within-person fluctuations, which is defined as lability. Decreases in interpersonal relationships may contribute youth to engage in risky behavior. Greater lability in interpersonal relationships may reduce youth safety feelings, thus, increasing risk behavior. In this study, links between changes of adolescent interpersonal relationships in four important domains (i.e., relationship with mother, father, peers, and teachers) and adolescent IA were examined. Whether these linkages are moderated by sex was also examined. A total of 824 adolescents (43.45% male; Mage = 15.76, SD = .61 at Wave 1) participated in questionnaire assessments at four time points. Controlling the demographic variables and the baseline of IA, results suggested that the decrease of peer-adolescent relationships and teacher-adolescent relationships was related to higher IA behaviors. Greater lability in peer-adolescent relationships was linked to higher IA. There was no significant moderation of the associations by adolescents' sex. Results revealed that the changes of school interpersonal relationships were important to the IA of youths. The findings highlight the role of interpersonal relationship changes in predicting adolescent IA.

Keywords: internet addiction, interpersonal relationships, adolescents

Association between recreational screen time and individual- and school-level factors among Japanese elementary school children: A multilevel analysis

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Background: Recreational screen time (RST) in children has become a national concern. We assessed the individual-level and school-level factors associated with prolonged RST in Japan. *Methods:* Toyama safety internet project was conducted in 2018. From 110 elementary schools in Toyama Prefecture, 13,413 children in the 4th-6th grades (Mean, 10.5 years old) joined. We distributed questionnaires and assessed their lifestyle, RST (not study use), social activities, and family rules. We defined 3 hours or longer RST as prolonged RST. Then, we calculated the school-level proportion of no family rules and divided it into 4 categories (0-20%, 20-30%, 30-40%, and 40%-). A multilevel Poisson regression analysis was performed. *Results:* Totally, 12,629 children were included in our analyses (94.2%). The prevalence of prolonged RST was 29.9% (34.7% in boy, 24.8% in girl) and the average school-level proportion of no family rules was 32.1%. The multilevel analysis showed that prolonged RST was significantly associated with individual-level factors, such as boys (prevalence ratio (PR)=1.40, older grade (PR=1.28), late bedtime (PR=1.78), physical inactivity (PR=1.33), frequent irritability (PR=1.56), infrequent child-parental interaction (PR=1.24), no family rules (PR=1.57), smartphone ownership (PR=1.19), and moreover, the analysis showed that school-level proportion of no family rules had the significant association with prolonged RST (PR=1.31 for 30-40%, and PR=1.45 for 40% or more, setting 0-20% as reference). *Conclusion:* Higher proportion of school-level no family rules seemed influential on individual prolonged RST. Increasing the number of households having family rules as well as addressing individual factors could be deterrent against prolonged RST in children.

Keywords: prolonged internet use, school-level factor, family rule

S-2D3

Internet availability and internet addiction: Patterns in China from 2003–2020

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Internet addiction (IA) has varied across countries and eras, but how it may relate to internet availability has not been well examined. The current study conducted a cross-temporal meta-analysis (k=182, n=244,513) to examine from 2003 to 2020 severity of IA and how it relates to gender and age in China. The results showed a pattern of increases in IA over time and these changes were statistically predicted by per capita gross domestic product (GDP), internet penetration, and time of internet per week. Gender-related differences in IA decreased over time, and it appeared related to more gender equality in internet penetration and use. In addition, college students had higher overall IA scores than secondary-school students, and that their IA scores increased over time, while secondary-school students' scores remained largely consistent. Findings support the availability hypothesis of IA. Implications for addressing IA are discussed.

Keywords: Internet addiction, addictive behaviors, China, availability, gender, cross-temporal meta-analysis

S-2E1

Integrating gambling prevalence surveys to understanding gambling related harm

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Gambling is an international phenomenon with substantial differences between countries in terms of regulation, types of gambling behaviour and minimizing gambling related harm. Jurisdictions have often sought to understand some of these issues individually by conducting gambling prevalence surveys, often using complex survey designs to ensure the data is representative of national populations. Although many of these surveys exist, they have not been used in tandem despite potential benefits to doing so. To utilise these to understand international predictors of gambling behaviour, we pooled microdata from gambling prevalence surveys from a number of different jurisdictions (e.g. United Kingdom, Canada, Germany, Finland, Germany, Australia, United States), to create an integrated dataset of gambling behaviour worldwide of several hundred thousand gamblers. We demonstrate the utility of this approach by conducting psychometric analyses of data from the pooled dataset, and using multilevel modelling to identify individual (e.g. age, gender, psychosocial risk factors) and cross-national (e.g. GDP per capita, cultural dimensions) predictors of gambling behaviour and harm. This reveals potential risk factors and structures that cannot be identified in individual datasets. These findings can be used to highlight circumstances that might make people more vulnerable to gambling related harm.

Keywords: gambling, international, gambling prevalence, risk factors

S-2E2

Large-scale web scraping for problem gambling research

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Background: Many people use online platforms to discuss mental health issues. The actual use of online forums might be less influenced by social desirability than self-report, and given the large amounts of data produced, observing online communication behaviour with computational methods may be a valuable approach to detect possible changes in prevalence and phenomenology of problem gambling. *Method:* To explore publicly available data for problem gambling research, we used web scraping to analyse posting behaviour on a major German gambling forum, gathering a database of more than 200k posts. Assuming that social distancing and lockdown measures following the COVID-19 pandemic altered gambling behaviour, for instance by pushing individuals to shift from land-based to online gambling, we analysed the usage of different gambling subforums including problem gambling, modelled reply latencies and changes related to the casino closures as part of the lockdown in Germany in 2020. *Results:* Comparing data from the first lockdown to the preceding weeks, we registered marked changes in number of users, usage of different gambling subforums and reply latencies, indicating a possible shift from land-based to online gambling during lockdown. We observed that many active users contributed at least once to the problem gambling subforum, showing that problem gambling is a widely discussed issue of concern. *Conclusions:* Finding event-related changes in online communication, we demonstrate the general feasibility of using publicly available data for problem gambling research. Observing online communication by using computational methods may thus be a valuable tool to detect early changes in problem gambling.

Keywords: problem gambling, online gambling, web scraping, COVID-19, lockdown

S-2E3

Harmful gambling among the military:
Risk factors and lived experience

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International evidence indicates that military personnel, including both those currently serving and veterans, have heightened vulnerability to harmful and problem gambling. Despite this, little is known about the prevalence of, and risk factors for, harmful gambling among the United Kingdom (UK) military. Moreover, even less is known about the lived experience of former and currently serving personnel in coping with an often-hidden problem. Here, we examined the associations between military service and mental health variables as predictors of problem gambling in age-and-gender matched samples of veterans (n=1,037) and non-veterans (n=1,148) and in a sample of currently serving members of the Royal Air Force (RAF; n=2,119). Follow-up interviews with service personnel revealed that alcohol use and gambling were common, with help-seeking impacted by perceived stigma and the need for secrecy. Many "didn't know where to turn". Past-year problem gambling rates were higher in veterans compared to non-veterans, and in RAF personnel compared to the general population. Gambling to cope with distress was significantly more likely among veterans, while those experiencing symptoms of anxiety and PTSD were at increased risk of gambling harm and levels of problematic alcohol use.

Keywords: gambling, harm, alcohol, anxiety, PTSD, military

S-2E4

Leveraging YouTube user engagement data for research on problematic internet use and gambling-like mechanisms

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Background: Internet platforms collect massive amounts of user data to generate revenue from knowledge about correlations between content and user engagement. Such data may, however, also be used for research on problematic internet use and gambling behaviour. *Method:* We used web scraping to collect publicly available data from German YouTube gaming channels and modelled user engagement based on likes and comments, and comment latencies. We analysed user engagement for gaming videos with and without loot box content, i.e. virtual objects in video games that are reminiscent of gambling, and potential changes in user engagement related to the lockdown in Germany following the COVID-19 pandemic. *Results:* We found higher user engagement with videos containing loot vs. non-loot content, and an increase in user engagement on gaming channels during the first lockdown compared to preceding weeks. *Conclusions:* Finding higher user engagement for loot content may be a reflection of the gambling-like properties of loot boxes, which are still being discussed and denied by most gaming companies. Detecting event-related changes in internet use behaviour during lockdown, demonstrates that publicly available user data may serve as an early indicator of potential changes in problematic internet use and gambling behaviour.

Keywords: gaming, gambling, loot box, problematic internet use, web scraping

S-2E5

Lived Experience in Gambling Research: Improving what we do

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Lived Experience can form a crucial part of any research project, however to date there is little in the way of a minimum standards framework for working with Experts by Experience (EBEs) in the gambling field. Our previous work has highlighted the when contributing to research, EBEs can often feel undervalued, inadequately supported from practical and technical perspectives, and forgotten about once a contribution has been made. As such, the standard of care and contribution to research from Lived Experience can vary widely across

research projects. Our aim is to work closely with a group of EBEs to develop and implement a Minimum Standards Framework (MSF) for all research engagement with Lived Experience. focusing on key areas including adequate remuneration, sufficient technical support, and proper aftercare. The MSF will then be applied to future funding calls from the Academic Forum for the Study of Gambling (AFSG). All projects, as part of an application, will be required to demonstrate how their proposed Lived Experience engagement meets with minimum standards framework. This talk will present a retrospective analysis on the process of the framework construction, and details of the agreed framework. We will also highlight the benefits of working within this framework. Lived Experience is fundamental to any research project - this will raise the standard of engagement which is ultimately beneficial for EBEs, researchers, and overall research quality.

Keywords: gambling, lived experience, disordered gambling

S-2E6

States Treaty, Corona and Trends in Online Gambling (STaCaTO): A study on website-traffic data

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Background: In Germany, terrestrial gambling venues were temporarily closed in context of Covid-19, furthermore the 2021 State Treaty on Gambling by and large legalised online gambling. Both factors have been supposed to promote online gambling. To examine if these assumptions hold true, our study investigates traffic data of gambling websites from 2019 until end of 2022. *Methods:* Daily traffic for selected Germany-wide accessible online gambling websites was operationalized via unique visitors and visits per visitor. Corresponding metrics were analysed using joint point regression to investigate potential trends with distinct turning points (i.e., changes in direction or slope). Turning points obtained were mirrored against timing of Covid-19 lockdowns and release of the State Treaty. By classifying the websites according to the type of gambling service offered, a differentiated and broadly comprehensive picture will be given. *Preliminary results:* Based on the preliminary sample of 236 websites, a slight increase in visits on gambling websites was observed. This increase was mainly driven by increased visits at sites for online casinos. A more resounding increase was observed in the visits per visitor regarding both providers of online casinos and of sports betting. There were no unambiguous associations with turning points and Covid-19 lockdown phases or the release of the State Treaty. *Conclusion:* Our study expands the sparse data available on trends regarding online gambling. Indeed, over the last three years interest in online gambling rose –

even though this increase was not necessarily driven by Covid-19 measures or changes in the legal framework. From a public health perspective, this trend requires future action as online gambling is considered a high-risk form of gambling.

Keywords: online gambling, pandemic (Covid-19), website traffic data, joint point regression model, time series

S-2E7

Prevalence of gambling disorder and its correlates among homeless men in Osaka City, Japan

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Background: Internationally, the prevalence of gambling disorder has been reported to be higher among homeless people than the general population; however, little is known about the correlates with gambling disorder in this population. The present study aimed to investigate the prevalence of gambling disorder and its correlates among homeless men using shelters in Osaka City. *Methods:* A cross-sectional survey was conducted from 30 December 2018 to 4 January 2019, using the 2017 Japanese National Survey of Gambling (JNSG) questionnaire, supplemented with questions about homeless experiences, drinking, and smoking. Using the South Oaks Gambling Screen, the presence of gambling disorder was determined by a score≥5 out of 20. Multivariate logistic regression was conducted to explore factors associated with lifetime gambling disorder. *Results:* Lifetime and past-year prevalence of gambling disorder among 103 participants was 43.7% (95% confidence interval [CI]: 34.5–53.3) and 3.9% (95% CI: 1.5–9.6), respectively, which are higher than the 6.7% and 1.5% found among men in the 2017 JNSG. Factors associated with lifetime GD included "more than 20 years since the first incidence of homelessness" (adjusted odds ratio [AOR]: 4.97, 95% CI: 1.50–16.45) and "more than five incidences of homelessness" (AOR: 4.51, 95% CI: 1.06–19.26). *Conclusions:* When homeless individuals with gambling disorder try to rebuild and stabilize their lives, gambling disorder may make the process difficult and pose a risk of recurring homelessness. Comprehensive support services for homeless individuals with gambling disorder are required.

Keywords: gambling disorder, homelessness, prevalence, associated factors

S-2F1

Cognitive deficits among patients with either gambling disorder or substance use disorders: A cluster analysis

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Background: Gambling disorder (GD) is a highly heterogeneous condition. Impairments in cognitive executive functions are common in GD, and may help to cluster GD patients. The aim of the present study is to profile patients with GD according to cognitive impairments, and to compare them to patients with a substance use disorder (SUD). *Methods:* Inclusion criteria were age 18-65 and diagnosis of either GD or a SUD (i.e., alcohol or cocaine use disorders). Exclusion criteria were severe psychiatric or neurological comorbidities. Executive functions were assessed using the Cogstate Brief Battery (CBB), a computer-based cognitive assessment used in clinical trials, healthcare, and academic research to measure neurological cognition, developed by Cogstate Ltd. *Result and conclusion:* The trial is still ongoing. To date 30 patients have been enrolled in the study. Preliminary data showed that patients with GD had more correct answers and faster response times at the CBB Maze Based Task. Patients with SUDs had a higher number of correct answers and faster response times at the CBB Card Based Task. CBB Continuous Paired Association Task showed an homogeneous number of correct responses among the two groups. A larger sample will allow to both cluster patients with GD according to cognitive impairments and to cluster patients with an addictive behaviour beyond their specific diagnosis.

Keywords: gambling disorder, executive functions, cognitive assessment, cluster

S-2F2

The comparison of patients with opioid use disorder and those with gambling disorder in terms of executive functions

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The aim of this study was to compare and evaluate the executive functions of patients diagnosed with opioid use disorder (OUD) according to DSM-V, who completed detoxification treatment, and patients with gambling disorder (GD) with healthy controls. It is also

aimed to contribute to a clearer understanding of the neuropsychology of addictions and to the development of addiction treatment plans. Our research was carried out in Alcohol and Substance Treatment Center of Erenkoy Psychiatric and Neurological Diseases Hospital. The study was conducted with a total of 150 participants, 50 male patients diagnosed with opioid use disorder, 50 male patients diagnosed with gambling disorder, and 50 male healthy control group. Sociodemographic Information Form, Beck Depression Scale, Beck Anxiety Scale, Brief Symptom Inventory were given to the participants to evaluate their clinical and demographic characteristics. In order to evaluate executive functions, Stroop Test, Wisconsin Card Matching Test, Tracking Test A and B form, Counting Forward and Backward Number Range Test, Verbal Fluency Test, London Tower Test from computer and Iowa Gambling Test were applied. As a result of the study, The scores of Stroop Test, Wisconsin Card Sorting Test (WCST), Digit Span Forward and Backward Test, Verbal Fluency Test, Trail MakingTest A and B section, London Tower Test and some parts of Iowa Gambling Test in Opioid Use Group, were lower than the scores of gambling disorder and healthy control group, It was found that there was only a negative and weakly significant correlation between the duration of gambling and the A section score of the Tracking Test. A negative and weakly significant correlation was found between the most recent daily use of opioids and the WCST 7 score. A weakly correlation was found between the last daily opioid use amount and the WCST 7 score. There was a negative weakly significant correlation between opioid use time and the number of corrections of Trail Making Test A, and a weakly negatively significant correlation between total opioid use time and the number of corrections of Trail Making Test A section. While there was a weakly positive correlation between the age of starting substance use and the number of errors of trail making test A and the age of starting opioid use and the scores of trail making test B/A; There was a weakly negative correlation between the age of starting drug use and digit span forward and sum of digit span forward and backward scores.

In the logistic regression models found to be significant between OPPD-COP groups, the risk factors that most predicted the diagnosis of OPPD were; WCST 1, ISM, Stroop D interference resistance time and SAT total letter perseveration score; In the models found to be significant between the OPPD-SC groups, the risk factors that most predicted the diagnosis of OPPD were; Stroop C, Stroop C spontaneous correction number and IST B-A time difference were determined. Neurocognitive features and related brain areas, which were affected by OUD-GD, and neurocognitive properties and related brain areas that were affected only in OPKB, were identified and recommendations were made to apply treatment modalities for them.

Neurocognitive features and related brain areas that are jointly affected by OPPD-COP groups, and neurocognitive features and related brain areas affected only in OPPD, were determined and recommendation were made for the application of treatment modalities for them. In the context of these findings, it is thought that adding cognitive rehabilitation programs to addiction treatments aimed at improving individual cognitive functions will contribute to the solution of addiction-related problems.

Keywords: addiction, gambling disorder, opioid use disorder, executive functions

S-2F3

Neural correlates of goal-directed control in internet gaming disorder and alcohol use disorder

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Background: An imbalance between goal-directed (model-based) and habitual (model-free) decision-making systems is a common feature in addictive disorders. However, little is known about whether similar decision-making deficits appear in internet gaming disorder (IGD). This study compared neurobehavioral features associated with model-based and model-free systems in IGD and alcohol use disorder (AUD). *Method:* Inside the functional magnetic resonance imaging (fMRI) scanner, individuals diagnosed as IGD (n = 22) and AUD (n = 22) and healthy control (HC; n = 30) performed the two-step task, a well-validated task for assessing the contribution of model-based and model-free systems in decision-making. We provided a mechanistic account of choice behavior using computational modeling and hierarchical Bayesian analysis. Then, we performed a model-based fMRI analysis to identify neural correlates of model-based and model-free prediction errors in each group. *Results:* Computational modeling results suggest that the model-based weights did not differ among the three groups. However, neural correlates of the model-based prediction error dissociated the IGD group from the others. The IGD group showed significantly lower activation in the right orbitofrontal cortex compared to the AUD group (t = –4.82, p < 0.001) and greater activation in the bilateral insula compared to the HC group (t = 4.66, p < 0.001). *Conclusions:* We found distinct neural mechanisms underlying goal-directed behaviors in IGD, compared to AUD and HC. This finding suggests that excessive gaming might entail aberrant decision-making processes.

Keywords: Internet gaming disorder, model-based decision-making system, computational modeling

S-2F4

Cocaine addiction, pathological gambling and l-dopa addiction: A common multidisciplinary rehabilitation approach

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One of the most productive aspects of a modern scientific approach is trying to learn and import information, and solutions from one topic to another, first finding a common point. Cocaine addiction, gambling and dopaminergic dysregulation syndrome in patients with Parkinson's disease, despite their clinical diversity, contain neurobiological circuits in common which allow us to adopt a perspective of shared rehabilitation strategy. In this project, we propose a multidisciplinary rehabilitative approach for 30 patients affected of cocaine addiction, pathological gambling and l-dopa addiction in people with Parkinson's disease, through a psychoeducational path combined with 12 neuromodulation sessions through transient current direct stimulation (TDCS) with 20 minutes of anodic right/cathodic left stimulation on the dorsolateral prefrontal cortex The selection criteria for the various categories of patients were: for cocaine addiction and for pathological gamblers diagnosis of according to DSM 5 criteria and active addiction; for patients with Parkinson's disease a positive Quiprs Questionnaire score for Dopamine dysregulation syndrome and a Levodopa Equivalent Daily Dosage over 600 mg/die. The psychoeducational path consists in focusing on the most dangerous individual trigger situations without implementing the addictive behavior, replacing it with personal and social resources. The integrated method is based on the Cognitive-Behavioral Therapy approach and in particular the exposure with prevention of the response Exposure/ Prevention) in imagination. As indicators of the rehabilitation process we have considered: the compilation of ad hoc diaries, the neuropsychological follow-up of executive functions and craving and biological markers.

Keywords: Cognitive-Behavioral Therapy, TDCS

S-2F5

Internet gaming disorder and Tobacco use disorder share neural connectivity patterns between the subcortical and the motor network

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Background: Internet gaming disorder and tobacco use disorder are globally common, non-substance-related disorders and substance-related disorders worldwide, respectively. However, whether Internet gaming disorder share common neurobiological pattern with the tobacco use disorder remains unknown. Recognizing the commonalities between Internet gaming disorder and tobacco use disorder will deepen understanding of the underlying mechanisms of addictive behavior and excessive online gaming. *Method:* Using node strength, 141 resting-state data were collected in this study to compute network homogeneity. The participants included participants with Internet gaming disorder (PIGD: n = 34, male = 29, age: 15-25 years), participants with tobacco use disorder (PTUD: n = 33, male = 33, age: 19-42 years), and matched healthy controls (control-for-IGD: n = 41, male = 38, age: 17-32 years; control-for-TUD: n = 33, age: 21–27 years). *Results:* PIGD and PTUD exhibited common enhanced node strength between the subcortical and motor networks. Additionally, a common enhanced resting-state functional connectivity (RSFC) was found between the right thalamus and right postcentral gyrus in PIGD and PTUD. Node strength and RSFC were used to distinguish PIGD and PTUD from their respective healthy controls. Interestingly, models trained on PIGD versus controls could classify PTUD versus controls and vice versa. *Conclusions:* The present study consistently demonstrates Internet gaming disorder share common neurobiological patterns with substance-related disorders such as tobacco use disorder. The present study discovered that the connectivity between the subcortical and motor networks is a potential biological target for developing addiction treatment in the future.

Keywords: functional magnetic resonance imaging, substance-related disorder, non-substance-related disorder, node strength, classification

S-2G1

The impact of stress and loneliness on gambling and gaming problems

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In today's society, it is easy to get stressed or feel lonely. There are also many diversions to cope with such sources of discomfort, which in turn can create problems of their own. While previous studies have established the links between stress, loneliness, and addiction, there is a lack of longitudinal research investigating how stress and loneliness together affect addictive behavior. This study intends to fill that gap by using multilevel hybrid models to analyze between and within effects of stress and loneliness on gambling and gaming problems. A representative sample of Finnish participants answered a survey in 6-month intervals between April 2021 and October 2022, 58.95% (n = 902) taking part in all four time points. Gambling problems were measured with The Problem Gambling Severity Index and gaming problems with the Internet Gaming Disorder Test. Perceived Stress Scale was used to measure stress, and 3-item UCLA Loneliness Scale was used to measure loneliness. Controlling for gender, age, mental health, living alone, and marital status, stress was found to have a significant positive between effect on both gambling and gaming problems, whereas loneliness had positive within and between effects only on gaming problems. These results imply that loneliness and stress affect gambling and gaming problems to different extent and therefore require different amounts of consideration when these problems are present. Focusing on these nuanced risk factors behind addictive behaviors could however be very helpful when dealing with emerging problems.

Keywords: gambling problems, gaming problems, loneliness, stress

S-2G2

Stress, gaming time, and problematic game use in adolescents: The moderating role of non-digital hobbies (NDHs)

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Stress is a well-known risk factor for adolescents' problematic game use (PGU; Maroney et al., 2019). A plethora of intervention programs for PGU have emphasized the importance of alternative leisure activities and/or hobbies to cope with stress (e.g., Peter, Ginley, & Pfund, 2020), but few empirical studies have directly examined whether those activities may mitigate the risk for PGU. Therefore, we aimed to examine the mediated moderation effect of stress, gaming time, and non-digital hobbies (NDHs) on PGU in adolescents. The partici-

pants were 1,453 adolescents (839 females) aged 11 to 15 (M = 12.15, SD = 1.07) in South Korea who responded to a set of self-report questionnaires via online. The results of PRO-CESS macro indicated that direct and indirect effects of stress on PGU via gaming time were both moderated by NDHs. Interestingly, the moderation effect of the variety of NDHs was only significant for the relationship between gaming time and PGU, but not for the relation-ship between stress and gaming time. Our results suggest that reporting a variety of NDHs may help adolescents become more "immune" to PGU by changing their lifestyle or attitude/motivation toward gaming, rather than reducing the time engaged in game use itself. In addi-tion, our findings provide empirical evidence that encouraging adolescents to explore NDHs may be an effective strategy that helps them use game as a useful coping method for stress without becoming overly dependent on it.

Keywords: problematic game use, gaming time, stress, non-digital hobbies

S-2G3

The dual protective role of mindfulness against both the stressfulness of negative life events and gaming disorder among male adolescents

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The significant relationship between stressful life events and gaming disorder was found in previous studies (e.g., Li et al., 2022). However, the role of mindfulness as a protective fac-tor in this context was not yet examined. The aim of this study was to examine whether the stressfulness of negative life events predicts gaming disorder and whether mindfulness is a protective factor against both the stressfulness of negative life events and gaming disorder. The study was conducted among 1075 male adolescents aged between 14 and 19 (M=15.46, SD= .65). The data were collected in the first wave of the StressLoad Project – Longitudinal Adolescent Stress Study in Croatia. The instruments used were Gaming Disorder Test (GDT, Pontes et al., 2019), Child and Adolescents Mindfulness Measure (CAMM; Greco et. al, 2011), and Negative Life Events Scale, which was constructed for the purpose of this study. The negative life events included events from different domains, such as health problems, bullying and abuse, relational problems, loss of a close person, and negative family events. In a structural equation model, with age and socio-economic status as control variables, the stressfulness of negative life events significantly predicted gaming disorder (β= .17, p<.001), and mindfulness was a protective factor against both the stressfulness of negative life events (β= -.44, p<.001) and gaming disorder (β= -.24, p<.001). Results suggest that mindfulness plays an important role in preventing gaming disorder, both directly and indirectly via pre-venting the stressfulness of negative life events.

Keywords: gaming disorder, negative life events, mindfulness

S-2G4

Insomnia severity as a mediating pathway of the association between adverse childhood experiences and internet gaming disorder in Chinese young adults

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Background: Adverse childhood experiences (ACEs) have been associated with internet gaming disorder (IGD) in early adulthood. But mechanisms remained understudied. We examined the associations among ACEs, insomnia severity, and IGD severity in Chinese young adults, and the potential mediating effect of insomnia severity was explored. *Method:* 1231 university students (54.5% male; 56.9% aged 18–20 years) who had played internet games at least once in the past month completed an online survey from December 2022 to January 2023. ACEs were measured using the 10-item ACE questionnaire (yes/no). Severities of insomnia and IGD were measured using the Insomnia Severity Index (score range 0-28) and the 9-item Internet Gaming Disorder Scale–Short-Form (score range 9-45). Multivariable regressions were used for examining associations adjusting for sex, age, maternal and paternal educational attainment, and monthly household income. Mediation analysis was conducted. *Results:* Mean scores of ACEs, insomnia severity, IGD severity were 1.3 (standard deviation [SD] 2.3), 9.1 (6.7), 24.9 (9.9), respectively. More ACEs were associated with higher severities of insomnia (adjusted b=1.03, 95% CI 0.87, 1.18, B=0.34) and IGD (adjusted b=0.78, 95% CI 0.55, 1.00, B=0.18). The association of ACEs with IGD severity attenuated after accounting for insomnia severity (adjusted b=0.23, 95 CI 0.01, 0.45, B=0.05). Insomnia severity partially mediated the association between ACEs and IGD severity (indirect effect: adjusted b=0.55, 95% CI 0.45, 0.66; proportion of total effect mediated:0.71, 95% CI 0.55, 0.98). *Conclusions:* Our results of the mediating effect of insomnia severity on the association between ACEs and IGD informed early screening and prevention programs of insomnia in Chinese young adults for reducing IGD risks.

Keywords: adverse childhood experiences, insomnia, internet gaming disorder, mediation

S-2H1

Addiction is a Symptom of a Spiritual Malady… Workshop regarding how to recover

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Addiction is a Symptom of a Spiritual Malady. Therefore, healing is spiritual. The workshop is based on my book, My Secret Life as a Sex Addict. I review the process that helped me heal from my addiction. At the end of several chapters, I pose questions to my readers that represent questions I would ask if I were their therapist. These are questions I reflected upon to achieve my healing. These questions and steps are universal to all addictions, not just sex addiction. Examples of questions I pose to the addict are the following: What were some childhood and teen memories that you have that formed your tastes, likes, dislikes, and attitudes toward sex, (or food, or alcohol, or gambling)? Do you ever make time and prioritize your addiction to the detriment of time with your family or job responsibilities? Are you more tired than you should be because you spend time on your sex addiction rather than getting sleep and rest? Do you try to act out your sex addiction in less risky ways while still feeding your addiction? Do you feel like you have more than your fair share of problems, struggles, and unfortunate events? Perhaps there is actually an order, reason, purpose, and greater good for these things even if you don't know why? Enter Higher Power/God/Universe What if you are subconsciously attracted these things thinking you needed to be punished for something? Taking responsibility. Do you re-create or gravitate toward similar sexual experiences like the ones that traumatized you as a child? There are more questions posed during the workshop. Then I review the steps to my recovery: 1. Admit I am powerless over the addiction and I need help to recover. 2. Talk with a therapist to analyze past traumas. 3. Put traumas and life's problems in the perspective of spirituality. This was meant to happen to learn certain lessons. Without a spiritual quest, there is no meaning in life. Accept your shadows and every past version of yourself. They made you, You. Since addiction is a symptom of a spiritual malady, the healing must be spiritual. 4. Declare victory over your addiction so that you do not live down to this label. This is in contrast to 12-step programs where you are an addict for life.

Keywords: female sex addiction, disordered eating, compulsive sexual behavior, binge eating, food addiction

S-3A1

A systematic review of cognitive functions in compulsive buying-shopping disorder

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Background: Compulsive buying-shopping disorder (CBSD) constitutes an increasingly noticed clinical phenomenon yet not included as a stand-alone diagnosis in ICD-11. Our aim was to systematically review experimental studies on cognitive functions in CBSD grouped by cognitive domains. Furthermore, evaluated studies were evaluated as (not) supporting the Interaction of Person-Affect-Cognition-Execution (I-PACE) model as a central theoretical framework for behavioral addictions. *Methods:* A systematic search in two databases (PubMed and Scopus) comprising compulsive buying-shopping related and cognition-related content was performed. *Results:* A final number of 26 articles was considered eligible. The studies were heterogeneous with respect to sample characteristics (i.e., predefined convenience or clinical samples) and cue material (i.e., neutral or shopping-specific cues). The studies on cognitive functions in persons with CBSD provide support for the concept of cue reactivity and mostly reveal disadvantageous decision making in persons with CBSD. However, convincing evidence for alterations in attention, cognitive flexibility, learning, memory, inhibitory control and Pavlovian to Instrumental transfer has not been found yet. Referring to methods, the number of fMRI studies to investigate neural correlates of CBSD symptomatology has increased in the last years. *Conclusion:* Whereas the evidence level for some cognitive functions, particularly cue reactivity and craving, is good and support the application of the I-PACE model to CBSD future research should focus on investigating cognitive domains currently underrepresented in the literature such as e.g., attentional bias and implicit associations. The methodological breadth and quality of the studies is increasing, but can still be expanded in order to capture cognitive alterations in CBSD as precisely as possible.

Keywords: compulsive buying-shopping disorder, cognition, behavioral addiction, experimental paradigm, I-PACE model

S-3A2

Cue-induced craving and inhibitory control in the context of Buying-Shopping-Disorder

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Background: Individuals with buying-shopping disorder (BSD) lose control of their buying behaviors and continue to buy despite negative consequences in daily life such as severe conflicts with others, indebtedness, and sometimes even delinquency. Nowadays, many individuals with BSD shop online. In analogy to behavioral addictions (e.g., gaming disorder), it is assumed that stimulus-induced craving and an associated response inhibition deficit are involved in development and maintenance of the disorder. The current study aimed at investigating craving reactions and response inhibition with a stop-signal-task (SST) in the Context of BSD. *Methods:* A cue-reactivity paradigm comprising online shopping-related and neutral pictures was applied in a predefined sample (N=49). To assess response inhibition a modified SST including the same pictures was administered. Symptom severity of BSD and craving reactions (at three points in time) were assessed via questionnaires. *Results:* Craving reactions and symptom severity of BSD are highly correlated. Moderated regression analysis reveals interacting effects of craving and response inhibition regarding symptom severity of BSD. Simple slopes indicate that in individuals with good inhibitory control and higher cravings show higher symptoms of BSD. *Conclusion:* The results underline the pivotal role of craving in the context of BSD and demonstrate that poor response inhibition is not necessarily interrelated with regard to symptoms of BSD. Given the high heterogeneity in clinical samples, the results suggest that there could be subsamples of patients in whom dysfunctional buying behaviors can be rather attributed to craving reactions and potential other mechanisms than to reduced response inhibition.

Keywords: buying-shopping disorder, behavioral addiction, impulsivity, inhibitory control, cue-reactivity

S-3A3

Differential correlates of pathological and impulsive buying

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One of the main causes of indebtedness is overspending because of excessive shopping. Across three Studies, providing cross-sectional and longitudinal data, we discriminated the two major kinds of excessive shopping: pathological and impulsive buying. Predominantly, pathological buying has been described as extreme and maladaptive form of impulsive buying. However, some research also has suggested that these two phenomena might be qualitatively different. Supporting the latter notion, the present research established discriminant validity. Moreover, the structure of the relation was best described by a nested-factor model with pathological and impulsive buying being orthogonal constructs. Thereupon, we propose, and empirically test, a common conceptual framework of similarities and differences, comprising predisposing factors, accompanying processes and long-term consequences, measured in a follow-up after two years. Pathological buying was associated with the more problematic side of consumers' psychological state, including psychopathology and dissocial personality features. Impulsive buyers prevailingly were materialistic and impulsive. Both phenomena shared impulsive affect-driven processes, especially a strong shopping-urge. However, they might be distinguished based on strategic cognition-driven processes. In particular, pathological buyers tended to follow a satisficing decision style, while simultaneously being indecisive. Pathological buying was not associated with exploratory shopping and brand loyalty, but impulsive buying was. Although both phenomena might be associated with overconsumption, only pathological buying was a predictor for severe financial vulnerability, including over-indebtedness. Remarkably, our results indicate that impulsive buying has no predictive value for pathological buying, neither cross-sectional nor longitudinal.

Keywords: impulsive buying, compulsive buying, structural equation model (sem), bifactor model

S-3A4

Do personality characteristics mediate the relation between life events and Compulsive Buying Shopping Disorder (CBSD)?

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Objective: Psychological processes involved in Compulsive Buying Shopping Disorder (CBSD) development require further researches. The first objective of the study was to better understand the relationship between traumatic events and the severity of CBSD, by testing the mediating role of self-esteem, motivations for buying, impulsivity, and materialism. The second aim was to explore the differences in the severity levels of CBSD and personality variables between three profiles of buyers: patients diagnosed with CBSD, buyers from the general population with CBSD or without CBSD. *Methods:* The sample consisted of patients recruited from the EVALADD cohort who consulted for CBSD (Pcbsd +) (n=26) and volunteers recruited through an internet-based survey, screened for CBSD (Vcbsd+) (n=25) or without CBSD (Vcbsd-) (n=150). They completed questionnaires assessing CBSD, life events, self-esteem, buying motivations, impulsivity and materialism. *Results:* Traumatic life events had a direct positive effect on the severity of CBSB and indirect effects were mediated by impulsivity (positive urgency), motivations (coping, enhancement, and social) and materialism (happiness). The two groups with CBSD (Pcbsd + and Vcbsd+) differed significantly from the Vcbsd- group on all variables. The Pcbsd+ and Vcbsd+ groups differed from each other in intensity of traumatic life events, level of sensation seeking, self-esteem, motivation for coping, and severity of CBSD. *Discussion:* Traumatic life events may influence the severity of CBSD directly or through personality variables. These personality characteristics may be the target of psychological interventions that may be of interest to favor the decrease of CBSD severity.

Keywords: Compulsive Buying Shopping Disorder, personality, traumatic life events

S-3A5

Treatment for Compulsive Buying-shopping Disorder – A systematic review

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Background: Compulsive buying-shopping disorder (CBSD) is characterized by impaired control over buying/shopping, an extreme preoccupation, and a strong urge to acquire goods. Increasingly more people are shopping online, partly due to the growth of the online market, leading to a shift from in-store CBSD to online-CBSD. Therefore, more attention should be drawn to the specifics of online-CBSD, which could also lead to a need for adaptation of existing therapeutic approaches. The aim of this study is to provide a systematic review of treatments for CBSD, with a focus on online-CBSD. *Method:* The preregistered systematic review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) checklist. The review included original research in scientific peer-reviewed journals published in English (1999-2022). The following databases were searched: PubMed, Scopus, Web of Science, and PsycInfo. Studies were selected in a two-step process: 1) 2 authors (NML, TAT) independently reviewed titles/abstracts, 2) two authors (AM, EG) independently reviewed full texts. *Results:* Thirteen studies were included: 6 psychotherapy (4 randomized controlled, 2 open) and 7 pharmacological studies (3 placebo-controlled, 4 open). All studies indicate stronger treatment effects on CBSD symptom severity in the cognitive-behavioral psychotherapy groups compared to the wait-list control groups. The effects of pharmacological treatment on CBSD symptom severity were high in open-label studies, but there was no superiority of medication over placebo in the three placebo-controlled studies. *Discussion:* None of the studies referred to a specific treatment of online-CBSD. However, it can be assumed that the results are transferable. However, future studies should distinguish which form of CBSD is present to determine differences and examine whether specific online-CBSD treatment is needed.

Keywords: Behavioral addiction, compulsive buying-shopping disorder, therapy, CONSORT, PRISMA

S-3B1

Evaluating the relationship between gender and technology-use disorders beyond the borders

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Symposium summary: Being a double-edged sword, the vast development of technology has resulted in a massive number of individuals suffering from technology-use disorders globally. Culture and gender differences may define the disparities in the profile of individuals with technology-use disorders, recognising them could improve treatment plans for individuals with these disorders. Sophia Achab from the Université de Genève will first talk on overview of gender challenges in the European public health system, alongside clinical contexts in tackling technology-use disorders, critical to understand how this disorder persists in first world countries, followed by Kristiana Siste from Universitas Indonesia, who will be presenting about internet addiction from a gender perspective and how it impedes treatment progression in Indonesia, taking the view of a low-middle income society. Satoko Mihara from Kurihama Medical and Addiction Centre will present the characteristics of women with gaming disorder and internet addiction in Japan, providing the perspective of a developed country in Asia, and Jiang Long from Shanghai Mental Health Center will discuss about public health considerations on gender differences of technology-use in China, a diverse country with a large population. Lastly, Janni Leung from The University of Queensland will present her research on the characteristics of women with gaming disorder symptoms in Australia, Canada, USA, and the UK – taking a global point of view. This symposium will bring upon novel prevention and treatment modalities to better address the outcomes of technology-use disorders and invigorate the urgency for further dialogues worldwide regarding gender-specific behaviours and their relationship with behavioural addiction.

S-3B2

Challenges and responses towards meeting care needs of women for technology-use in Switzerland

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Background: Technology-use is considered as a public health issue in Switzerland since early 2000 and many actions have been undertaken from health and socio-educational perspective. However, a big challenge facing currently the country is that of increasing access to treatment for women and meeting their care needs, whether as care givers or as service users. *Method:* An overview of Swiss public health response to technology-use and gender characteristics will be drawn from regular Federal public health reports, expert discussions and clinical research conducted and ongoing in the country. *Results:* Women are the main users of the healthcare system for technology-use of their relatives. In contrast, they use it to a smaller extent than men for themselves. Moreover, referrals are gender-oriented regarding the online content motivating care demand for technology-use disorders. Women have a range of specific needs for treatment which constitute barriers to seeking help for themselves. *Conclusions:* Heath systems should adapt to meet specific needs of women as mothers and partners of affected individuals by technology-use disorders. They should tackle as well the issue of treatment access for women suffering from technology-use disorders, building upon their specific preferences and care needs.

Keywords: women, technology-use disorders, treatment

S-3B3

Gender disparity in Internet addiction: Focus on the impediment of addictive behavior treatment and potential prospective remedies

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Background: Behavior addiction, such as Internet addiction (IA), is still nascent compared to substance addiction. However, in both research and clinical realms, there are practices of gender inequality that hinder progress. *Methods:* In this presentation, data will be presented from an Indonesian survey on IA focusing on the distinct patterns between males and females and considering factors particular to a low-middle-income country. Further, data from the national addiction clinic will be discussed against recent models of addictive behavior pathophysiology and recovery. *Results:* A prior Indonesian survey data indicated disparate

preferences and modalities of Internet use between males and females. Interestingly, Indonesian men had equal preferences for gaming and social media. The latter was not common in reports from the West or other Asian countries. Data from the national addiction clinic demonstrated a lower proportion of females seeking professional care, despite the similar prevalence in the community. These are influenced by the socially imposed gendered experience and stigma, further aggravated by neurobiological mechanisms unique to females. There is a lack of data pertaining to specific IA nature among females, although distinctive patterns had been observed for females with gambling disorders. These patterns may improve the provision of personalized and gender-sensitive care. *Conclusions:* Females experience similar risks to males for IA but present with a divergent pattern. There are observable barriers for females in accessing and receiving care. More studies that are solicitous to gender proportions while employing advanced analyses are required to promote understanding of genders differences and generate gender-tailored management.

Keywords: gender disparity, internet addiction, gaming disorder, social media

S-3B4

Gender differences in clinical characteristics of gaming disorder and internet addiction

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Background: Existing data has suggested that gaming disorder (GD) is strongly dimorphic by gender in terms of both its psychological features and the activity of different brain areas. However, data deriving from clinical samples are limited. In this study, we investigated gender differences regarding clinical features of patients with GD and/or internet addiction (IA) using data collected at a specialist medical treatment facility for both disorders in Japan. *Method:* The study subjects were 818 male and 104 female (total 922) treatment seekers who visited Kurihama Medical and Addiction Center between 2017 and 2022. The average age was 18.2 years old with an age range between 7 and 77 years old. Their clinical features were obtained by collecting medical and familial information, physical examinations, and semi-structured psychological assessment. Gender differences were preliminarily analyzed with regard to age, the severity of internet addiction, and the internet applications used. *Results:* Female patients were significantly older than male patients. The results of two screening tests for IA, Young's DQ and IAT, showed little difference between genders. Regarding internet applications, female patients played online games less often and used SNSs to a greater degree than male patients. With regard to smartphone games and offline games, gender differences were not observed. *Conclusions:* The results of preliminary analysis of our data suggested that females were older and regarding the service used, most males used online games, while females used a wider range of internet applications.

Keywords: gender differences, gaming disorder, internet addiction

S-3B5

Characteristics of women with symptoms of gaming disorder in Australia, Canada, USA, and UK – Findings from the 2022 International Gaming Study

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Background: Gaming disorder is a condition described in both the International Classification of Diseases (ICD-11) and the Diagnostic and Statistical Manual of Mental Disorders (DSM-5). Most research on gaming disorder has occurred in males. The prevalence and associated symptoms of gaming disorder among female video game players is largely unexplored. *Method:* The 2022 International Gaming Study (IGS22) is a cross-sectional survey of 955 participants, who play video games for 3 hours or more per week. Respondents are from Australia, Canada, USA, and UK (age range=18-94; M=46.10 [16.19]; n=431 female). The participants answered items related to their video game playing behaviour and completed the 10-item Internet Gaming Disorder Test (IGDT-10) to assess their symptoms of gaming disorder. *Results:* Proportions who met IGDT-10 cut-off in females (16%) were not significantly different to males (20%) who spent similar amounts of time playing. Frequency and intensity of use was linearly related to the meeting IGDT-10 cut-off. For females who played several times a day, 22% met GDT-10 cut-off. This increased to 32% for 4 hours a day on a typical weekday, 35% for three or more hours in one session daily, and 42% for 6 hours or more in one session daily. Over half (51%) of females who reported that they plan to become a professional video game player excessed the IGDT-10 cut-off. *Conclusions:* Women engaging in high frequency video game playing met similar thresholds of gaming disorder. Analyses are underway to examine differences between specific symptoms reported between men and women.

Keywords: women, gaming disorder, behavior addiction

S-3B6

Public health considerations on gender differences in technology use in China

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Health issues related to technology use are increasingly becoming a public health concern in China. The high prevalence is due to various factors, including the rapid development of technology in the country, the high penetration of the internet, and the lack of regulations and guidelines for technology use. In response to this growing problem, China has implemented many interventions to address technology-use disorders. There are gender differences in technology use. The literature suggests that men use technology for information-seeking, problem-solving, and decision-making tasks, while women tend to use technology for communication, socialization, and relationship-building tasks. Studies also found that men are more likely to be early adopters of new technologies, while women tend to be more cautious and wait until others have adopted a technology before using it. Moreover, research has suggested that women in China may be more likely to experience harassment and abuse online, which can negatively impact their mental health. Studies have found that males are more likely to develop internet addiction or gaming addiction than females. The difference may be due to various factors, such as cultural attitudes towards males and females engaging in technology-related activities and differences in interests and hobbies between genders. Addressing Health issues related to technology use in China will require a multi-faceted approach that includes education, regulation, and clinical interventions that take into account gender differences. In addition, it is also essential to consider cultural and societal factors that may contribute differently to the development of technology-use disorders in men and women.

Keywords: gender differences, technology-use disorders, behavior addiction

S-3C1

Online sex advances in the assessment and treatment of compulsive sexual behaviours

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Symposium summary: The inclusion of compulsive sexual behaviour disorder (CSBD) in ICD-11 drew attention to evidence-based treatment approaches. Unfortunately, recent meta-analyses show a scarcity of well-controlled treatment studies. Therefore, this symposium aims to present current developments in this area. In the first talk, Lewczuk et al. report on field-trial research in which the self-reported severity of CSBD, assessed by questionnaires, is compared with diagnostic assessments conducted by experienced clinicians. This study can be informative on most predictive questionnaire measures for CSBD diagnosis. In the second talk, Stark et al. present the results of several studies on the current care situations and therapy interests concerning problematic pornography use in Germany. The data clearly show a great need for treatment for this disorder, but the reality of care does not meet the demand. Next, Golder et al. will report the pilot results of a large care study called PornLoS, which compares the effectiveness of two intensive therapies with the goals of abstinence and reduced use. In the last presentation, Gola et al. will show the results of a double-blind, randomized intervention comparing paroxetine, naltrexone, and placebo in CSBD treatment. Using fMRI, changes in cue reactivity due to psychopharmacologic treatment were demonstrated. The symposium will conclude with an outlook on current issues and future directions.

S-3C2

Compulsive Sexual Behavior Disorder assessment and diagnosis – field trial study based on psychiatric interviews – design and preliminary results

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Background: Inclusion of Compulsive Sexual Behavior Disorder (CSBD) in ICD-11 have contributed to fast development of research on the disorder in recent years. However, we still lack studies involving treatment-seeking and clinical samples, focused on CSBD assessment & diagnosis according to the current ICD-11 guidelines. *Method:* The presented work is based on a field trial type study employing clinical interviews conducted by expert diagnosticians, with treatment seekers for CSBD. The treatment-seekers will be pre-screened with self-report assessment instruments before conducting the interview. During the semi-structured diagnostic interviews conducted online, expert diagnosticians will evaluate whether a particular participant manifests a clinically significant level of CSBD symptoms (taken the ICD-11 criteria) the specific characteristics and severity of symptoms, possible comorbid disorders and other CSBD-related variables. *Results:* The diagnostic reports provided by the expert diagnosticians will be subject to statistical analysis, and preliminary quantitative results will be presented (depending on the progress of the research project). Prior to diagnostic interviews, participants will also fill-out screening measures assessing CSBD, PPU (problematic pornography use) and related constructs, which will also be subject to quantitative analysis. *Conclusions:* In general, analyzed results will include CSBD and PPU symptom severity, CSBD comorbidities, moral disapproval of pornography, as well as related variables including trait-level variables like impulsivity and compulsivity.

Keywords: compulsive sexual behavior disorder; problematic pornography use; diagnosis

S-3C3

Pornography-use disorder: Current care situation and therapy interests in Germany

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Background: In different international studies, the prevalence estimates for compulsive sexual behavior disorder and especially for pornography use disorder (PUD) greatly varied, and aspects of care were not addressed. This present study aimed to estimate the prevalence of PUD in Germany, to identify the psychotherapy demand among PUD patients and the treatment supply in different psychotherapeutic settings, to survey psychotherapists' level of expertise regarding PUD, and to identify predictors for psychotherapy demand. *Method:* Four studies were conducted: First, an online study in the general population (n=2070; females 50.8%); second, a survey among practicing psychotherapists (n=983); third, a survey of psychotherapists in psychotherapeutic outpatient clinics (n=185); forth, interviews with psychotherapeutic inpatient clinics (n=28). *Results:* The prevalence of PUD was 4.7% (men: 8.3%; women: 1.3%) in the online study. Among PUD cases, 51.2% of men and 64.3% of women were interested in PUD treatment. Psychotherapists reported 1.2%–2.9% of PUD cases among their patients. 43.2%–61.5% of psychotherapists stated to be poorly informed about PUD. Only 7% of psychotherapeutic inpatient clinics provided specific treatments to patients with PUD. While, among other factors, negative consequences attributed to PUD were predictive of psychotherapy demand. *Conclusions:* Overall, the high interest in therapy, the low rate of patients in outpatient and inpatient treatment, the few offers of specific clinical therapy, and the low level of knowledge among therapists indicate a lack of treatment services. This indicates that there is a great need for treatment offers and the establishment of disorder-specific knowledge.

Keywords: pornography use disorder, psychotherapeutic care situation

S-3C4

PornLoS: Treatment of the pornography-use disorder

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Background: For the first time, the ICD provides the diagnosis of compulsive sexual behavior disorder (CSBD) in its 11th revision. To date, for the most common form of CSBD, the pornography-use disorder (PUD), there are hardly any randomized controlled trial treatment studies. Meta-analyses showed, that cognitive behavioral therapy is an effective psychotherapeutic treatment approach. Despite first promising studies, more methodologically rigorous and statistically well-powered studies are strongly recommended. Therefore, we developed a specific cognitive behavioral treatment intervention program (PornLoS), which includes individual as well as group therapy, and sexual counseling if needed. This program will be tested in the next four years in an RCT clinical study. *Method:* 237 patients with PUD will be randomly assigned to three treatment groups. The two experimental groups will receive the newly developed psychotherapeutic treatment but with the difference that the first group will have the goal abstinence from pornography use and the second group the goal of reduced, harm-avoiding pornography use. For the third group, a therapy-as-usual is planned. *Results:* The therapeutic components of PornLoS will be described in detail. The diagnostic and statistical approaches will be discussed and first results of a pilot study will be presented. *Conclusions:* The PornLoS project is an important step to improve the care situation for persons suffering from PUD through evidence-based psychotherapeutic interventions.

Keywords: compulsive sexual behavior disorder, pornography-use disorder, cognitive behavioral treatment

S-3C5

Neural changes after 5-month pharmacological treatment of Compulsive Sexual Behavior Disorder – Double blind fMRI study with paroxetine, naltrexone and placebo

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Background: Neural mechanisms of effective Compulsive Sexual Behavior Disorder (CSBD) treatment remain unknown. Recent studies show beneficial effects of pharmacological interventions with SSRIs or Naltrexone for individuals with CSBD. Given the inclusion of CSBD in ICD-11 we aimed to identify neural changes underlying improvement during CSBD therapy and advance knowledge of neural mechanisms of this disorder. *Method:* Using functional magnetic resonance imaging (fMRI) and Incentive Delay Task, we examined brain reactivity towards erotic and monetary stimuli among 73 heterosexual males with CSBD who were admitted for a 20-week double-blind and placebo-controlled randomized clinical trial. 24 were randomly assigned to paroxetine (20 mg/day), 24 to naltrexone (50 mg/day), and 25 to the placebo condition. fMRI recordings were collected before and after the 20 weeks of treatment. *Results:* We observed a significant effect of time on severity of CSBD symptoms using self-report questionnaires. Self-reported frequency of pornography consumption decreased over the time of treatment across all conditions and there was no difference between the conditions at any time point, nor an interaction of time and condition. We analyzed BOLD responses to erotic and monetary cues in 7 regions of interests (ROIs) identified in previous research as differentiating males with CSBD form healthy controls. *Conclusions:* We demonstrated that active treatment conditions result with decrease of BOLD response in the brain regions which were initially hyperactive for erotic cues, while placebo do not result in such a change of BOLD response.

Keywords: compulsive sexual behavior disorder; therapy; fMRI, double-blind RCT

S-3D1

Gaming patterns and mediators of problematic gaming in esports students

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Background: Underlying problematic gaming (PG) factors include dysfunctional gaming cognitions (DGC; e.g., gaming-based self-esteem, inflexible gaming rules, and overvaluing game rewards) and the Game Transfer Phenomena (GTP) (i.e., re-experiencing game content as cognitive intrusions, hallucinatory and dissociation-like phenomena after playing). DGC is comprised of rules of conduct or inflexible thinking patterns, unattainable self-expectations, and beliefs that influence attitudes and behavioral responses. *Methods:* A total of 292 high school students (male 83.4%, meanAge = 16.74) who participate in esports programs because they want to pursue an esports career, become rich or famous through esports (CM), and those who participate for other reasons were compared to examine their gaming patterns. Mediation analyses were performed to understand the role of DGC and GTP in the relationship between CM and PG. The measures used were the Problematic Online Gaming Questionnaire, GTP, and Internet Gaming Cognition Scale scores. *Results:* The students' motivations to enroll in eSports education included attending school, following friends, having fun, and skipping another course. The CM group showed significantly higher mean scores on time playing esports games, engagement in competition/gambling, PG (immersion, withdrawal, preoccupation, and interpersonal/isolation conflicts), DGC, and GTP. The relationship between CM and PG was partially mediated by GTP, whereas CM and PG were fully mediated by DGC. *Conclusion:* This study suggests the importance of identifying DCG and educating students about it, as it contributes to PG. High school eSports education can provide early guidance for balancing maladaptive gaming cognitions to promote a healthy and sustainable esports career.

Keywords: esports, gaming disorder, dysfuntional cognitions

S-3D2

Assessing celebrity effect in the eSports industry on emerging adults' gaming behaviors and gaming disorder in China

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Background: The largest eSports market in China has attracted many celebrity endorsements, and some of eSports players have become famous with numerous fans. Emerging adulthood can be a sensitive period for influences of celebrity culture. We aimed to quantify such celebrity effect on gaming behaviors and gaming disorder in Chinese emerging adults. *Method:* University students who had played internet games at least once in the past month were surveyed on the frequency of gaming motivated by celebrities and eSport players. Gaming behaviors included gaming time (hours/day; weekday/weekend) and gaming expenditure in the past month. IGD was measured using the 9-item Internet Gaming Disorder Scale–Short-Form (score range 9-45). Multivariable regressions were used for examining associations adjusting for sex, age, maternal and paternal educational attainment, monthly household income, and psychological distress measured using the 4-item Patient Health Questionnaire. *Results:* Of 1231 participants (54.5% male; 56.9% aged 18–20 years), the mean IGD severity was 24.9 (SD 9.9). Higher gaming time (weekday: adjusted b=0.20, 95% CI 0.15, 0.25, B=0.23; weekend: adjusted b=0.19, 95% CI 0.13, 0.24, B=0.20), and gaming expenditure (adjusted b=0.25, 95% CI 0.19, 0.30, B=0.23) in the past month were observed for higher frequency of gaming motivated by celebrities and eSport players. Such celebrity effect was linearly associated with IGD severity with medium to large effect size (adjusted b=4.62, 95% CI 4.37, 1.94, B=0.65). *Conclusions:* The associations of celebrity effect in the eSports industry with higher gaming time, expenditure, and IGD severity warranted longitudinal studies for causal inference.

Keywords: internet gaming disorder, celebrity effect, eSports industry, gaming behavior

S-3D3

Adolescent online game use, gaming disorder, and its health consequences in Korea

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Internet gaming disorder (IGD) in children and adolescents negatively affects sound physical, mental, and social development. Since gaming disorder was listed or mentioned in ICD-11 and DSM-5, many studies reported various aspects of this health problem. However, relatively little is known about the natural course of or physical health outcomes of IGD. In this study, based on the data analysis results of the iCURE project, in which 2319 Korean early- adolescents were observed prospectively for 2-year, the authors presented 1) the natural course of IGD occurrence, remission, and recurrence, 2) physical health consequences of IGD, 3) IGD occurrence according to game use time and frequency, and 4) the moderation effect of depression and self-control on the association between game use and IGD occurrence. The authors emphasized that prevention and early intervention of IGD are crucial in childen and adolescents.

Keywords: adolescent, gaming disorder, cohort studies, addictive behavior, internet

S-3D4

Investigating prevalence rates and risk factors for problematic Internet use and gaming in a large sample of Spanish adolescents

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Background: Epidemiological studies on problem Internet use (PIU) and problem gaming (PG) conducted so far have mainly been carried out with unrepresentative and self-selected convenience samples, resulting in unreliable prevalence rates. This study estimates the prevalence of PIU and PG in a large sample of Spanish adolescents and identifies risk and protective factors for these risky behaviours. *Methods:* An epidemiological study was conducted in Spain involving a total of 41,507 adolescents, 48.7% female and 50.3% male (M = 13.81, SD = 1.32). Data were collected through an online survey: Sociodemographic questions, the Problematic Internet Use in Adolescents Scale and the Game Addiction Scale for Adolescents. *Results:* Using a cut-off approach, we found a prevalence of 33% for PIU and 3.1% for PG. With a more conservative approach inspired by the ICD-11 framework, prevalence rates decreased to 2.98% for PIU and 1.8% for PG. Female gender, higher parents' education, elevated internet connection time (week and weekend), reporting being online after midnight and reporting using the mobile phone in class predicted problematic internet use, whereas male gender, "living situation" where families do not have a traditional structure or stable environment, elevated internet connection time (week and weekend) and reporting using the mobile phone in class predicted PG. *Conclusion:* A cut-off approach involving scales that recycle substance use criteria (as in the DSM-5) over-pathologize internet use and gaming behaviours. In contrast, the ICD-11 approach seems to provide more realistic and reliable prevalence rates. Risk factors for PIU versus PG are not the same.

Keywords: prevalence, gaming, problematic internet use

S-3E1

Characteristics of in-play sports bettors and antecedents of in-play bets

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Studies have identified a positive association between in-play betting and problem gambling severity. However, less is known about the specific characteristics and harms that may distinguish in-play bettors from other types of sports bettors. To address these gaps, two studies were conducted. Study 1 comprised an online survey of N=920 adults who currently bet on sports and were categorized as either in-play (n=223), single-event (n=533), or traditional bettors (n=164). They completed measures of demographic (e.g., age, gender), psychological (e.g., emotion dysregulation), and gambling-related (e.g., harms) variables. Study 2 consisted of a 14-day daily diary study wherein N=84 in-play bettors from Study 1 completed measures of in-play betting, gambling-related harms, and contextual factors (e.g., substance use). Results of Study 1 revealed that in-play bettors were significantly younger than single-event and in-play bettors, and more likely to be men compared to traditional bettors only. Further, in-play bettors endorsed greater problem gambling severity, gambling-related harms (e.g., social, financial), and mental health and substance use difficulties compared to single-event and traditional bettors. Results of Study 2 revealed that at the between-person level, impulsivity was associated with greater number of in-play bets placed and money spent. Moreover, problem gambling severity was associated with greater number of gambling-related harms resulting from in-play bets. At the within-person level, simultaneous alcohol and cannabis use were associated with number of in-play bets placed, money spent, and harms. Findings provide clarity regarding the profile of in-play bettors as well as the antecedents and consequences of in-play betting.

Keywords: sports betting, in-play sports betting, gambling, online gambling

S-3E2

Gambling adverts during live TV broadcasts of Euro 2020 and Qatar 2022 World Cup: A comparative study

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Background: Gambling has become synonymous with football at club level across Europe and beyond, with many teams in the top divisions across the continent sponsored by gambling companies. Previous research has demonstrated how gambling marketing is common in fans consumption of football related product, across many different media and formats. However, although highly prevalent in club football, less is known about gambling exposure during international football matches, and specifically, high profile international tournaments such as the UEFA European Championships and the FIFA World Cup. *Method:* The recent European Championships (Euro 2020) and World Cup (Qatar 2022) have afforded us the opportunity to observe the frequency and type of gambling adverts shown in live broadcasts in the UK, via commercial broadcaster ITV. Each live broadcast was recorded, and the number of adverts noted. Analysis then allocated each gambling advert into a category type: brand awareness, financial incentives, odds, or safer gambling. We were also able to record time of kick off, time of adverts, the use of celebrities to promote gambling, and the presence of any industry sponsored safer gambling messages. *Results:* For Euro 2020, overall, 113 gambling adverts were recorded (4.5 adverts per relevant match). Financial inducements were the most frequently shown category (56.6%), followed by adverts raising awareness of a given operator's brand (19.5%), adverts featuring the odds on specific complex bets (18.6%), and adverts promoting safer gambling (5.3%). Adverts featured a range of safer gambling messages, with the "when the fun stops, stop" message featuring in 56.6% of adverts. For the Qatar World Cup, the data is currently being analysed however preliminary analysis indicates that the number of adverts shown per programme has increased from Euro 2020, and that adverts are predominantly promoting financial incentives or live odds, and are shown prior to kick off. This is irrespective of kick off time. Celebrity promotion was only used by specific brands, however due to the time of year the tournament was staged, gambling companies were able to draw on festive themed adverts to promote their brand. *Discussion:* Gambling advertising is still common in international football matches. Although exposure to gambling marketing is not as prevalent as in club matches (due to lack of shirt sponsorship in international matches), the number of adverts encouraging people to gamble prior to match kick off is high. This finding highlights that current industry led 'light-touch' regulation that is designed to protect children and other vulnerable groups from exposure to gambling marketing is ineffective.

Keywords: gambling, advertising, football, soccer

S-3E3

Slot machine near-misses in different type of virtual reality

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Within-game constructs, such as near misses, have been established as a key component in the development and maintenance of gambling disorder. Although our understanding of the influence of these constructs on behaviour has increased through substantial experimental research, the context in which these tasks are delivered, and the subsequent ecological validity of this research is rarely examined. In this study, we sought to use virtual reality to maintain the experimental control afforded by more traditional experimental paradigms, whilst increasing the ecological validity of the environments in which the behaviour is performed. Furthermore, previous research has indicated that near misses drive persistent gambling most when occurring on 30% of spins. The current study sought to replicate this finding using a more ecologically valid gambling task. Participants completed the PGSI, the Gambling Craving Scale, Simulator Sickness Questionnaire (SSQ), and a Presence Questionnaire. Participants were assigned to one of three conditions: Computer Generated VR (CGVR), Naturalistic VR (360VR) and or a control condition and were then invited to complete a minimum of 50 spins, experiencing near-misses on either 15, 30, or 45% of spins. Following the 50-spin experimental phase, participants could continue to spin the reels in the extinction phase, where they experienced only loss outcomes. Persistent gambling, in the extinction phase, was also recorded. Our hypotheses predict that the near miss effect, where near misses on 30% of spins drive persistent gambling, will be replicated across a range of experimental environments, and that virtual reality environments will generate a greater sense of presence that traditional experimental environments thus demonstrating the increased utility of VR in gambling research. Data is currently being analysed. These findings will be important in two ways. First, for the validation of VR as an experimental tool in gambling research. Second, a greater understanding of constructs such as the near miss is fundamental to the way in which gambling is understood, legislated and regulated.

Keywords: gambling, disordered gambling, near misses, game structure

S-3E4

Social connectedness and gambling in New Zealand

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Multiple factors are associated with disordered gambling, with some populations having a greater risk for developing disordered gambling than others. Social connectedness, considered a psychological sense of belonging to a group and interpersonal closeness with society, is an essential part of being human, leading to a sense of well-being, belonging and cohesion. The present study, utilising data previously collected for a New Zealand (NZ) national gambling survey (n=4,904), explored the associations between social connectedness and risky gambling behaviour. Poorer social connectedness was found to be associated with increased gambling risk and poorer quality of life. Furthermore, Māori (NZ's indigenous population) had lower social connectedness and a greater gambling risk than the NZ European/Other population. These findings indicate that the risk of progressing from recreational gambling to risky gambling is relatively higher for Māori, and that social connectedness could be contributing factor for this increased risk.

Keywords: social connectedness; gambling; leisure activities; indigenous population

S-3E5

COVID-19 and online gambling: Impact of the COVID-19 pandemic on online gambling among users of the French national online websites

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Background: The interruption of sports and horse races due to the COVID-19 pandemic and the impacts of government decisions can motivate an initiation, a change, or an intensification of gambling activities. This study aimed to estimate the changes in gambling activity during a year impacted by the COVID-19 pandemic (2020) compared with a reference year (2019) among all French. *Methods:* This study included metadata of all gamblers with an active account from the French national online gambling authority (poker, horse race betting, and sports betting) and the French national lottery operator (draw-based lottery games, scratch games, and multiplayer lottery games). The data included the number of active gamblers according to sex for each week from 2019 to 2020 and for each gambling type. 2019 and 2020 were divided into five periods according to the government decisions due to the level of the COVID-19 pandemic in 2020: one pre-COVID period and four COVID-affected periods (1st lockdown, unlockdown, inter-lockdown and 2nd lockdown). *Results:* Results differed markedly between gambling types. Sports and horse betting followed the pattern of a decrease and gradual normalization with the re-opening of sports and horse races. In contrast, the study did demonstrate a consistent increase of number of gamblers engaged in draw-based lottery games, scratch games, and multiplayer lottery games for women and in draw-based lottery games and scratch games for men. Regarding poker, results show a consistent increase of number of gamblers for both sexes. *Conclusions:* Dramatic changes due to the cancellation of sports and horse races during the first lockdown might have diverted some gamblers to other types of gambling.

Keywords: COVID-19, France, gambling disorder, online gambling

S-3F1

Prevalence of eating disorders among individuals at risk of exercise addiction: Considering, culture, gender, and competitive/recreational status

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Background and aim: The risk of exercise addiction (REA) is closely linked to eating disorders, but the prevalence of the latter among those at risk of exercise addiction (REA), in view of gender, competitive status, and cultural diversity, is unclear. The aim of this pilot work is to fill this gap. *Methods:* Using an online survey, 289 regular exercisers (minimum 150 min/week over the past six months) were tested. They were from Germany, Hungary, Spain, and the United Kingdom, having a mean age of 34.84 (SD=14.56) years. They trained 5.01 (SD=2.89) time/week for an average of 14.69 (SD=11.04) years. Forty-one were competitive athletes, and 53.6% were women. Questionnaires were completed anonymously. They included validated versions of the revised Exercise Addiction Inventory (EAI-R) and the SCOFF. *Results:* No cross-national or gender differences in the REA and eating disorders were found. However, women scored higher on the SCOFF than men (p=.02). Competitive athletes exhibited statistically significantly (p=.02) greater REA (mean=23.37; SD=5.91) than recreational exercisers (mean=21.03; SD=5.58). The prevalence of the REA in the overall sample was 10% (29/289). The prevalence of eating disorders was 10% (3/29) among participants at REA, while it was only 3.1% (8/260) among the rest. *Conclusions:* This study shows no cross-national difference in the REA and genders when the minimum exercise is 150 min/week. The results also corroborate that eating disorder is more prevalent in those at REA, and the latter appears to be higher in competitive than recreational exercisers.

Keywords: addiction; dependence; eating disorder; exercise; training

S-3F2

Exercise Addiction, Eating Disorders and Insecure Attachment Style

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Exercise addiction (EA) and eating disorder (ED) comorbidity is prevalent among professional and amateur athletes (Berczik, 2012). Further, pathological attachment style has been shown to be linked separately to ED and to EA. The current study aimed to explore the associations between ED, EA, and insecure attachment style (i.e., anxiety or avoidance) among 405 Israelis identified as habitual exercisers according to criteria for assessing EA research (Pálfi et al., 2021). All participants exercised at least four hours a week for at least one year. They all completed the Exercise Addiction Inventory (EAI; Terry et al., 2004) and the Eating Attitudes Test (EAT-26; Apter & Yanko, 1989). Moreover, their attachment style was assessed via Experiences in Close Relationship Scale (ECR; Brennan et al. 1998). Standardized maximum likelihood estimation showed that attachment anxiety was positively associated with ED symptoms (β=.25, P<.001), whereas the association between attachment anxiety and EA symptoms was not significant. In contrast, attachment avoidance was positively associated with EA symptoms (β=.22, P<.001), but not with ED symptoms. The results imply that the anxious attachment regulation strategy is highly associated with body image. Furthermore, individuals characterized by avoidance attachment manifest regulation strategies in adhering to an excessive exercise regimen. Scholars and practitioners can utilize these results to examine dispositional risk factors for insecure attachment style and to assess type of addictive behaviors. Limitations, future directions, and implications are discussed in detail.

Keywords: exercise addiction, eating disorder, attachment theory, self-regulation

S-3F3

Understanding problematic practice of physical activity: A mixed method approach

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The field of exercise dependence, also known as, problematic practice of physical activity (PPPA), faces both theoretical and methodological challenges (Szabo et al., 2015). While there exists a plethora of quantitative studies trying to understand PPPA, there is a significant paucity of qualitative research. The objective of our study is to conduct a mixed methods study (quantitative and qualitative) in order to understand PPPA with respect to its conceptual and theoretical frameworks. A total of N = 400 individuals will be administered the Exercise Dependence Scale-Revised (EDS-R; Hausenblas and Downs, 2002). Those categorized as "at risk" as well as "dependent symptomatic" will be called back for focus group discussions (FGD). Two FGDs per category will be conducted. The focus group discussion questions will be divided into three sections. The first section will intend to gauge the participants' understanding of PPPA. The second section will attempt to understand their motivations to practice PA as well as their perceptions with respect to the dimensions of PPPA (especially the role of withdrawal and tolerance). And the third section will intend to understand the perception of the deleterious consequences of PPPA on their health (physical, mental, emotional). Qualitative analysis of the FGDs will be done following reflexive thematic analysis. Using a mixed methods approach to understand PPPA will highlight the probable complex interactions between the environmental, social, and psychological influences on a person's behavior (PPPA in this case).

Keywords: problematic practice of physical activity, mixed methods, thematic analysis

S-3G1

Five-week of solution-focused group counseling significantly reduces internet addiction in college students: Evidence from behavior and resting state EEG

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Internet addiction was considered as an epidemic in the digital age, and we have few effective treatments. Here, we proposed a solution-focused group counseling that could potentially reduce the Internet addiction among college students. The present study used behavior and resting state EEG to examine short-term and long-term effect of this intervention. Through questionnaire and structured interview, 32 participants were recruited and randomly assigned into the experimental group (n=16) and control group (n=16). The experimental group received a five-week solution-focused group counseling, while control group did not receive any intervention. The revised version of the Chinese Internet Addiction Scale (CIAS-R) and resting-state EEG were administered pre- and post- intervention, as well as two follow-up tests (one month and six months after intervention). Results showed that the scores of four dimensions of the CIAS-R in the experimental group were significantly decreased after intervention, and these effects could last for one month and six months follow-ups. EEG results suggested that the beta and gamma absolute power in the experimental group decreased after intervention. These results suggested that solution-focused group counseling could be an effective intervention on Internet addiction.

Keywords: Internet addiction, solution-focused group counseling, intervention, resting-state EEG, college students

S-3G2

Internet addiction treatment in children and adolescents – Evaluation and recommendations from a pilot project in Poland

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In 2021 Polish Ministry of Health announced a pilot project aiming at designing, conducting and evaluating treatment for children and adolescents using the Internet (incl. gaming, smartphones, and social media) in a problematic way. More than ten institutions were given the possibility to design and conduct their treatment protocols (psychotherapies). As an ex-

ternal instituting, Maria Grzegorzewska University evaluated each treatment protocol. Each treatment protocol had to fulfil a set of aims (among others: psychosocial skill development, well-being improvements, self-control over the Internet development, and parental skills development). *Methods:* Quasi-experiments were conducted with two groups (treatment vs waiting list) and two to three times (pre-test, post-test and follow-up). The purpose of the evaluation was to assess the effectiveness of each treatment. Furthermore, the evaluation aimed to determine which specific conditions constitute effectiveness (e.g. individual such as ADHD diagnosis or family-specific). Only partial results will be presented – from two treatment centres with complete pre-test and post-test measurements and control groups.

Keywords: Internet Addiction, treatment

S-3G3

Yoga as an adjuvant with multi-modal psychological interventions for excessive use of technology: A pilot study from India

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Background: The rise in global digitalization has resulted in issues with excessive technology use and associated factors like body pain, obesity, reduced sleep and appetite, mood disorders, and social withdrawal. Psychotherapy evidence has shown that a multi-modal approach is most effective for managing the excessive use of technology. There is little evidence for managing physical symptoms through traditional psychotherapy practices. Yoga, a holistic mind-body therapy, is effective for addiction, pain relief, stress management, and overall well-being. The aim was to investigate the feasibility of yoga as an adjuvant treatment with multimodal psychological intervention among participants with excessive technology use. *Method:* An integrated module was developed, which included 10 sessions of yoga and 8 sessions of a multimodal psychological intervention program, and was given for 2 weeks to 15 patients by certified Mental health and Yoga practitioners. This was followed by booster sessions and post-assessments conducted at 12 weeks. Each participant was assessed using the Internet Addiction Test-short-form (s-IAT), Internet Gaming disorder scale- short form (IGD S9-SF), Smartphone Addiction Scale-Short Version (SAS-VS), Kessler's' Psychological distress scale (K 6) for baseline and follow-up assessment. *Results:* The participants' profiles suggested young adults, longer hours of internet use, particularly gaming and social media, and difficulty in controlling their use. The integrated yoga and multimodal psychotherapy programme effectively reduced internet use, smartphone use, and psychological distress and increased treatment adherence and retention. *Conclusion:* The feasibility of Yoga as an adjuvant therapy with psychological intervention for excessive use of technology was found to be effective and carries further implications for mental health professionals.

Keywords: Yoga, multi-modal psychotherapy, CBT, excessive use of technology, pilot study

S-3G4

Online New Page

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"Online New Page Project" has been launched by Hong Kong Christian Service since 2005 in Hong Kong. The aim of this project was to assist young internet addicts to regain their life balance and their parents to improve family functioning. We have been using a multi-level intervention approaches including outreaching, individual counselling, youth therapeutic groups, parent therapeutic groups, and also building up mutual aid networks to help clients with problems relating to Internet Addiction (mostly gaming). This presentation 1) demonstrates our intervention model which applies the Strategies and Skills Learning and Development System developed by Professor Ka Tat Tsang of the University of Toronto, and 2) publishes our case study result and explores change factors, and 3) summarizes our practice experience. The result from in-depth study of both young internet addicts and their parents reveals the improvement of their life balance as well as the sense of achievement, interpersonal relationship, leisure and family relationship. This overall change empowers them by equipping them with an expanded repertoire of strategies and skills for addressing their needs and for managing their lives, resulting in minimizing dependency on a single strategy such as internet gaming. Meanwhile, as many young internet addicts usually are passive and insecure to others, it is crucial that they need someone to engage and build up a sincere relationship. Continuously outreaching and counseling appear more important.

Keywords: Internet addiction, gaming disorder, practice experience

S-3H1

Behavioral Addictions: Insights from Singapore

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Institute of Mental Health, Singapore

Symposium summary: Even before the official inclusion of Gaming Disorder and Compulsive Sexual Behavioral Disorder in the ICD-11, there has already been much research examining Internet addiction, excessive smartphone use, social media addiction and sex addiction. The National Addictions Management Service in Singapore is Singapore's main addiction treatment center for treating both substance and behavioral addiction. Through this symposium, we will provide an overview of our services for treating such disorders, and a broad overview of the research insights into excessive internet use and gaming disorders in Singapore. We will also present our bibliometric review of the Top articles published in the field of Gaming addiction, and how it has helped us in identifying key research trends. In addition, we will share our clinical experiences regarding Compulsive Sexual Behavioral Disorder (CSBD). We will then provide an overview of the pharmacological and psychological approaches we adopt in the treatment of these disorders in Singapore.

Keywords: behavioral addiction, internet gaming, CSBD, Singapore, intervention

S-3H2

Introduction to the National Addictions Management Service (NAMS)

LEE CHENG

NAMS, Institute of Mental Health, Singapore

The National Addictions Management Service (NAMS) was set up in 2008, funded by the Ministry of Health, Singapore. NAMS is the main substance and behavioral addictions treatment center in Singapore. Along with the changing trends and the conceptualisation of new behavioral disorders in the DSM-5 and ICD-11, NAMS has progressively adapted our services to cater to the treatment of these new behavioral disorders. In this talk, we will provide an overview of the NAMS service, and our core treatment approaches. We will also highlight the setup of an adolescent service, to cater to adolescents with behavioral addictions.

S-3H3

Gaming Disorder: Insights into research in Singapore and an overview of the top 100 citations globally

MELVYN ZHANG

NAMS, Institute of Mental Health, Singapore

Although gaming disorder has only been recently included as a diagnosable condition the ICD-11 in the recent years, there has been much research into Internet addiction, excessive screen-time use, smartphone use and social media usage in Singapore. In the first part of this symposium, we will review all the literature related to internet addiction and gaming disorder from the Singapore's context. In the second part of this symposium, we will describe our conduct of a bibliometric review that examined the top 100 articles related to Internet Gaming disorder. In our review, we found that 340 authors were involved in all the publications, and the authors' collaborative index was 3.62. Regarding the nature of the identified documents, 75 were articles, 6 were editorial materials, 18 were reviews and 1 was a letter. The Journal of Behavioural Addiction was the journal with the greatest number of articles (n=11), and this was followed closely by Computers in Human Behaviour (n=10) and Addiction (n=6). The thematic analysis demonstrates that most of these top publications focused on examining the disorders amongst adolescents and the exploration of gaming disorders with other psychiatric disorders, such as depression. We will discuss the insights and the implications that arise from this review.

S-3H4

Compulsive Sexual Behaviour Disorder: Insights

GOMATHINAYAGAM KANDASAMI

NAMS, Institute of Mental Health, Singapore

Compulsive Sexual Behaviour Disorder (CSBD) has only been recently included in the ICD-11, although it has been previously proposed in 2010 to be considered for inclusion in the DSM-5. Since the official inclusion of CSBD in the ICD-11, there has been a series of research into this topic. In this symposium we will present our clinical experiences in identifying and treating such disorders in Singapore. We will also touch upon the research project that we have undertaken to retrospectively validate the earlier clinical assessments done during the ICD-11 criteria for CSBD.

S-3H5

Treatment of IGD at NAMS

EVELYN GOH

NAMS, Institute of Mental Health, Singapore

In this symposium, we will provide an overview of the profile of individuals we see at NAMS for gaming disorder and describe how the trend changed during the onset of the COVID-19 pandemic. We will share the approach we use in the treatment of gaming disorders in Singapore.

S-4A1

The current state of knowledge on micro, meso, and macro risk factors of work addiction and the design of a global survey in over 60 countries

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Background: Currently, our knowledge of micro, meso, and macro risk factors of work addiction is limited. The available data suggests that macro and meso factors may contribute to the relatively high prevalence of work addiction in working populations. Micro factors may be predominantly responsible for the high persistence of this disorder in a minority of individuals. The study design of a global survey on work addiction and potential prevention approaches will be discussed in the context of Rose's Theorem and prevention paradox. *Methods:* A global survey on micro, meso, and macro risk factors of work addiction in over 60 countries from six continents is carried out by an international team in 2022/2023. Participation criteria are: being an adult and employed full-time for at least one year in an organization with at least ten employees. Work addiction, alongside macro (i.e., cultural and socioeconomic), meso (i.e., organizational), and micro (i.e., individual) factors, and related health problems, such as occupational depression and burnout, are measured. *Results:* The results will provide information on the relative contribution of micro, meso, and macro risk factors to work addiction and its relationship to health problems. *Conclusions:* The main aim of our research is to understand which factors contribute most to work addiction and how factors at different levels interact with each other to develop best practices in its prevention and treatment. The results of this research can provide a scientific basis for preparing recommendations for governments concerning working conditions and influence organizations' policies and procedures regarding work climate and organizational values to minimize the risk of development of work addiction and/or to mitigate its effect on health and well-being.

Keywords: prevention, risk factors, survey, work addiction, workaholism

S-4A2

Substance use habits in work addiction

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Background: Work addiction is a behavioral addiction characterized by excessive and obsessive overwork that disturbs the individual's physical, mental, and social health. Several studies investigated the personality correlates and health issues of work addiction; however, the knowledge about the substance use habits of individuals affected by work addiction is still incomplete. Yet the characteristics of addictive workers (e.g., high perfectionism, obsessiveness, and anxiety; low self-esteem) pose a high risk for using both stimulants and depressant drugs. The present study aimed to explore the prevalence of substance use among individuals with work addiction using the data of a representative study. _Methods:_ Participants of the first wave of the Budapest Longitudinal Study who were having full-time jobs (N = 3,076) were included in the analyses. Lifetime, last year, and last month prevalence of the use of the following substances were explored: nicotine, caffeine, amphetamine, cocaine, crack, new psychoactive stimulants (NPS), alcohol, and sedatives/tranquillizers. Work addiction was measured by the Bergen Work Addiction Scale. _Results:_ Latent profile analysis resulted in three working profiles: 'addictive workers', 'excessive workers', and 'non-problematic workers'. 'Addictive workers' showed significantly higher prevalence of smoking, energy drink consumption, amphetamine, NPS, cocaine, alcohol, and sedative/tranquillizer use than other workers. _Conclusions:_ We assume that addictive workers might use stimulants to enhance their activity, effectiveness and self-confidence, and depressants can help them to relax after a long stressful day. Since addictive workers have a higher prevalence of both stimulant and depressant use, screening and prevention of work addiction should be more accentuated in workplace mental health programs. _Funding:_ The research was supported by the Hungarian National Research, Development, and Innovation Office (Grant numbers: KKP126835, K134807).

Keywords: work addiction, workaholism, substance use, stimulant use

S-4A3

Role of Obsessive-Compulsive Personality Disorder in work addiction, burnout and physical health

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Background: While relationship between problematic substance use and personality disorders is concluded by several studies, research on possible role of personality disorders in behavioral addictions, especially work addiction is only scarce. In the present large-scale domestic research, based on empirical results suggesting OCPD being a predictive factor of work addiction and other studies demonstrating that burnout and psychosomatic complaints might be negative consequences of WA, the hypothesized relationships between indications of personality disorders, risk of WA and possible negative mental and somatic health outcomes were examined in a pathway model. *Method:* A total of 4,340 individuals participated in the non-representative online survey. The OCPD subscale of the SCID-II screening tool, Work Addiction Risk Test (WART), Physical Health Questionnaire and Bergen Burnout Inventory were administered. Results: Preliminary results of SEM demonstrate that symptoms of OCPD significantly predict WA ($\beta = 0.377$) and that OCPD both directly and indirectly ($\beta = 0.277$; $\beta = 0.406$), via the mediating effect of WA, positively and significantly predicts severity of burnout. Medium strength significant correlations are also present between levels of OCPD symptoms, risk of WA and burnout. Physical health demonstrated significant but weak relationship with OCPD, WA and burnout. Conclusions: Our results support the assumptions that OCPD symptoms might be related to WA and might also have an impact on burnout as a negative outcome of WA. Physical health, however, seems to be also predicted by factors that are not accounted for in this model. Results of this study draw attention to the importance of further research to obtain more in-depth knowledge in this domain. *Funding:* Supported by the National Research, Development and Innovation Office (FK134807, KKP126835).

Keywords: work addiction, OCPD, burnout, physical health

S-4A4

Comorbidity of work addiction with depression among Chinese white-collar workers

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Work addiction (WA) triggers a series of adverse consequences and depression has been frequently reported in workaholics. Prior studies have documented the general positive association between WA and depression, suggesting that such association might be potentially comorbid. From the perspective of network model which could depict a more comprehensive picture of the complex associations among individual symptoms of psychological disorder(s) or condition(s), both central and bridge symptoms within the WA-depression network were identified by network analysis to improve the effectiveness of WA-related intervention in the present study. Via an online questionnaire survey including the 10-item Dutch Work Addiction Scale (DUWAS) and the 7-item Depression Subscale of the Depression Anxiety Stress Scales (DASS21), voluntary and anonymous responses from 694 Chinese white-collar workers (58.8% female; Mage = 32.07, SD = 5.61, range from 24 to 55 years) were collected in March 2022. Results of network analysis indicated two central symptoms (DUWAS3 [Stay busy and keep many irons in the fire] and DUWAS1 [Race against time and in a hurry]) and two bridge symptoms (D1[Anhedonia of depression] and DUWAS2 [Continue working after coworkers quit]). One should note that the strongest bridge pathway (DUWAS2-D1) in fact had a low partial correlation (r = 0.05) within the WA-depression network. Both network structure and global strength did not differ by genders in the results of Network Comparison Test. These findings indicate that WA and depression might be only slightly comorbid among Chinese white-collar workers and the integrated interventions for both disorders may not be as cost-effective as expected.

Keywords: work addiction, depression, workaholism, network analysis

S-4A5

Comparing work addiction and gaming disorder in terms of inhibition and impulsiveness

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Background: Behavioral addictions are often associated with weaker executive functioning. Several studies have found impairment in inhibition in internet gaming disorder (IGD), however, the role of this cognitive function in work addiction (WA) is still unclear. A few studies showed a higher level of impulsiveness and ADHD in WA: these results suggest a possible altered functioning of inhibition. The present study aimed to investigate inhibition and impulsiveness of individuals affected in IGD and WA to explore the possible similarities and differences. Methods: The participants were divided into three groups based on their scores on the Ten-Item Internet Gaming Disorder Test and the Work Addiction Risk Test. Participants in the IGD group (n=15), the WA group (n = 39) and the control group (n=62) completed neuropsychological tasks assessing executive functions: we applied the Go/No-Go task for inhibition. Impulsiveness was measured by the Barratt Impulsiveness Scale (BIS). _Results:_ We did not find significant difference between the three groups in the Go/No-Go task, but the IGD and the WA groups scored significantly higher on BIS than the control group, without any difference between the two groups. Conclusions: We found intact inhibition both in work addiction, and – in contrast to the previous literature – in IGD. On the other hand, the higher impulsiveness in both addictions may refer to an altered cognitive functioning and self-regulation. Future studies should focus more on the executive functions of different behavioral addictions, as in our ongoing study, we also analyze these functions on larger samples. _Funding:_ The study was supported by the Hungarian National Research, Development, and Innovation Office (FK134807), and by the ÚNKP-22-2 New National Excellence Program of the Ministry for Innovation and Technology from the source of the National Research, Development and Innovation Fund.

Keywords: internet gaming disorder, work addiction, inhibition, impulsiveness

S-4B1

"Poker is like cannabis while illegal sports betting is like heroin:" Qualitative study on illegal gambling in Israel

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Background: Israel is considered to be a conservative country regarding gambling, where no legal casinos are allowed. Nevertheless, illegal gambling flourishes, partially visible and partially concealed, both online and physically. But little is known about illegal gambling in Israel, therefore the present study sought to map, understand, and explore the unknown phenomenon of illegal gambling in Israel. *Methods:* Triangulation by using multiple datasets from various sources, including semi-structured interviews with 28 people who gamble at illegal settings and with 13 policymakers and gambling professionals; online ethnography; physical observations; and data collection from the gray literature. *Results:* The most salient themes included: (a) a wide, diverse, and complex phenomenon of illegal gambling and gamblers exists in Israel; (b) "Illegal poker is like cannabis while illegal sports betting is like heroin:" the risk of severe addiction and other related problems depend on the type and arena of illegal gambling; (c) illegal gambling is a vague phenomenon in a gray region of Israel legally, morally-religiously, socially, and politically. *Recommendation:* Policy makers and professionals should be aware of the wide illegal gambling phenomenon in Israel, dispel the ambiguity surrounding it, formulate regulations, and develop a comprehensive gambling policy concerning enforcement, treatment, prevention, and harm reduction.

Keywords: illegal gambling, addictions, policy, Israel

S-4B2

Perspectives on the gaming behaviour among the stakeholders associated with gaming: A qualitative study from India

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Background: Digital gaming/online gaming has become one of the most popular and a genuine source of entertainment/recreation for millions of users worldwide. It is also a popular professional sport(e-sports), career option for different stakeholders like professional players, game developers etc. However, in few users gaming behaviour becomes problematic leading to multiple negative consequences. Recognition of 'Gaming disorder' as a diagnostic entity in ICD 11 has further complicated the picture. Hence there is a need to understand gaming behaviour from different stakeholder's perspective. *Methods:* We did in-depth interviews and focus group discussions among different stakeholders in the age group of 18-24 years i.e., those with problematic gaming and their parents, professional gamers, recreational players, game developers and analysed the date through qualitative methods to understand different perspective to gaming behaviour. *Discussion:* Most with problematic gaming perceived gaming to be beneficial, satisfied their needs/brought relief in many ways though being aware that it is leading to disruption of daily activities. Parents perceived it to be problematic only when duration exceeds a particular limit and when it leads to negative consequences or disruption in their daily routine. Recreational gamers were able to regulate their gaming behaviour and professional gamers perceived it to be a serious profession. Game developers employed various psychological techniques to make games more engaging and immersive. *Conclusion:* Our study tried to understand different aspects of gaming which helped in understanding the phenomenology of gaming and what could constitute to pathological/problematic gaming. This helped us to formulate a model to understand gaming behaviour from normative to pathological behaviour.

Keywords: gaming behaviour, normative gaming, pathological gaming, qualitative study, models of pathological gaming

S-4B3

Problematic and healthy intensive video gaming:
A qualitative study on adolescents

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Previous research shows that intensive video gaming is not harmful for most players. The aim of this study was to investigate the experiences of highly engaged adolescent video game players, by focusing on how they incorporate video games into their lives and what motivates them to play video games. The study was conducted by using semi-structured interviews on a sample of N=37 Croatian adolescent gamers (35 boys and 2 girls), who were 15 to 18 years old and played video games for 23.8 hours per week on average. The data were analyzed using thematic analysis. Results show that most gamers managed to integrate video games into their lives, and that for most of them getting the school work done and getting enough sleep were the priorities. The gamers mentioned positive effects of video games, such as learning English and becoming more "tech-savvy". Socializing was particularly important for them, and some discussed competition, coping and fantasy motives. A few gamers described their problematic gaming experiences, naming possible causes: personal factors such as lack of control over video gaming in younger age, lack of social skills, strong and rigid competitiveness, and situational factors such as negative life events (e.g., parental divorce, moving to another country). However, the players recognized that they have a problem with gaming and managed to return to healthy gaming. Results show that problematic gaming can be transitory and that some adolescents can change and adapt their behavior on their own and with the help of their immediate surroundings.

S-4B4

Spectrum model of gaming behaviours: From normative to pathological

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Background: Gaming Disorder has been included as a diagnosis in ICD-11. We are aware that gaming is used for recreational purposes and gaming is recognized as a profession too. Without understanding gaming as a normative behavior in the population, it will be difficult to understand the same as a disorder. This also leads us to the question as to why in some people, gaming becomes a disorder. Our literature review revealed there is a dearth of literature addressing these concerns, especially from India. *Method:* A qualitative study design was adopted to answer the above deficits in the literature. We conducted 8 key informant interviews (KII) and 3 Focussed Group Discussions (FGD) to collect data from the key stakeholders. It included recreational and professional gamers, patients with gaming disorder and their caregivers, addiction medicine experts, and game designers. *Analysis:* The interviews were transcribed manually and analysed on Atlas.ti software web version. 97 open codes were obtained from the analysis of participant interviews, which were further categorized into 11 groups and 8 broader themes through the process of first-order coding, second-order coding, and inductive reasoning. *Results and discussion:* The main themes that emerged during the analysis were the antecedent factors to gaming, game preferences among individuals, the contextual factors involved in gaming, the game-related characteristics, features of gaming disorder, perceived benefits of gaming, maintaining factors, and negative consequences both in the clinical and non-clinical subjects of the study. Among the patient group, we found a bidirectional relationship between the different themes and the interaction of different factors leading to the development of gaming disorder. Based on these, we propose an alternate model to explain gaming in problematic and recreational gamers from India. Both groups share a similar trajectory till the level of increased online gaming after which depending on the balance between protective factors [balanced Life style, family support, active social life, and good self-regulation] and risk factors [mental health-related issues, boredom, lack of adequate social engagement, difficulties in school/workspace] recreational gaming progresses into pathological gaming. *Conclusion:* This alternate model of gaming helps us in understanding gaming behavior as a spectrum where the presence or absence of different personality and contextual factors determine the progression from normative gaming to pathological gaming. Application of this model to the clinical population will help us in formulating better treatment and preventive approaches.

Keywords: gaming behaviour, spectrum, gaming disorder, India, risk factors, protective factors

S-4C1

Neurobiological and psychological mechanisms underlying problematic pornography use and compulsive sexual behaviours

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Symposium summary: With the classification of compulsive sexual behavior disorder (CSBD) within the ICD-11 as impulse control disorder, CSBD has been recognized as clinically significant disorder. The problematic and pathological use of pornography (PPU) is listed as one phenotype of CSBD. For a better understanding of the etiology of CSBD and PPU much effort has been put into the understanding of neurobiological and psychological mechanisms underlying CSBD in the last decade. Matthias Brand will give an overview on these advances in research within the first talk. In the second talk, Kseniya Krikova will present recent data on the role of appetitive conditioning and extinction processes in PPU. Comparisons will be made with gaming disorder, a recently classified disorder due to addictive behaviors. One specific mechanism in CSBD and PPU is that the behavior itself is a natural reinforcer and important for the fulfillment of natural sexual needs and functioning. Beáta Bőthe will focus in the third talk on associations between PPU, pornography use and sexual functioning. Within the fourth talk, Stephanie Antons will compare psychological mechanisms of CSBD and PPU aiming to understand specificities of the phenotypes. Collectively, these works present innovative research employing a variety of methods to further elucidate the neurobiological and psychological mechanisms underpinning the development and maintenance of CSBD and PPU.

Keywords: psychological mechanisms, problematic pornography use, compulsive sexual behavior, sexual functioning, appetitive conditioning

S-4C2

Psychology and neurobiology of problematic pornography use

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Background: Problematic pornography use (PPU) has been included in the ICD-11 as a phenotype of compulsive sexual behavior disorder (CSBD). The classification, however, is still debated and some authors argue that PPU shares important similarities with disorders due to addictive behaviors, such as gaming disorder. *Method*: A narrative review examines current studies and review articles addressing psychological and neurobiological mechanisms of PUD. *Results*: Cue reactivity and craving, a central process in addictive behaviors, is reliably demonstrated in PUD with activities in the ventral and dorsal striatum being central neural correlates. Results regarding inhibitory control and other executive functions are more diverse, but also indicate (at least partially) reductions in self-control. *Conclusions*: The integration of the empirical data into theoretical models suggests a conceptualization of PUD as a disorder due to addictive behaviors. The results indicate an imbalance between reward-/craving-related, habit-/compulsivity-related, and self-control-related fronto-striatal loops, which is comparable with what is known from gaming disorder.

S-4C3

Are there differences in appetitive conditioning and extinction processes with pornographic, gaming-related, and monetary reward stimuli in problematic pornography users and problematic gamers?

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Background: Appetitive conditioning is one of the important mechanisms for the development and maintenance of pornography use disorder and gaming disorder. Pornographic stimuli are thought to be primary reinforcers while monetary and gaming-related stimuli are more likely to be secondary reinforcers. Whether and to what extent conditioning and extinction processes with pornographic, gaming-related, and monetary reward stimuli differ in healthy

individuals as well as in individuals with problematic pornography use or with problematic gaming use has barely been studied so far. We hypothesized that subjects with problematic use of games or pornography have difficulties especially in extinction learning and that this extinction deficit is only present in problem-related stimuli. *Method:* In this fMRI study appetitive conditioned and extinction responses (e.g., neural correlates and subjective ratings) with pornographic, gaming-related, and monetary rewards as unconditioned stimuli were studied in three groups of male heterosexual subjects: A group of men with unproblematic use of games and pornography, a group of men with problematic use of games, and a group of men with problematic use of pornography. *Results:* First analyses show that appetitive conditioning but not extinction was strongest pornographic stimuli in comparison with gaming stimuli and monetary stimuli. There are also first hints that conditioning, and extinction processes are altered in subjects with problematic use of either games or pornography and that the effects are stimulus specific. *Conclusions:* Therefore, the study suggests the importance of conditioning and extinction processes for gaming disorder and pornography use disorder.

S-4C4

Complex associations between pornography use frequency, problematic pornography use, and five aspects of sexual function – Insights from the 43-country International Sex Survey (ISS)

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Background: Pornography use is prevalent worldwide, with 3–10% of individuals experiencing problematic pornography use (PPU). There is conflicting evidence concerning whether pornography use is positively or negatively related, or unrelated to sexual function. These inconsistencies might be attributed to methodological and conceptual shortcomings, such as the simplified assessment of constructs (e.g., only pornography use frequency), or the focus on men from Western countries. *Method:* This study examined the associations between pornography use frequency, PPU, and five aspects of sexual function, considering culture- and gender-based differences. We used self-report survey data from the 43-country International Sex Survey (N=82,243, 57% women; Mage=32.4 years, SD=12.5). Associations between pornography use frequency, PPU, and five aspects of sexual function (i.e., sexual drive,

arousal, erection/lubrication, orgasm difficulties, satisfaction with orgasm) were examined with structural equation modeling. *Results:* In general, higher pornography use frequency was associated with better sexual function. However, important differences were observed in the association of PPU and different aspects of sexual function. For example, higher levels of PPU were associated with a higher sexual drive as well as with less satisfying orgasms. Culture and gender-based differences were also observed (e.g., men's higher levels of PPU were associated with worse erectile function, while women's lubrication was unrelated to their PPU). *Conclusions:* The results highlight that associations between pornography use and sexual function are complex with significant culture and gender-based differences. Our findings contribute a more nuanced understanding of the potential effects of pornography use on sexual function, providing key insights for prevention and treatment.

S-4C5

Similarities and differences of compulsive sexual behavior disorder and pornography use disorder

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Background: The problematic use of pornography, also described as pornography use disorder (PUD), is listed in the ICD-11 as one phenotype of compulsive sexual behavior disorder (CSBD). Up to now, less is known about the similarities and differences between the problematic engagement in sexual behaviors in general and specifically in pornography use. The aim of the study was to identify potential similarities and differences. *Method:* We used an online survey and analysed data from 1,107 participants who used pornography within the prior 6 months based on self-reports. Participants answered questions regarding symptom severity of CSBD and PUD and questions regarding socio-demography, pornography use and other sexual behaviors, psychopathology, moral considerations, and craving for pornography-use. Cut-off scores for CSBD und PUD were used to identify groups of CSBD only, PUD only, CSBD with PUD, and none of these disorders. *Results:* The groups identified at risk of having CSBD and/or PUD were younger than the "no disorder" group, showed higher psychopathology (compulsivity, depression, anxiety, addictive tendencies) and reported more intense cravings, guilt and moral disapproval. The CSBD and PUD groups differed in gender and specific behavioral variables, e.g. pornography with sadomasochistic content and longer durations of use. *Conclusions:* The results indicate broad overlaps between CSBD and PUD. Differences could be identified with regard to variables that are specific for pornography use. Future studies should focus on psychological mechanisms such as cue-reactivity or inhibitory control that may differ due to the high availabilities of pornography and mobile devices.

S-4D1

Gaming Disorder within the broader Technology Addiction Network: The role of avatar and Online Flow effects

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Symposium summary: The current symposium integrates novel findings from Australia and The Czech Republic. The empirical evidence presented is based on recent, multimethod, cross-sectional and longitudinal data aiming to enhance the understanding of: a) How Technology related Addictive Behaviours associate overtime; b) The utility of machine learning approaches in analysing User-Avatar-Bond (UAB) responses to identify Gaming Disorder [GD]; c) The interplay between Proteus effect and Physical Activity on GD behaviours, d) Key, Online Flow, behaviours' distinct associations with GD and; e) The measurement of UAB via the revision/upgrade of an internationally used/established scale. The first four presentations are from Australia, with the contribution of US and Korean collaborators. Two, currently developing, longitudinal datasets are analysed via the employment of diverse, advanced, statistical methods including machine learning, network, and latent profile analysis. Findings aspire to address pivotal issues surrounding technology-related cross-addictive behaviours, as well as the role of UAB and Online Flow in relation to GD. The fifth presentation is from The Czech Republic and employs a large community sample to revolutionize UAB measurement in the context of impending Metaverse developments. Findings will be discussed in light of the emerging literature, related to the broader field of technology/internet-accommodated addictions.

Keywords: technology addictions, gaming, avatar, Online Flow, machine learning, network analysis

S-4D2

User-Avatar Bond 2.0: Development of a new-old scale and its association with gaming disorder and life satisfaction

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Background: This study aims at upgrading the User-Avatar Bond (UAB) scale (Blinka, 2008), one of the oldest measures of its type, by improving its existing items and adding more items for exploring new dimensions *Methods:* 6,391 adult gamers (Mage = 26.31; SD = 7.04; 83.4% males) completed the online questionnaire that included a pool of 30 items of the UAB2.0, the Gaming Disorder Test (GDT), and the Satisfaction With Life (SWL) scale. Exploratory graph analysis and a set of exploratory and confirmatory factor analyses were employed to assess the UAB2.0. Structural equation modeling was employed to test the as-

sociation between dimensions of UAB2.0, GDT, and SWL. *Results:* The final CFA model included 19 items, showed excellent fit to data, and identified 4 factors: Unity between self and avatar, Compensation of gamer's weaknesses by avatar's superior characteristics, Influence of the avatar upon gamer's behavior and feelings (Proteus effect), and Emotional bond. Compensation, Bond, and Influence were moderately associated with gaming disorder (β = .32, .26., and .23). SWL was moderately related to Compensation (β = -.33), and weakly to Influence and Bond (β = -.12 and -.11). *Discussion & Conclusions:* UAB2.0 is a promising tool for studying patterns of players´ identification with their gaming avatars. An avatar perceived as compensatory by the gamer is especially predictive of gaming disorder and lower satisfaction with life.

S-4D3

Utilizing machine learning to understand the severity of gaming disorder symptoms: The role of the User-Avatar Bond

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Background: Gaming disorder [GD] symptoms are suggested to be normally distributed in the community of gamers, with only a minority presenting with diagnosable behaviors. Interestingly, the severity of GD symptoms experienced by different individuals has been significantly associated with the way they bond/connect with their in-game figure of representation, called the avatar. Specifically, identification, idealization, compensation/repression, and immersive aspects of the user avatar bond [UAB] have been proposed to play a significant role. The present study aims to test a sequence of supervised machine-learning regression models to predict GD severity based on the different UAB aspects. *Methods:* A normative sample comprising 571 adolescents and adults (mean age = 29.32; SD = 10.7; weekend-average-daily-gaming-time = 5.31 hours; SD = 19.58; 50.6% males) was assessed via the UAB scale (Blinka, 2008) and the Internet Gaming Disorder Scale Short Sorm-9 items [IGDS-SF9]. Several different machine learning algorithms will be employed to train our statistical model of UAB identification, immersion, compensation/repression, and one's age and gender to understand/model GD severity. Cross-validation techniques to solidify machine learning outputs will be also used considering both the training and the testing proportions of the data. *Results:* The best-performing machine learning models will be presented and UAB variables with the most significant predictive contributions will be identified. *Discussion & conclusions:* Research, assessment, prevention, and intervention implications of the findings are going to be discussed in light of the available literature.

S-4D4

Modelling Online Flow associations with Gaming Disorder behaviors: A network analysis approach

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Background: Online Flow [OF] describes an individual's level of engagement with their online activity to the extent they may become disconnected from their surroundings. Although the significant association between OF and Gaming Disorder [GD] behaviors is acknowledged, the number of OF core behaviors is debated resulting in different measurement tools. To contribute to this area of knowledge, the present project aspires to identify the key behaviors underpinning the OF construct, as well as, their distinct associations with GD severity. *Methods:* A normative sample of 571 adolescents and adults (mean age = 29.32; SD = 10.7; 50.6% males) were assessed via the Online Flow Questionnaire (OFQ; Chen et al, 2000) and the Internet Gaming Disorder Scale Short Form-9 items (IGDS-SF9; Pontes & Griffiths, 2015). Network analyses, enhanced via the least absolute shrinkage and selection operator (LASSO) algorithm will be applied successively for models including 5 (OF key behaviors), 6 (OF key behaviors and GD total score), and 14 (OF and GD key behaviors) nodes respectively. *Results:* The analysis outcomes will elucidate pivotal clusters of nodes, critical edges, and bridges informing the OF construct and its associations with GD behaviors. *Discussion & conclusion:* Research, assessment, prevention, and intervention implications of the findings are going to be discussed in light of the available literature.

S-4D5

Proteus Effect associations with Gaming Disorder and physical activity behaviors: A latent profiles analysis approach

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Background: An avatar is an in-game representation that has been assumed to potentially influence the gamer's real-life conduct. This is often referred to as the 'Proteus Effect' [PE] defined as a bidirectional transforming link between the gamer and their avatar. Specifically, PE has been supported to likely affect the gamer's offline demeanour, perception, and conduct, whilst positively correlating with gaming disorder [GD] behaviours severity. Past evi-

dence has identified distinct PE profiles with varying GD behaviours and has advocated for further attention to an individual's physical activity [PA]. Therefore, the present study aims to explore PA and PE as risk and protective indicators for the development of GD. *Method:* The present study recruited a normative sample comprising 571 adolescents and adults (mean age = 29.32; SD = 10.7; weekend-average-daily-gaming-time = 5.31 hours; SD = 19.58; 50.6% males). To access PE, the Proteus Effect Scale (PES) was utilized, whilst the Internet Gaming Disorder Scale Short Sorm-9 items (IGDS-SF9) measured GD behaviours. PA was recorded using actigraphy devices and measured the average number of steps across seven days. A latent class analysis will be performed, guided by variations across the PES. PES profiles revealed will be then examined in relation to PA, GD, and their interaction. *Results:* The best-performing PE profiles will be presented, and significant findings related to PA and GD patterns will be identified. *Discussion:* Research, assessment, prevention, and intervention implications of the findings are going to be discussed considering the available literature.

S-4D6

The longitudinal network of online behavioral addictions: Are there gender differences?

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Background: Online activity has become increasingly prevalent worldwide, raising concerns about potential online behavioral addictions (for example, problematic social media use, disordered online gambling, internet gaming disorder, and problematic internet use, in general). The aim of this study was to conduct a longitudinal network analysis of symptoms associated with online behavioral addictions to examine their interrelations and potential differences across one's biologically assigned gender (i.e., male, female). *Methods:* An online community sample of 462 adult participants (28.5% women, 69.5% men) completed self-rating questionnaires across two time points one year apart. Participants' responses were assessed with LASSO regularized partial correlations (EBICglasso) and invariance methods. *Results:* Gender differences were observed, with online gaming symptoms showing higher centrality in men and disordered social media use in women. Additionally, disordered gaming and internet use symptoms were highly influential, followed by online gambling, and social media use. Longitudinal differences were observed across genders, suggesting their different vulnerability to problematic behaviors associated with online activities. Additionally, mood modification associated with disordered internet use and impairment due to disordered gaming were highly influential in longitudinal measures, increasing the likelihood of developing comorbid or persistent symptoms of internet use disorders over time. *Discussion & conclusions:* Research, assessment, prevention, and intervention implications of the findings are going to be discussed in light of the available literature.

S-4E1

Longitudinal association between problematic social media use and body image in a representative sample of young adults

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Background and aim: In the literature, the association between problematic social media use (PSMU) and negative body image is well-established, although these results are based exclusively on cross-sectional studies. In our 3-year longitudinal study, we aimed to investigate the association between PSMU and body image over time. *Methods:* In the first three waves (2019, 2020, 2021) of the Budapest Longitudinal Study (www.bls2018.hu), we collected representative data from 2563 Hungarian young adults (born between 1984 and 2000) living in Budapest. We used multidimensional longitudinal weighting to correct sample attrition. The statistical analysis was performed on the sample of the respondents who participated in all the three waves and were social media users (N=2196). The current analysis is based on the data from four items of the Body Attitude Test and the Bergen Social Media Addiction Scale. A cross-lagged panel model was applied in the case of both genders, separately, to test whether a change in one variable was related to a change in another variable over time. *Results:* A difference was found in the relationship between body image and PSMU over time across genders. Among females, all the cross-lagged paths were significant, while among males, the negative body image at T1 did not explain PSMU at T2. At the same time, the PSMU at T1 was related to the negative body image at T2 (however, between T2 and T3 the cross-lagged paths were significant among males as well). *Conclusions:* Overall, our results suggest that the relationship between problematic social media use and negative body image is bidirectional.

Keywords: problematic social media use, body image, longitudinal associations

S-4E2

Instagram engagement in BDD: An exploration of the experiences using Instagram with Body Dysmorphic Disorder

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Background: Much research looking into social networking sites (SNS) and body image has taken a focus on weight or shape concerns or eating disorder such as anorexia and bulimia. However, there is little research that explores the role of SNS in those living with body dysmorphic disorder (BDD). This study aimed to explore how individuals experience using SNS whilst living with BDD, with a focus on the platform Instagram. *Methods:* A total of eight participants who identified as living with BDD were interviewed about their experiences of using SNS and Instagram. *Results and conclusions:* Interpretative phenomenological analysis (IPA) resulted in three themes being developed from the data. The first theme, 'Agency online' revealed the value placed on appearance in BDD, highlighting a loss of control when viewing images of others, and the need to regain a sense of control of Instagram use. The second theme 'comprehending appearance comparisons as an individual with BDD' encompassed appearance comparisons online and the desire for 'normality'. This theme also indicated comparisons as a protective role in the context of being negatively evaluated by others. The third theme, 'The value of others' perceptions online' revealed the experiences of anxiety of judgement online due to fear of negative evaluation of appearance. These findings are discussed in the context of informing the future research and development of therapeutic interventions, and how to better support those with BDD in managing their SNS use.

Keywords: social networking sites, body dysmorphic disorder, well-being, appearance comparisons

S-4E3

Addictive social media use predicts depressive symptoms in adolescents: Results from a cross-sectional study of 513 German high-school students

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Theoretical background: Social media have become an essential part of young people's lives. At the same time, negative effects of these on mental health have been observed in past studies. However, it is still unclear whether the amount of time or the pattern of use is accountable for these negative effects. Compulsive usage patterns characterise addictive social media use, while non-addictive use is characterised by voluntary usage patterns. The present study aims to analyse the associations between the amount of time spent with social media, addictive social media use, and depressive symptoms. *Method:* The study investigates cross-sectional data from N = 513 students aged 11 to 19 years (M = 12.91, SD = 1.02) in 39 classes (18 high schools) in Germany. Hierarchical linear modelling was applied to investigate the predictive influence of amount of time spent with social media and addictive social media use on depressive symptomatology. *Results:* Addictive social media use was identified as a significant predictor of depressive symptomatology, explaining 17% of the variance in depressive symptomatology. Amount of time spent with social media failed to explain a significant amount of variance in depressive symptomatology after controlling for addictive social media use. *Discussion and conclusion:* The present results suggest that the amount of time spent with social media alone is not responsible in promoting depressive symptoms in children and adolescents, but rather the addictive social media use. Thus, addictive social media use is a potential risk for the mental health of children and adolescents. In order to avoid negative consequences of social media use in the future, interventions and prevention should focus in particular on the usage pattern of social media use.

Keywords: depression, addictive social media use, Internet use disorders, predictors, children and adolescents

S-4E4

Problematic social media use, depression, and emotional regulation difficulties among young adults in India

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Background: Problematic social media use (PSMU) is a growing problem all over India and is associated with a decline in mental well-being. However, a limited number of studies demonstrate the relationship between affective states, emotional regulation, coping styles, and PSMU in India compared to problematic internet use. *Methods:* This study was undertaken on 392 participants aged 18 to 30 years to explore relationship between affective states, rejection sensitivity, and coping styles in those with PSMU. Bergen Social Media Addiction Scale (BSMAS), Patient health questionnaire (PHQ-9), Generalized Anxiety Disorder 7-item (GAD-7) scale, Difficulties in emotion regulation scale (DERS), Rejection Sensitivity Adult Questionnaire (A-RSQ), and Brief Approach/Avoidance Coping Questionnaire (BACQ) were utilized for the online collection of study data. *Results:* The findings showed that 19.6% (95% CI: 15.8%, 23.9%) of participants were engaging in PSMU, and those who had moderate to severe depressive symptoms had 5 times more prevalence of PSMU than those without depression after adjusting for remaining variables (p<0.001), prevalence among participants with a substantial extent of upward comparison was 3.8 times more than the participants who were not involved in upward comparison (p=0.001), for every 5 unit increase in DERS total score, the prevalence of PSMU increases by 1.16 (95% CI of 1.1, 1.2). Pearson goodness-of-fit results indicate that the model fits reasonably well (276.41, P=1.000). *Conclusions:* Findings suggested that depression, difficulty in regulating emotions, and upward comparison were found to be significant risk factors for PSMU and these variables are to be considered for inclusion in the design of targeted prevention approaches for PSMU.

Keywords: problematic social media use, body image, longitudinal associations

S-4F1

Food Addiction among young adult women and men: Prevalence, potential risk factors and consequences

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Background: Previous studies comparing differences in Food Addiction (FA) prevalence between women and men have reported mixed results. Psychological factors play an important role in FA; thus, more research is needed in this area. We aimed to compare FA between women and men, including its prevalence, potential risk factors, and consequences. *Methods:* The sample consisted of 1,157 young adults (51.94% of women; Mage = 20.33 ± 1.68; MBMI = 22.42 ± 3.48). The modified version of the Yale Food Addiction Scale, the Ten Item Personality Inventory, the Word Health Organization Quality of Life Test-BREF, the Single Item Narcissism Scale, the General Self-Efficacy Scale, the Liebowitz Social Anxiety Scale, the Three-Item Loneliness Scale, the Perceived Stress Scale-4 and the Short Hopelessness Scale were used in our study. *Results:* The prevalence of FA was similar in women (2.3%) and men (2.6%). FA was positively associated with age, extraversion, narcissism, and social anxiety among both women and men. However, the two groups were differentiated by specific risk factors. High loneliness, low agreeableness, low self-esteem and low conscientiousness were significantly related to FA among women. In comparison, low self-efficacy was associated with FA among men. FA was a significant predictor of health quality, general anxiety, hopelessness, and BMI in both women and men. Additionally, FA predicted sleep quality among women and perceived stress among men. *Conclusions:* There were no gender differences observed in the prevalence of FA. Further research is needed to identify potential risk factors for FA separately for women and men.

Keywords: food addiction, psychological factors, young adults

S-4F2

Food addiction, BMI and another psychological variables in the Czech adolescence

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In the obesogenic environment with the wide availability of hyper-palatable food and enormous pressure on appearance and slim body cult, people often use food to cope with life and its stressors. Especially for adolescence can be difficult to build a healthy relationship with food. The face-to-face research using a pencil-and-paper version of a set of questionnaires conducted in the Czech Republic among randomly chosen adolescents evaluated the prevalence of food addiction and its connection to other psychological variables.

For the purpose of the study, we adapted psychodiagnostic methods such as Yale Food Addiction Scale (mYFAS 2.0), Eating Disorder Psychopathology (EDE-Q8), and Food Cravings Questionnaire-Trait (FCQ-T-r α = 0.92). The prevalence of food addiction in the representative sample of Czech adolescents (N = 4409) was 4.69%, with a higher prevalence for girls (7.2% vs. 1.6%), while the prevalence was 9.17% in the clinical cohort, with a higher prevalence in girls (14.55% vs. 3.70%). Conducted hierarchical logistic regression of food addiction explained 66% of the variability of food addiction. Food addiction is a complex phenomenon, and our research represents the first step in analyzing the issue in the Czech Republic. A more profound understanding of the phenomenon may help create effective prevention strategies and design treatment procedures. This work was made possible thanks to targeted funding provided by the Czech Ministry of Education, Youth and Sports for specific research, granted in 2022 to Palacký University Olomouc (Risky use of internet pornography in relation to selected personality characteristics IGA_FF_2023_057).

Keywords: food addiction, adolescence, representative sample, obesity

S-4F3

Leading an ideal life, modern eating habits, and addiction-like eating in Chinese adults

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Background: The rapid changing of lifestyles and eating patterns in modern society have aroused increasing risk of addiction-like eating (AE), but little is known about the associations between leading different types of ideal lives and AE. The current study was aimed to explore the associations between AE and three ideal living styles (i.e., happy, meaningful, and psychologically rich life), along with two modern eating habits (i.e., ordering delivery and late-night eating) in order to better understand the risk/protective effect of leading different ideal lives on AE. *Method:* Using random sampling method, a probability sample of Chinese adults ($N > 1,000$) was recruited in a telephone survey. *Results:* Consistent negative correlations were found between leading all three ideal lives and AE ($r = -0.12$ to -0.21, $p < 0.001$). Ordering delivery was found to be positively associated with leading all three ideal lives and AE, while eating late-night meals was only positively correlated with the level of meaningfulness set for an ideal life and AE. After controlling variables of gender, age, and eating habits, hierarchical regression analysis revealed that both leading a happy and leading a meaningful ideal life showed significant negative association with AE. *Conclusion:* This study was the first to examine and demonstrate the potential protective effects of leading different ideal lives on AE. Our results have proposed a new research direction regarding the buffering effect of pursuing an ideal life against AE. Future studies are warranted to reveal the psychological mechanisms between leading an ideal life and AE.

Keywords: addiction-like eating, ideal life, modern eating habits

S-4F4

Is pre-surgical food addiction associated with adverse mental health outcomes before and after obesity surgery?

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Background: Food addiction (FA) represents a controversial phenomenon that is often referred to as behavioral addiction. Ongoing debate discusses a potential symptom shift (e.g., cross addiction transfer) due to reductions in FA after obesity surgery. It was examined if pre-operative FA is associated with increased risk of pre- and post-operative adverse mental health outcomes (suicidal ideation, self-harm and problematic alcohol use). *Methods:* A longitudinal study in 220 patients (75.9% females, MBMI = 49.48 kg/m²; SDBMI = 6.32 kg/m²; Mage = 40.99 years; SDage = 11.07 years) before and 6 months after obesity surgery was conducted. YFAS 2.0, Self Harm Inventory (SHI), PHQ and AUDIT were the standardized questionnaires used to capture FA, self-harm, suicidal ideation and alcohol use. Results: The YFAS 2.0 prevalence of FA was 40.9% before and 5.0% after obesity surgery. Persons with pre-operative FA showed an increased risk of pre-operative (OR: 3.83 [2.14-6.86]) but not post-operative suicidal ideation (OR: 1.68 [0.73-3.88]). Persons with pre-operative FA revealed an increased risk of post-operative problematic alcohol use (OR: 2.88 [1.02-8.09]) and tended to show an increased risk of post-operative self-harm (OR: 1.72 [0.93-3.19]). They did not show an increased risk of pre-operative self-harm (OR: 1.34 [0.72-2.49]) or pre-operative problematic alcohol use (OR: 1.39 [0.60-3.19]). *Conclusion:* FA seems to be primarily associated with adverse mental health outcomes after obesity surgery with some of them representing conditions requiring clinical intervention. Future research should be devoted to the clinical utility of the FA concept, the operationalization of FA and differentiation from other constructs such as binge eating disorder.

Keywords: Food Addiction, obesity surgery, self-harm, alcohol use, suicidal ideation

S-4F5

Is history of abuse a predictive factor of recovery from eating disorders with binge-eating episodes? A French longitudinal study

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Background: The links between impulsivity, a history of abuse, the emergence of eating disorders with episodes of binge eating (EDBE) and their severity have already been assessed, but little is known about clinical predictors of clinical outcome. Our objective was to confirm that a history of abuse might impede the achievement of ED recovery. *Methods:* Patients seeking treatment for EDBE were assessed at inclusion and one year after. Recovery was defined as the absence of ED at 1 year. Association between history of abuse, impulsivity, other baseline characteristics and recovery were explored by means of univariate and multivariate analyses. *Results:* Our sample comprised 186 patients, mainly women (96%), who suffered from anorexia nervosa binge-eating/purging type (29%), bulimia nervosa (54%) and binge-eating disorder (17%). Approximately one-third of the sample reported a history of abuse, and ED recovery was achieved for 20% of the sample. We failed to demonstrate that a history of abuse was associated with recovery at 1 year. Factors negatively associated with recovery were: anxiety disorders (OR=0.41, CI95% [0.18-0.97]); vomiting (OR=0.39, CI95% [0.17-0.85]); physical hyperactivity (OR=0.29, CI95% [0.09-0.79]); higher scores of negative urgency and lack of perseverance (OR=0.85 for both, CI95% [0.73-0.99] and CI95% [0.72-0.99] respectively). Only higher score of positive urgency was positively associated with recovery (OR=1.25, CI95% [1.06-1.49]). *Conclusions:* Our results could help to deconstruct the empirical belief that traumatic events could limit ED recovery.

Keywords: binge-eating, history of abuse, impulsivity, recovery, predictors

S-4F6

Neuropeptide Y neurons in nucleus accumbens lead to food addiction by appetitive food experience memory

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Food addiction is caused by the accumulation of pleasant memories associated with palatable foods. The nucleus accumbens (NAc) has been recognized as a prime center for the reward and addiction. However, the mechanism by which neurons in NAc controls food-specific memory, especially for palatable food, remains unknown. Here, we demonstrated that neuropeptide Y (NPY) neurons in NAc encode palatable food memory acqusition. Using calcium imaging, we found that the NAc NPY neurons respond to eating behavior. This response depended on the palatability of the food. More interestingly, we further demonstrated that the neural activity of NAc NPY increased as the learned value of reward-associated cues increased. Using optogenetics, we discovered that the NAc NPY neuronal activation significantly increased palatable food intake. Optogenetic activation of NAc NPY neurons showed food-specific positive valence in real-time place preference test with palatable food context. Furthermore, optogenetic activation of NAc NPY neurons served as an unconditioned stimulus for the formation of palatable food memory. In conclusion, these experiments provide strong evidence that NAc NPY encodes positive memory for palatable food. Our findings could lead to the development of novel therapeutic strategies to prevent and treat obesity and food addiction.

Keywords: food addiction, reward memory, nucleus accumbens, neuropeptide y, optogenetics, in vivo calcium imaging

S-4G1

The effectiveness of an internet-delivered intervention "Gaming Habit Hacker" for gaming disorder: A randomised controlled trial

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Gaming disorder treatment is predominantly psychotherapeutic, provided in person, and targeted towards severe symptoms. For individuals with low to moderate severity, a brief internet-delivered intervention that is accessible and convenient might be a suitable alternative to in-person treatment. This randomised controlled trial aimed to determine the effectiveness of Gaming Habit Hacker, a website-based program that delivered a range of behaviour change techniques for gaming reduction. The study recruited 215 participants from New Zealand and Australia who were 16 years or older and had self-identified problems with gaming. Participants were randomly assigned to Gaming Habit Hacker or an assessment-only comparison group with weekly check-ins. Participants completed surveys at baseline and 28-days post-intervention. This presentation looks at the impact and acceptability of the intervention. A brief intervention could easily be made accessible to people experiencing varying levels of problematic gaming, which could address current gaps in support options.

Keywords: randomised controlled trial, gaming disorder, internet-delivered intervention

S-4G2

Group Motivational Interviewing for young people with risks for gaming disorder: Preliminary outcomes and lessons learned

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During the COVID-19 pandemic, online gaming becomes a key form of entertainment and social engagement among young people. Based on the motivational interviewing approach, we designed and implemented a three-session group programme that aims to reduce risks for gaming disorders. Each session has experiential activities followed by discussion, in which we guide participants to reflect on their time use, purpose of life, in view of their gaming behaviour. The group intends to induce ambivalence, facilitate a move from pre-contemplation to contemplation stage of change, and facilitate planning for change. The groups were conducted in person. A total of 56 primary and secondary school, and university students aged 12 to 21 participated in the intervention. Using a single group pre-posttest design, this study examined the feasibility of a brief motivational interviewing group. Outcome measures were collected at pre-, post-intervention, and 3-month follow-up. Results showed there were significant increases in proportion of participants in contemplation and action stages of change, but there were no significant changes in risks for gaming disorders. The participants had significant decreases in time for entertainment, significant increases in time for academic work, but no change in time for outdoor activities. Content analysis of the exercise worksheets showed that participants attributed problematic gaming behaviour to lack of self-control and negative influence by others. Many are concerned with their academic progress and health, and are keen to address these concerns. They perceived peer and family support, and helping themselves as the most important facilitators of change.

Keywords: motivational interviewing, group therapy, gaming disorder, risks

S-4G3

Diverse gaming problems and an effective intervention

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Can an intervention for problematic gaming be successful if its's goal is not to quit or even cut back gaming? We argue that it can, both in getting people to seek help for diverse gaming problems and making a successful and lasting change. Restart program is an online and phone-based intervention for problem gaming in Finland utilising CBT and MI. We are presenting results from a clinical data set of 144 adults (18-63 years old) who sought help for problematic gaming and longitudinal data from 72 people who completed the program in 2020-2022. Descriptive statistics of help-seekers and statistical analysis on the effects of the program are presented. When there were no institutional barriers, people sought help to subclinical disorders and later in life. In our data problematic gaming seems to be a more heterogenous phenomenon than GD diagnostic criteria suggest, but Restart program is effective no matter where the problems occur (time, money, psychosocial distress). We invite researchers to utilise our data in their work and provide instructions for the application process.

Keywords: problematic gaming, intervention, help-seeking

S-4G4

Development and effectiveness verification of a family support program

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Background: In this study, we developed and implemented a psychoeducational program that teaches family members of children with gaming disorder (GD) how to properly interact with their children and verified its effectiveness. *Method:* We invited 130 families who wanted to bring their children to our clinic but were unable to do so, mostly due to the children's refusal to visit. Thirty-four families who consented to participate in the study were randomly assigned to either the intervention or the waiting (control) group. The final number of participants was 23 - 10 in the former group and 13 in the latter. The family intervention program consisted of six in-person group sessions which were conducted every two weeks. Both groups were followed up at 3 and 6 months after the completion of the program. *Result:* By 3 months after the end of the program, 5 out of 9 children with GD in the intervention group sought treatment at the clinic, but none did so from the control group. In addition, time spent on gaming decreased significantly at the 3-month follow-up compared to the baseline for the

intervention group, but not for the control group. On the other hand, there were no significant differences between the two groups in terms of the severity of GD and related problems, or with the degree of families' depression and anxiety. *Conclusions:* Although the sample size was small, our findings suggested that the family intervention program developed for this study was effective in improving treatment seeking and reducing time spent on gaming for children with GD.

Keywords: gaming disorder, family program, intervention outcome

S-4G5

Using board games in gaming disorder

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Background: Board games are being used in the treatment of adolescents for therapeutic purposes. It can be used as one of play therapy, but currently there are not many studies on which board game is effective and how. Board games can expected to improve the understanding ability, enhance interpersonal communucation with participants, and increase the motivation of participants. *Presentation points:* Board games, unlike online games, are played offline and are played directly with other people, it can give a different experience from online games. Due to the time required for preparation, face-to-face interaction with others, and lack of flashy effects, it is less addictive than online games and can be expected to serve as a much safer replacement treatment. There are various genres of board games, such as competition and cooperation, more complex games, simple party games, games that require mathematical calculations, and games that require sensitivity or imagination. Introducing several board games that are currently on the market, and reviewing factors that can be helpful in treating game addiction.

Keywords: gaming disorder, board game, play therapy

S-4H1

Religiosity and behavioral addictions

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Background: Previous studies investigating the associations between religiosity and addictive behaviors mainly focused on substance use-related disorders. Therefore, the goal of our study was to also involve behavioral addictions into the examination of this link. *Methods:* Problematic pattern of gambling, internet use, social media use, video gaming, as well as work addiction, exercise addiction, eating disorders, and compulsive buying behavior were analysed on the data of a nationally representative study of the Hungarian adult population (N = 1385). Chi-square tests and multinomial logistic regression were conducted to evaluate the relationships between these addictive behaviors and the three values of religious status: religious (49.5%); uncertain (6.4%) and non-religious (44.1%). *Results:* Significant differences were found regarding problematic pattern of gambling, internet use, and social media use as well as exercise addiction and compulsive buying behavior with the lowest occurrence among religious and the highest occurrence among uncertain participants. Based on the regression model, uncertain religious status and being male increased, however, higher age decreased the chance of one, while religiousness decreased the chance of involvement in two or more of the examined addictive behaviors. *Conclusion:* Our results suggest that religiosity is protective in behavioral addictions. However, these results also draw attention to the need to investigate how uncertain religious status affects the maintenance and recovery from addictions. *Funding sources:* This work was supported by the Hungarian National Research, Development and Innovation Office (K128604; K143732).

Keywords: religiosity, addictive behaviors, behavioral addictions

S-4H2

Stigma in substance-based and behavioral addictions: A systematic review

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Background: The study of stigma in mental health is vital to understanding the phenomenological experience of mental disorders, as well as serving clinical assessment, case conceptualisation, and interventions. Addictions are a broad class of mental disorders often associated with public misunderstanding, which can contribute to shame, discrimination, and reticence to seek help. The recent recognition of behavioural addictions, including gaming disorder in the ICD-11, has also generated debate on whether ordinary recreational activities may become inadvertently stigmatized by such diagnoses. This talk will discuss our recent systematic review which evaluated addiction stigma research to identify the grounding theoretical frameworks, correlates, and measurement approaches to stigma across substance-based and behavioral addictions. *Method:* A search of five databases: Web of Science, PubMed, Scopus, PsycInfo, and PsycNet, identified 74 studies of addiction stigma. Twenty measures of stigma were reviewed for their validity in assessing addiction stigma. Results: Only 20 studies reported outcomes for behavioural addictions compared to 58 which reported on substance addictions and 52 studies examined public stigma. This talk will summarise the findings on predictors of stigma; examine differences between substance and behavioural addictions, and summarise the psychometric differences in measurement tools. *Discussion:* Several studies have examined stigma arising from food addiction and gambling disorder, but there has been less attention on technological addictions, including gaming disorder. Further research would assist in understanding how individuals and the wider community view and respond to diagnostic labels and harms associated with excessive engagement in these activities.

Keywords: stigma, addiction, review, measurement

S-4H3

Finding your way in the complex area of behavioral addictions

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Background: The OFDT informs public decision-makers on addictive behavior, drugs and contexts and intends to extend its scope of observation to behavioral addictions, beyond gambling Which is already monitored. A preliminary overview of the current state of knowledge and research has been carried out. *Methodology:* A bibliography has been produced by searching scientific databases, and then with a "snow ball method" has been broaden to a wide variety of sources (grey literature, online non-scientific literature from and for management or marketing professionals, websites targeting gamers…). The disciplinary scope was as broad as possible beyond the health field (information and communication sciences (ICS), anthropology, economics...), as were the potential addictive practices studied (gaming, sport, hypersexuality…). *Results:* The field of addictive behaviors appears especially complex. It involves numerous scientific disciplines, each with their own theoretical concepts, models and vocabulary, that are often not explicit. The same applies to the concept and the definition of addiction terms, employed with heterogeneous meaning. Also are the behavioral situation's concepts and definitions (addiction, problematic use…) which are the core of measurement grids and data comparability. The issues of professionals whether from a scientific, social or more pragmatic perspectives are many and cross-linked. There is limited exchange between different viewpoints, notably between health approaches and ICS which could help understand the addictive process through specific theories and thus open up perspectives for prevention. *Conclusion:* This work describes the multiaxial framework of the field of behavioral addictions in order to facilitate understanding by contextualizing the literature.

Keywords: behavioral addiction, behavioral addictions field framework, review

S-5A1

A neuroscientific perspective on smartphone use disorder:
What do we know and where to go from there

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Since the inception of the IPhone in 2007 the smartphone has been a tremendous success story resulting in billions of users worldwide. Despite its many useful features such as enabling communication from every location with a mobile network, the smartphone provides its users also with applications which are increasingly debated as being potentially addictive (such as freemium games or social media services). In order to understand what drives the overuse of smartphones, it is critical to not only rely on behavioral and questionnaire assessments, but to also integrate brain imaging approaches to understand the neural mechanisms underlying excessive use of the devices and their manifold applications. The so far most used neuroscientific technique to shed light on this controversial topic is magnetic resonance imaging (MRI). In the presentation, an overview is provided on both structural and functional brain imaging studies examining smartphone use disorder, also referred to as problematic smartphone use or smartphone addiction. Based on this overview, a roadmap is provided to delineate a framework and open questions to better understand the neural basis of excessive smartphone use.

Keywords: MRI, smartphone addiction, smartphone use disorder, problematic smartphone use, review

S-5A2

To study the interaction between craving and physiological changes in problematic mobile gaming addiction

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Background: With the dramatic development of internet and mobile phone, there is a tendency for the gamers to switch their gaming to their smartphone. Literature has shown the negative impact of internet gaming, it was unclear the correlation between mobile gaming and their physiological changes. *Methods:* All subjects were required to complete a problematic mobile gaming questionnaire (PMGQ, cutoff point, 29/30), the experiment with mobile gaming, and resting conditions accompanied by heart rate variability (HRV) measurement. *Results:* Total of 85 participants (mean aged 21.58 years old) were recruited (30 problematic mobile gamers, PMGs, and 55 non-problematic mobile gamers, nPMGs). The results showed that the PMGs significantly had a higher craving score than the nPMGs ($p < .001$). In addition, the results showed a significantly higher LF/HF HRV in the PMGs than in the nPMGs during the mobile gaming condition ($p = .009$). Moreover, the craving for gaming score was found to be positively correlated to the LF/HF ($p = .001$) as well. *Conclusions:* The significantly higher craving score for mobile gaming was found in the PMGs indicating the craving tendency even when they are not playing mobile games. In addition, the significantly higher LF/HF found in the PMGs during mobile game playing, implies a higher arousal of autonomous systems related to the game-related cues and craving induced. Our study may provide knowledge to study the physiological aspect of mobile gaming, and possible differences compared to the internet gaming disorders; in order to contribute to prevention and intervention of gaming addiction.

Keywords: autonomic nervous system, craving for gaming, mobile game addiction, heart rate variability (HRV)

S-5A3

Impulsivity-related right superior frontal gyrus 'hubness' serves as a potential endophenotype of internet gaming disorder

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Background: Internet gaming disorder (IGD) is a worldwide mental health issue. However, the lack of knowledge about the endophenotypes associated with IGD has restricted the prediction, diagnosis, and treatment of IGD. *Methods:* Twenty-six patients with IGD, 23 excessive internet game users (EIUs) who recurrently played internet games but were not diagnosed with IGD, and 29 healthy controls (HCs) performed delay discounting tasks and Iowa gambling tasks. Resting-state fMRI data were also collected. *Results:* IGD exhibited significantly lower hubness in the right medial orbital part of the superior frontal gyrus (ORBsupmed) than both EIU and HC. Additionally, the hubness of right ORBsupmed was found to be positively correlated with the highest excessive internet gaming degree during the past year in the EIU but not the IGD group, which might be the protective mechanism for EIU from being addicted to internet games. Moreover, the hubness of the right ORBsupmed was found to be related to the outcome of treatment of IGDs, with higher hubness of this region indicating better recovery when undergoing forced abstinence. Further modeling analysis of the delay discounting task and Iowa gambling task revealed the cognitive significance of the hubness of right ORBsupmed and linked lower hubness of this region with higher impulsivity in decision-making. *Conclusions:* The impulsivity-related right ORBsupmed hubness highlighted in our data can serve as a potential endophenotype of IGD, and provide clues for the prediction and treatment of IGD.

Keywords: impulsivity, nodal hubness, brain network, decision-making, Internet gaming disorder

S-5A4

Risky decision making in specific domains of problematic Internet use: Results from a meta-analysis

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Background: Addictive behaviors are commonly associated with decision-making deficits. In research on problematic Internet use (PIU), respective findings have been reported isolated for specific domains (e.g., gaming) or pooled over different domains and different task types although different underlying cognitive processes are assumed. We reviewed empirical studies on risky decision making in specific PIU domains and analyzed mean performance differences between task types (objective risk/ ambiguity) and PIU domains. *Method:* The PubMed search included original research articles published in peer-reviewed journals until January 2023. We excluded studies where the problematic behavior was not performed predominantly online, or where the PIU was merely comorbid to another psychiatric disorder. Risk of bias was assessed using the Newcastle-Ottawa Scale for quality assessment in case-control studies. Meta-analysis was performed if at least four studies were available per subgroup. The protocol is registered on PROSPERO. *Results:* Studies were identified in the PIU domains of gaming (n=17), social-networks use (n=8), unspecified PIU (n=7), and online gambling (n=1). In the meta-analysis, we included 23 studies (2382 participants). Across domains, individuals with PIU show lower decision-making performance compared to controls. PIU domain and gender were significant moderators in the risk domain. *Discussion:* PIU is associated with decision-making deficits. However, the results depend on decision-making type and PIU domain. For ambiguity, deficits appear small but consistent across PIU domains. For objective risk, deficits are present for gaming disorder but not for unspecified PIU. Further studies on decision-making in PIU including similar gender-distributions are necessary to uncover differential effects.

Keywords: Internet addiction, Gaming disorder, social-networks use disorder, risky choice, gambling task

S-5B1

A pilot study of a group-based intervention for parents of adolescents who engage in excessive gaming

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Interventions targeting adolescents with gaming disorder (GD) have been developed and they are shown to be effective in improving adolescents' GD severity and mental health symptoms. However, the current literature pays little attention to the fact that adolescents' GD can be a source of distress for their parents, and such distress may in turn impair their relationship and elevate adolescents' GD severity. Furthermore, adolescents with GD are often reluctant to participate in treatment, which may lead to feelings of frustration and hopelessness in parents. Interventions addressing the needs of parents, not just the needs of adolescents with GD, are therefore needed. This pilot study developed a group intervention for parents of adolescents who engage in excessive gaming. The intervention is based on motivational interviewing and mentalization approaches. A total of 43 participants (n = 23 intervention group; n = 20 control group) were recruited via social services. Using a mixed methods design, the study evaluated the feasibility and acceptability of the intervention: 1) a non-randomized controlled design was used to examine the impacts of the group-based parent intervention on parents', adolescents' and relationship outcomes using. Specifically, the primary outcome was parents' stress and mental health symptoms; and the secondary outcomes included parents' emotional regulation, parent–adolescent conflicts and adolescents' GD severity. 2) Parents' perceived usefulness of the intervention and views regarding the intervention content were collected via individual interviews. This talk will present the study's results and discuss research and clinical implications of the findings.

Keywords: gaming disorder, intervention, mixed methods, group-based

S-5B2

Collective motivational interviewing facilitates a joint change partnership among adolescents with gaming disorder tendency and their parents: Preliminary findings and insights from a mixed-methods pilot study

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Collective motivational interviewing (CMI) is a novel motivational tool devised by the present authors based on evidence-based motivational interviewing (MI). CMI retains the tenets of MI, but goes beyond the individual-based dialogue by involving concerned significant others in the motivational process. We developed a brief four-session intervention that prepares the adolescents and their parents separately through individual MI sessions. This is then followed by a joint session to foster mutual understanding and reach a consensus on a goal going forward. The present study is the first to apply CMI to address adolescents' gaming problems. A mixed-methods pilot study was adopted to track changes in the outcomes of the intervention, including the severity of gaming disorder; level of craving for gaming; motivation for change; and social support at the pretest, posttest, 1-month follow-up, and 3-month follow-up. In addition, multi-dimensional qualitative interviews were conducted to capture the experience of the participants (i.e., adolescents with GDt and their parents) and counselors as observers. With dyads of five adolescents and their parents participated in the intervention with zero attrition suggesting that the intervention is acceptable to the target group and feasible. This presentation will present the preliminary quantitative findings of CMI and insights gained from the multi-dimensional participant and observers' feedback, which will guide the future development of CMI and provide solid ground for the fully-fledged randomized controlled trial.

Keywords: behavioral addiction, gaming disorder, and motivational interviewing

S-5B3

Effectiveness of cognitive-behavior therapy for adolescents with high-risk of Internet Gaming Disorder and Problematic Smartphone Use: A randomized clinical trial

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Internet gaming disorder (IGD) and problematic smartphone use (PSU) is now recognized as a global mental health issue among adolescents and young adults. Cognitive behavioral therapy (CBT) is widely used for prevention and treatment of IGD/PSU. PROTECT (Professioneller Umgang mit technischen Medien [Professional Use of Technical Media]) intervention has shown effectiveness in reducing symptom severity of IGD for at-risk adolescents in Germany. PROTECT intervention is also translated and adapted for Korean adolescents with high-risk of IGD/PSU. In this study, a randomized controlled trial (RCT) is conducted to investigate effectiveness of PROTECT intervention for IGD/PSU high-risk adolescents in South Korea. Total 32 adolescents are recruited for study. Study group (n=16) participate PROTECT program for 4 week, and control group (n=16) are included as wait-list. Participants are assessed at baseline, post-intervention, 2-month follow-up. Internet gaming and problematic smartphone use symptom severity is evaluated as primary outcome. Procrastination, depression, social anxiety, and performance anxiety is evaluated as secondary outcome. Result of this on-going RCT for adolescents with high-risk of IGD/PSU will be presented and discussed.

Keywords: Internet gaming disorder, Internet Addiction, smartphone addiction, problematic smartphone use, cognitive-behavioral therapy

S-5B4

Management of IGD in community children and adolescents in Korea – from prevention to case management

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Problematic Internet use is a major community mental health problem because it can pose a major challenge to the mental health of children and adolescents. It is not enough to simply treat problems after they occur, and the most effective management is achieved when primary prevention, secondary prevention, and tertiary prevention are applied equally to the community. Therefore, based on this public health model, we would like to introduce literacy promotion and prevention education for problematic Internet use, universal screening and short-term intervention for problem groups, and individual case management models accordingly. Currently, Screening, Brief Intervention, and Referral to Treatment (SBIRT) and DAGIM Plus case management programs are being implemented at Nowon Community addiction management center in Seoul. Information on this process will be provided along with the data. This will provide participants with ideas for applying good practices of community engagement to other countries and regions.

Keywords: IGD, case management, Korea, community, adolescent, school, gaming

S-5C1

The contribution of sexual narcissism and childhhod trauma to hypersexual behavior in SA partipantsts

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Background and aims: There is evidence that sexual addiction is associated with childhood trauma in women and men. We have recently shown positive associations between childhood sexual abuse (CSA), physical and mental abuse and physical neglect, (but not emotional neglect) and sex addiction among a mostly female sample who use dating applications for sex. A multiple regression analysis revealed that ratings of child abuse (physical neglect, sexual abuse, physical and mental abuse but not emotional neglect) have explained 57% to the variance of sexual addiction scores in this sample. There is also evidence that sexual narcissism is associated with aggression and with intercourse with many partners and sex at young age. There are few studies on the association between personality factors and compulsive sexual behavior. The current study aims to examine the relationships between childhood abuse and neglect, sexual narcissism and hypersexual behavior in participants of a sex addiction support group. *Methods:* Participants were 118 adults (age range 18-59 mean age 31.94 (SD = 9.32), 72 males and 46 females. The sample included 59 participants in the sex addiction group (Sexaholics Anonymous SA) and 59 control participants from the general population. Questionnaires included a socio-demographic questionnaire, the Hypersexual Behavior Inventory (HBI) (Reid, et al., 2011), Sexual Narcissism Scale (SNS) (McNulty and Widman, 2010) and the Childhood Trauma Questionnaire (CTQ) (Bernstein et al., 1994). *Results:* Childhood trauma was associated with sexual narcissism (r = 0.52, p < 0.01) and with hypersexual behavior (r = 0.60, p < 0.01). A mediation model has shown that sexual narcissism and child trauma have contributed significantly to ratings of hypersexual behavior (F(5,112) = 38.47, p < 0.01) and they have explained 63% of the variance of hypersexual behavior ratings. In addition, using the Bootstrapping method, the indirect effects found in this model showed that sexual narcissism has increased the likelihood of hypersexual behavior and it is a significant mediating factor between trauma and hypersexual behavior. *Discussion and conclusions:* This study shows that sexual narcissism has a mediating role in explaining the relationships between childhood trauma and hypersexual behavior. These findings explain the role of personality traits, like sexual narcissism, and childhood trauma in the development of hypersexual behavior and it may have clinical implications for treatment of compulsive sexual behavior disorder.

Keywords: hypersexual behavior, childhood abuse, narcissism

S-5C2

Suicidal risk in patients with sex addiction

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Background: Sex addiction (SA) may co-occur with other psychiatric disorders such as suicidal behavior. This is a crucial issue from a prognostic perspective and few studies have explored this phenomenon in depth in patients with SA. The objectives of our study were to determine the prevalence of suicidal risk (SR) in patients with SA, to identify factors associated with SR in this population and to describe their clinical profiles. _Method:_ Data were collected in the EVALADD cohort. The sample used for the present study included 136 patients with SA. The presence of SA was assessed by the Sexual Addiction Screening Test and the SR by the MINI 5.0. To identify factors associated with a SR and with a higher risk of suicide, we performed two multivariate logistic regressions. _Results:_ More than 46% of patients had a suicidal risk when they started treatment (63/136). Having a current mood disorder, a current anxiety disorder, relatives aware of the SA and a low level of self-directedness were factors associated with a suicidal risk. Patients with a higher risk of suicide had a lower level of perseverance and less frequently a secure attachment style. _Conclusions:_ Individuals with SA are at high risk of suicide, maybe even more than for the other behavioral addictions. The presence of the factors associated with a suicidal risk in SA could alert the clinician about an act that is sometimes difficult to predict. Looking for a suicide attempt when the patient initiates treatment for SA is a crucial factor that can improve the prognosis.

Keywords: suicidal risk, sex addiction, sexual behavior

S-5C3

The global health implications of compulsive sexual behaviour disorder

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Background: Problematic pornography use has been recognised as a health issue through the World Health Organization's diagnostic criteria for compulsive sexual behaviour disorder. With the Internet now making free online pornography accessible to over 63% of the world's population, what are the emerging global health policy implications for the development of behavioural addictions driven by pornography use? *Method:* We use publicly available data to propose a methodology for estimating the number of individuals whose internet pornography consumption may place them within the diagnostic criteria for compulsive sexual behaviour. Our model combines Internet traffic data for major pornography websites with known prevalence statistics on treatment seeking and non-treatment seeking populations drawn from the behavioural addiction literature. This allows the calculation of likely upper and lower numbers of people presently having, or at risk of developing, a compulsive sexual behaviour disorder driven by pornography use. *Results:* Traffic analysis suggests that at least 20% of the five billion people with access to the internet are regular online pornography consumers. Between 1% and 6% of pornography consumers are likely to develop problematic use of pornography. This suggests the likely current populations of individuals world-wide who might meet the diagnostic criteria for compulsive sexual behaviour disorder is between 10 and 60 million users. This number is on a positive growth trajectory. *Conclusions:* The potential global health policy implications of the development of behavioural addictions relating to pornography use are discussed.

Keywords: compulsive sexual behaviour disorder, problematic pornography use, Internet pornography

S-5C4

Raising awareness of behavioural addictions among professionals: A non-profit case study

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Background: The international conference on behavioural addictions was established in 2013 as a forum to explore new ways of understanding human behaviour. The Reward Foundation: Love, Sex and the Internet, a non-profit organisation based in Scotland, UK, has been active in communicating the knowledge generated by the behavioural addiction science community since 2017. *Method:* In this case study, we explore the different approaches of The Reward

Foundation to inform client-facing professionals, and the wider public, about opportunities to integrate knowledge from behavioural addiction research into their practice. Communication channels examined include face-to-face teaching in secondary schools and creating lesson plans for school teachers. We also look at the effectiveness of creating in-person and online training courses for professionals in the sexual health, legal, educational, therapeutic and counselling fields. Challenges with reaching a wider public through websites and public information programmes are also discussed. *Results:* Five years of developing and delivering programmes involving compulsive sexual behaviour disorder has demonstrated the need to understand how to best present content for maximum effectiveness. It is grounded in developing tools through face-to-face interaction with real clients. However, it is clear that the in-person model does not scale and online teaching tools and information websites have much more potential to disseminate the insights generated by the research community. *Conclusions:* The development of high impact communications programmes benefits from development involving wide and deep feedback loops with representative samples of the target audience. Online tools then allow this to scale to reach the whole world.

Keywords: behavioural addiction communication, developing teaching tools, effective communication

S-5C5

This is the True Story of my Struggles with Addiction and how I recovered

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The Healing is Spiritual. I want to tell you about my life. As I tell you more about myself, you can play along in your mind, as to what type of addiction I recovered from. Let's see if you can figure out what affliction I used to have. I will reveal the type of addiction at the end of my talk today. I am now almost 51 years old. I have worked as a medical doctor for 25 years. The majority of my career has been as a Board Certified Pediatrician. I stand here before you not as an addiction medicine specialist, but as a person who has suffered with the struggles of addiction. My talk today, is about the steps of my recovery.... My children are now adults and living their best lives. However, for most of my childrens' lives, I had guilt that I caused my son Alex's disability.... I believed that I had caused my son's disability due to my actions and also because I needed to be taught lessons by God or The Universe. You see, before I had children I would avert my eyes away from disabled people. They made me feel uncomfortable and I did not see their worth. I felt that God had given me a disabled child so that I could learn my life's lessons and change my mindset. This thought created anger in me because I felt that I should have been the disabled one, not my son, and that my son was the sacrifice for me being a bad person and not valuing people with disabilities... My addiction was my only coping mechanism. It was the only thing that could help me forget my problems for a brief time. It Was my only escape. My addiction has been with me since

I was a pre-teen, up until the age of 49. Like any addiction, I had a strong craving for it. The addiction provided short-term gratification. The addiction caused long-term consequences and I was not able to stop acting on my addiction despite the consequences. At age 49, I had health problems such as high blood pressure, high cholesterol, depression, being overweight, and overall low energy and work burnout. My addiction had caused problems in my family life and especially with my relationship with my current husband. I had hit rock bottom and I was determined to get help. I had tried therapy in the past but it did not fundamentally help me. I tried anti-depressant and anti-anxiety medications but they too had limited benefits. I finally found a coach with whom I had a connection, who was ultimately able to help me heal. The steps to my recovery were as follows: First I declared myself a _____ addict. I surrendered to this label. I then worked through all the traumas and stressors of my past to determine what it was in me that caused my emotional distress. This step took many hours, weeks, and months of therapy and mindset work. I declared myself free from my addiction to _____. I was able to live my life in love. I no longer gave myself the label of _____ addict so that I did not "live down" to the expectation of this label. The missing piece to healing in the past had been spiritual. The problem had been in my mind but the healing is spiritual. That is why, for me, medications and cognitive talk therapy had limited benefits. THIS IS THE SHORTENED VERSION OF MY 10–15 minute lecture. I would like to follow up my lecture with a workshop 30–60 minutes long.

Keywords: female sex addiction, binge eating, spiritual healing, compulsive sexual behavior

S-5D1

Addiction, impairment, and resilience in videogamers: Findings from the International Gaming Study, 2022 (IGS22)

JOHN SAUNDERS (chair)

The University of Queensland, Australia

Symposium summary: The International Gaming Study, 2022 (IGS22) is a four-country study in which videogamers reported their experience of videogaming, including duration and frequency of gaming, game genre, features of ICD-11 Gaming Disorder (GD), DSM-5 Internet Gaming Disorder, and a range of positive experiences and impairments from gaming. Dr. Gary Chan will examine whether tolerance and withdrawal are integral to ICD-11 GD, which presently does not include them as obligatory features. Dr. Saunders will report on occurrence of impairment from videogaming in participants who were not diagnosed with ICD-11 GD. A "sub-addiction" diagnosis of "Harmful Gaming" is proposed to identify such individuals, who would potentially benefit from prevention and brief therapeutic interventions to avoid further harm. Dr. Leung will present evidence that physical health consequences including pain, are common in videogaming populations. Those playing > 12 hours/week had significantly higher experience of pains in the hand, wrist, neck and back. These occurred particularly in those aiming to be professional players and in those who fulfil DSM-5 IGD. Dr. Stjepanovic will report the experience of videogaming in older adults (> 65 years). In this population videogaming is less likely to cause adverse consequences than in younger people. This is partly related to reduced overall gaming time and frequency of play, and integration into life. Dr. Hides will describe the results of a qualitative study examining gamers perceptions of how to differentiate problematic from normal, healthy videogame play. The implications of this for the prevention and treatment of problematic videogaming will be discussed.

Keywords: gaming, video game, addiction

S-5D2

Do tolerance and withdrawal exist in Gaming Disorder?

GARY CHAN, JOHN SAUNDERS, JANNI LEUNG, DANIEL STJEPANOVIC, MATTHEW GULLO, JASON CONNOR

The University of Queensland, Australia

Background: The ICD-11 diagnosis of Gaming Disorder (GD) requires the presence of impaired control over gaming, increasing priority over other activities, continued gaming despite adverse consequences, and demonstrable impairment. Tolerance and withdrawal, which are characteristic features of substance dependence, are not accepted as diagnostic features; instead they are noted as "additional clinical features". This study, part of IGS22, sought to examine whether tolerance and dependence are integral components of GD. *Method:* Data were

from 803 participants (age <=65) in the IGS22. There were 76 items in the study measuring impaired control over gaming, increasing priority over other activities, continued gaming despite adverse consequences, e impairment, and tolerance and withdrawal. *Results:* Tolerance was reported by 32%, and withdrawal by 33.5%, compared with 33.7% reporting impaired control. Exploratory factor analysis (EFA) shows that both tolerance and withdrawal loaded on the same factor as impaired control. Increasing priority loaded on to a second factor and impairment on to a third. We then conducted two sets of confirmatory factor analysis, one with the 3-factor structure identified in the EFA and one with 6-factor with impaired control, tolerance and withdrawal loaded on separate factors. The 3-factor model fitted the data well (CFI=0.962, RMSEA=0.025); with substantially increased model complexity, the 6-factor model only marginally fitted the data better (CFI=0.973, RMSEA= 0.022). *Conclusions:* The constructs of tolerance and withdrawal largely overlap with impaired control. While they could be additional clinical features, they are unlikely to be necessary for diagnosis and screening for gaming disorder.

S-5D3

Evidence for harmful gaming as a diagnostic entity

JOHN SAUNDERS, GARY CHAN, JANNI LEUNG, DANIEL STJEPANOVIC

The University of Queensland, Australia

Background: In the newly published ICD-11, Gaming Disorder (GD) is included as a new behavioural addiction. In contrast to the spectrum of substance use disorders, no disorder comprising impairment (harm) from videogaming in the absence of addiction is identified. As part of the IGS22 four-country study, we examined whether there is evidence for a sub-addiction entity of Harmful Gaming. *Method:* A sample of 796 adults who played online games for at least three hours per week was recruited from Australia, Canada, the US and the UK. They completed a survey of features of Gaming Disorder. Results: At least one feature of impaired control over gaming was present in 33.7%, increasing priority of gaming in 29.7%, and continued gaming despite harm in 28.0%. The diagnosis of GD requires all three, together with evidence of impairment and a pattern of repeated gaming over 12 months; 11.2% (n=89) fulfilled these requirements. Overall, 48.0% (n=382) experienced impairment and 34.9% (n=278) also had a 12 months+ pattern of gaming. Thus, 189 had evidence of impairment but did not fulfil the diagnostic requirements for GD, and can be considered to have Harmful Gaming. *Conclusions:* Impairment from gaming is common in participants who do not fulfill the diagnosis of Gaming Disorder and could be described as having "Harmful Gaming". This diagnosis was more than twice as common as GD. This provides support for Harmful Gaming to be included in ICD-11, and supports broadening the scope for prevention and intervention to minimise gaming-related harm.

S-5D4

Negative physical problems and body pain associated with video gaming behaviours – A cross-sectional analysis of the 2022 International Gaming Study

JANNI LEUNG, GARY CHAN, MATTHEW GULLO, JOHN SAUNDERS, DANIEL STJEPANOVIC, CALVERT TISDALE, LEANNE HIDES, JASON CONNOR

The University of Queensland, Australia

Background: Online gaming or video game play can result in a persistent pattern of addictive behaviour associated with negative psychological consequences. Less studied are the physical aspects, so we examined negative physical problems associated with video gaming behaviours. *Method:* Data were from the 2022 International Gaming Study (IGS22) - a cross-sectional survey of individuals who play video games for 3 hours or more per week. This study included 955 participants who were aged 18-94 (M=46.10 [16.19]) and 45% were male. We examined socio-demographic and gaming behavioural factors associated with past 12 months experiences of physical problems. Respondents also completed the 10-item Internet Gaming Disorder Test (IGDT-10). Results: Preliminary results showed that playing video games for more than 12 hours per week (n = 327) was associated with hand pain (RR=1.39, p = .016), wrist pain (RR = 1.68, p<.001), and back pain or neck pain (RR = 1.21, p < 0.001). Playing for 3 or more hours in one session was associated with negative physical problems and pain (RR = 1.65–3.92, p < 0.01). Those who reported intentions to play video games professionally (n = 94) were more likely to report physical problems (59% vs 26%; p < .001). Those who met the positive cut-off according to the IGDT-10 (n = 139) were significantly more likely to report physical problems (66% vs 25%; p<0.001). *Conclusions:* In addition to negative psychological consequences, physical problems and pain should be considered in persons who engage in high frequency gaming behaviours, including those who aim to become professional video game players.

S-5D5

Resilience to impairment in older videogamers

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The University of Queensland, Australia

Background: The International Gaming Study (IGS22) multi-country study recruited participants from a wide age range, providing an opportunity to explore gaming patterns and consequences in older adults, a hitherto under-assessed population. The aim of the present study was therefore to understand the impact of videogaming on the wellbeing of older adults. *Method:* The IGS22 is a cross-sectional survey of individuals who play video games weekly. This study included 955 participants aged 18–94 (M = 46.10 [16.19]; 55% female). We stratified our sample into five age categories: (i) 18–25 (10.3%), (ii) 26–35 (21.8%), (iii) 36–45

(20.1%), (iv) 46–65 (31.9%), and (v) >65 (15.8%). Results: Participants' play frequency did not differ across age (p = 0.151), but older adults were less likely than young adults (18–25: 73%, >=65: 24%, p < 0.001) to play for 4 hours or more on a typical day. Younger people were more likely than older people to play for 3 or more hours in one session (p < 0.001), with only a very small proportion of older adults playing for 6 or more hours in single session (>=65: 2.6% vs 18–25: 19.4%). In young adults aged 18–25, 27% met IGDT-10 cut-off, compared to only 2% in older adults aged >65 years (p < 0.001). *Conclusions:* Preliminary analyses showed that people across the lifespan engage in videogame play. Older individuals were less likely than to game for long sessions, and the majority did not meet the IGD-10 gaming disorder positive category. Analyses are underway to investigate if videogaming may be more harmoniously integrated into their lives.

S-5D6

Differentiating problematic from normal videogame play: Insights from a qualitative study

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Background: Internationally, there is increasing concern about the risk of internet gaming disorders in young people. However, little is known about how to differentiate between normal versus problematic gaming behaviour. *Method:* Semi-structured interviews were conducted with 21 gamers (21– 37 years, M = 26.91), who engaged in 6 to 70 hours (M = 20.86) of videogame play/week. Audio-recordings of interviews were transcribed and then analysed using Vivo and the reflexive thematic approach. *Results:* Participants felt gaming was an enjoyable hobby which was beneficial for their mental health. Positive social connections including the formation of new friendships and gaming experiences with family and friends were prominent themes. Gaming was considered problematic if it had negative impacts on social connections outside of gaming, the achievement of real-world responsibilities, personal or professional goals or became a way of avoiding real-world stressors or managing distress. Maintaining social connections, hobbies/interests outside of gaming, and having long term personal and vocational goals were seen as protective strategies. Further protective techniques included being able to set time or discernible 'end-point' limits on gameplay, or organizing time spent gaming around other activities/responsibilities. With a view to possible interventions for problematic play, participants suggested that messages about problematic gaming should come from other gamers with a 'healthy' relationship with games. *Conclusions:* Participants provided important insights into how to differentiate problematic from normal, healthy videogame play. The results of this study will inform the development of a new problematic play check-up program.

S-5E1

Cashless gambling: Consumer perspectives on the risks and benefits of digital payment systems for electronic gaming machines

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In-venue gambling remains predominantly cash-based despite broader societal trends towards a cashless economy. Historically, regulators have shown hesitancy about cashless gambling (e.g., using cards or smartphone apps to load funds for gambling) due to the very limited evidence base available in relation to the impact of cashless payments on gambling behaviour and risk of experiencing harm. Cashless gambling is receiving renewed regulatory attention due to the risk of money laundering through gaming venues and increasing recognition of the potential to leverage digital technologies for enhanced gambling harm reduction. This presentation reports findings from a qualitative study exploring consumer perspectives about cashless payments on electronic gaming machines (EGMs). Online focus groups were conducted with 26 Australian adults (38% female, aged 24 to 76 years) who play EGMs regularly. Data were analysed using qualitative content analysis. Participants expressed concerns about how cashless payments might lead to overspending, such as through greater accessibility of funds, the intangibility of cashless payments, and reduced breaks in play. The ability to track an individual's gambling activity was identified as a potential benefit for preventing money laundering and providing integrated consumer protection tools (e.g., precommitment systems, activity statements), but privacy was a major concern. We discuss factors that may influence consumers' willingness to adopt cashless gambling, such as the level of flexibility of settings within the system, consistency across venues, and integration of loyalty programs. This study lays important groundwork for much-needed further research into the optimal design of cashless gambling systems for effective harm minimisation.

Keywords: gambling, payment, digital, cashless, harm reduction

S-5E2

Canadian Lower Risk Gambling Guidelines:
Investigating feasibility of the guidelines in a Finnish cultural context

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At-risk and problem gambling is a significant public health concern globally, and it causes harm not only to the gamblers but also to their significant others as well as the society at large. This study evaluates the feasibility of the Lower-Risk Gambling Guidelines (LRGG), developed by the Canadian Centre of Substance Use and Addiction (CCSA), in a Finnish cultural context. The LRGG was developed to lessen the harms related to gambling in Canada, using gambling data from eight countries, including Finland. We use both qualitative and quantitative methods to find out whether the established guidelines of: 1) Gamble no more than 1 % of household income, and 2) Gamble no more than 4 days per month, and 3) Avoid regularly gambling at more than 2 types of games apply to the Finns as they are or do they need cultural modifications. We will present and discuss preliminary results of the quantitative online survey results (n = 500–800) and the qualitative focus group interviews (n = 44–70). *Implications:* The goal of our study is to establish culturally sensitive safer gambling guidelines in Finland, which would help Finns to make informed decisions about their gambling. The guidelines also support the implementation of the programs aimed at reducing gambling-related harms and promoting public health. In addition, these programs can provide consistent evidence-informed advice about how to gamble in a lower-risk manner.

Keywords: prevention, at-risk level of gambling, problem gambling, harm minimization, feasibility study

S-5E3

Impact of a self-exclusion procedure optimized by an extension of the suspension of commercial solicitations (PASS)

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Context: The effectiveness of the current self-exclusion system appears limited. Suspension of direct commercial solicitations by SMS and email for a long period of time after self-exclusion could limit the loss of control over gambling. *Objectives:* Our objective is to evaluate the impact of an optimized self-exclusion procedure by extending the suspension of direct commercial solicitations by SMS and email compared to the self-exclusion procedure alone to 9 months, on the total net loss of gamblers. *Method:* We will include: 2544 sports betting, poker, and horse racing players playing online at the PMU site, self-excluding for the first time AND self-excluding for 3 months or less (min 3 days). Players will be randomly assigned to the 2 arms: procedure optimized by an extension of the suspension of commercial solicitations for a total of 9 months (A) and usual procedure without extension of suspension of commercial solicitations at the end of the self-exclusion period (B). They will be evaluated on D-1 of 6 (T1), 9 (T2, main criterion), 12 (T3) and 18 (T4) months after their self-exclusion on the change of the total net loss of the last 4 weeks as well as on other criteria such as total bets per game, compulsivity, total loss per game, number and duration of game session. We will present the 9-month results of this ongoing study.

Keywords: gambling, self-exclusion, prevention, advertisement, marketing, rct

S-5E4

Can a brief motivational contact improve engagement with an online self-directed program to reduce gambling problems?

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Despite the success of gold standard cognitive-behavioural therapy for disordered gambling, most individuals with gambling problems do not seek or receive professional treatment. Thus, the development of less intrusive interventions has been encouraged. Online interventions show good impact although user engagement is low. This investigation assessed the impact on engagement and outcomes of adding a digital motivational interview (MI) to an online program. A two-arm randomized controlled trial was conducted. Eligible participants (N = 318) were randomly assigned to complete an online self-directed workbook either alone

or in combination with a MI completed upon enrollment. Gambling severity, frequency, and expenditures were assessed along with other mental health outcome data at baseline and 3, 6, and 12 month follow-up time points. Participant follow-up retention (>85%) was very high compared to similar prior trials. Participants who completed the MI did show greater engagement in the online program (twice the number of logins, four times as much time spent), which was positively associated with better outcomes at three months. Twelve month outcome results will be presented along with discussion of implications for providing low intensity easy access options for people wanting to address gambling-related problems.

Keywords: brief intervention, motivational interviewing, online intervention, gambling disorder

S-5E5

'Buy High, Sell Low': A qualitative study of cryptocurrency traders who experience harm

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The constant, substantial price fluctuations of cryptocurrency allow traders to engage in highly speculative trading that closely resembles gambling. With significant financial loss associated with adverse mental health outcomes, it is important to investigate the impact that market participation has on mental health. Additionally, its easy accessibility by mobile trading apps and 24/7 nature necessitates investigation into cryptocurrency trading as a potential addictive behavior. To investigate this, we conducted interviews with 17 participants who self-reported having problems due to their trading. Thematic analysis was conducted, revealing three themes: (1) factors in engagement, (2) impacts of trading and (3) harm reduction. Factors in engagement captured factors that motivated and sustained cryptocurrency trading. Impacts of trading outlined the ways cryptocurrency trading positively and negatively impacted participants. Harm reduction described methods participants employed to reduce mental distress and financial loss while trading.

Our study provides novel insights into the adverse impacts of cryptocurrency trading across multiple domains, especially mental health (14/17), relationships (13/17) and finances (11/17). They also indicate the importance of further research on effective coping strategies for emotional distress caused by financial loss or fixation because of trading.

Additionally, our study reveals the significant role an individual's social environment has on their expectations and intentions of entering the space. These social networks extend beyond real-life relationships to include celebrity and influencer endorsement. This encourages investigation into the content of cryptocurrency promotions and the influence they have on participants' decisions to trade.

Keywords: mental health, cryptocurrency, financial trading, problem gambling, addiction

S-5F1

Behavioural addiction & gender differences with a female perspective: Session 1

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Presentation 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 addictions. Literature and studies on Women and Gambling Disorder and other Behavioural Addiction are scarce, both in Europe and worldwide. The existing data are often not specific to female population but inferred from mostly male samples. Nevertheless, more and more women are affected by pathological gambling and other non-substance related addictions, even if they rarely ask for help: so, with little specific data, it is not easy to have dedicated research and understanding of peculiarities of this invisible population. Because of the crucial role in family and society, women's addictive behaviours may have a deep impact on their social and personal life. One key point, beyond the shame issue, is that women often experience great difficulty in finding appropriate treatment services. Most health clinics are not "female friendly", and very rarely offer female-specific treatment approaches and prevention strategies. That is why it is so important to learn from our experiences as researchers and clinicians, sharing data from all over the world to enrich our understanding of these issues. That's the aim of our new book "Behavioural Addiction in Women: An International Female Perspective on Treatment and Research", F. Prever, G. Blycker & L. Brandt, which gather transcultural contributions to compare, discuss and improve research and treatment for the women on whose behalf we are working on.

Keywords: gender, women, behavioural addictions

S-5F2

Prevalence and correlates of compulsive behaviours related to eating and sex in a female population – Results from a representative Polish sample

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Background: Compulsive Sexual Behavior Disorder (CSBD) and Binge Eating Disorder (BED) are currently included in the 11th revision of the International Classification of Diseases (ICD-11); however, little is known about the prevalence rates and correlates of these conditions. *Method:* Using a web-based survey, we collected the prevalence data of CSBD and BED on representative Polish sample of 787 Polish women. *Results:* Analyzed results will include the prevalence rates of CSBD and BED in a representative sample of women, comorbidity of these disorders with substance and alcohol use, the relationships with trait-level variables (such as anxiety and depression), and sexual activity (both solitary and dyadic).

S-5F3

A qualitative study of motivations and the recovery of repetitive non-fatal self harm behaviors in Asian female community

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Previous literature has suggested that non-suicidal self-injury (NSSI) could be conceptualised as behavioural addiction as they share common characteristics. While NSSI continues to be a problem among the Chinese female population, help-seeking rates remain low. There has been little research into the psychosocial factors and cultural influence contributing to NSSI and its help-seeking behaviour. This research presents an up-to-date background and prevalence rate of NSSI behaviour in Hong Kong. It seeks to explore the subjective experiences of NSSI as an addictive behaviour through a qualitative analysis of interviews with 13 Chinese female participants who are in recovery from it. Interviews were transcribed and analysed for understanding the shared themes across participants' accounts in deliberate self-injurious behaviour. Alexithymia was found to be a trait that may contribute to their NSSI. Participants' self-harming habits met some addictive criteria mentioned in DSM-V. The implications of these findings for the treatment and interventions of Chinese females engaged in NSSI are discussed.

S-5F4

Psychological characteristics of women suffering from gambling disorder

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Historically, gambling disorder, like the vast majority of addictions, has been considered a predominantly male activity. This, on the one hand, has generated great difficulty in the adequate and early detection of the problem in female population and on the other hand, has led to a greater social stigmatisation of women who suffer from gambling-related problems. The aim of this investigation was to study the conditioning factors and specific characteristics in the development of gambling disorder in women. To this end, qualitative research was carried out with a sample of adult women with gambling disorder. The methodology was based on discussion groups. The results show that female gamblers presented a different profile in terms of gambling motives, consequences, family and social support and/or psychosocial manifestations. We highlight the need to introduce gender perspective both in research and in clinical and healthcare resources. Treatment and prevention programmes should consider different psychological aspects depending on sex and gender.

S-5F5

Treatment needs for women impacted by a partner's CSBD/PPU

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Background: Women in romantic relationship with a partner with CSBD or PPU are often affected in many ways before root causes of problems are identified or diagnosed. Women may experience challenges and unique harms, including trauma, due to the nature of an addiction or compulsivity operating in the sexual system of a romantic context where safety, trust, empathy, emotional intimacy, honoring of commitments, honesty, and sexual wellbeing are foundational to a healthy secure relationship. *Method:* A review of research focusing on the impact on women as well as a review of conceptual models for treatment for women with partners with CSBD/PPU will be presented along with clinical case examples. A holistic model will be utilized to compare the seven domains that comprise sexual wellbeing and how each domain may be impacted for women with partners with CSBD/PPU. *Results:* Women may be isolated without proper support and a partner's sexual compulsivity, upwards

comparison to pornography, preferring pornography to partnered sex, or focusing craving towards partnered sex and therefore expressing dissatisfaction or resentment of sexual frequency may all possibly interfere with a woman's sexual self-esteem and feelings about her body, sexual autonomy and agency. Clinical recommendations for supporting women will be included. *Conclusions:* Education about the traumatic impact on women is essential for clinicians to provide a trauma informed approach to treatment. More is needed in the research and clinical fields to advance understanding and knowledge to inform evidence-based treatment needed by women impacted by their partner's CSBD/PPU.

S-5F6

Women, gambling, violence, therapy, and desires during pandemic times in Italy: When resisting wasn't the solution

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The COVID pandemic, 2020/2022, deeply affected our lives and our physical and mental health, and in many ways, women paid a higher prize in their personal and professional lives. What happened to women with gambling problems? And how did we face their loneliness, isolation, depression, and fear of illness and death? We observed our gender group for women with DGA in Milan. 'Holding on' wasn't always a successful strategy for them and we had to deal with their pain and domestic violence issues, using new online tools to support them. We observed different reactions to gambling venue lockdowns in women with and without treatment, and we could understand the importance of being in a female support group, but also the limits and barriers to it, and gave us important hints for future research about support modalities to female population.

S-5G1

Game Disorder in Taiwan, Japan and South Korea: Similarities and differences

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Symposium summary: Gaming Disorder (GD) was recognized as a psychiatric disorder and integrated into the category of "Disorders due to substance use or addictive behaviors" in the 11th version of the International Classification of Diseases (ICD-11). Although there are a large number of reports about GD from all over the world, a significant portion of them are from East Asia. Socio-cultural-economic factors have a significant influence on the occurrence of GD. While there are various similarities among East Asian countries that have influenced the occurrence of GD, there are also likely to be a variety of differences. In particular, health care systems and government policies vary widely from country to country. This symposium has invited four speakers from three countries, Taiwan, Japan and South Korea. Prof. Chih-Hung Ko from Taiwan will give a presentation entitled "The heterogeneity in Gaming Disorder in Taiwan". Drs. Masaru Tateno, Takanobu Matsuzaki and Aya Kinjo from Japan will talk about the current status of Gaming Disorder in Japan from their respective positions. Dr. Seung-Yup Lee from Republic of Korea will explain recent changes in government policy relating to Gaming Disorder, although it should be noted that the Republic of Korea has previously taken a variety of government-led measures to address GD. Understanding the current situation of GD in each country and exchanging knowledge, opinions and experiences will be beneficial in developing future treatment options.

Keywords: gaming disorder, internet gaming disorder, internet addiction, behavioral addiction

S-5G2

The heterogeneity in gaming disorder in Taiwan

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The heterogeneity is a critical issue in gaming disorder. The heterogeneity in GD could contribute to differences in treatment needs. Based on clinical experience, we proposed three subtypes of gaming disorder: (i) impulsive patients with attention deficit hyperactivity disorder (ADHD), (ii) dysphoria patients with dysfunctional coping skills, and (iii) isolated patients with social anxiety. Psychiatric comorbidity is an essential issue in treating indi-

viduals with gaming disorders (GD). Cognitive control, emotional regulation, and reward sensitivity are three critical dimensions in the etiology model to determine the heterogeneity for GD. In our previous study, we demonstrated that individuals with GD and ADHD have higher impulsivity than those without ADHD in the GD group. On the other side, those with GD and emotional comorbidity (depression or anxiety disorder) have lower emotional intelligence than others. Our recent studies demonstrated that Attention-deficit/ hyperactivity disorder(ADHD), depressive disorder, generalized anxiety disorder(GAD), and social anxiety disorder(SAD) are associated with GD. Further, comorbidity with ADHD is associated with cognitive deficit and impulsivity among the GD group. On the other side, comorbidity with depressive or anxiety disorder is associated with emotion regulation among GD. This result supports our claims for heterogeneity in GD. Based on these empirical research data, there are multiple dimensions of heterogeneity within individuals with GD. The assessments for mechanisms contributing to this heterogeneity should be evaluated and developed as soon as possible. These assessments could help mental health professionals determine the best-individualized intervention to fulfill the treatment needs of individuals with GD.

S-5G3

Gaming Disorder in Japan: From the perspective of a child and adolescent psychiatrist

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Gaming disorder (GD) is one of the diagnoses under the umbrella of Disorders due to substance use or addictive behaviors in ICD-11. The most significant difference of GD from other diagnoses is the fact that most of the patients are children and adolescents. Recently, many patients are visiting child and adolescent psychiatry (CAP) services complaining of concerns related to excessive gaming. We conducted a national survey of child and adolescent psychiatrists (CAPs) to investigate the current practice of GD within clinical settings in Japan. The study questionnaire was mailed to all CAPs certified by the Japanese Society for Child and Adolescent Psychiatry (n=414). The subjects were requested to answer the questionnaire anonymously. We received 159 responses. The most common reasons for a visit to CAP service which resulted in a subsequent diagnosis of GD was school refusal followed by disruption of sleep-awake rhythm, and violence towards family members. Very few CAPs provided specialized treatment for GD. The two most common difficulties in the treatment of GD were low motivation and a large variety of combined problems other than excessive gaming itself. Regarding psychiatric comorbidities, the two most common ones reflected

in the answers were autism spectrum disorder and attention deficit hyperactivity disorder (ADHD). Our results have revealed that although GD is one of an assortment of behavioral addictions, many children and adolescents with problems related to excessive gaming are the first to visit CAP clinics. Greater collaboration between CAPs and addiction specialists is needed in the future.

S-5G4

The current status of treatment for Gaming Disorder in Japan and the efforts of Kurihama Medical and Addiction Center

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There is a growing international demand for the treatment of gaming-related problems, especially among adolescents and young adults. As Gaming Disorder is a new disease concept, standard treatment methods have not been established yet. The effectiveness of treatments such as cognitive-behavioural therapy (CBT) and family therapy has been recognized. In Japan, the National Hospital Organization Kurihama Medical and Addiction Center has established a department for the treatment of internet addiction since July 2011, which provides specialized treatments. The outpatient department provides an assessment of the type and duration of online-gaming, physical and mental health problems, impact on schoolwork and other social life, and problems in family and interpersonal relationships. If home care is difficult due to disordered lifestyles, violence against family members, etc., inpatient treatment (approximately two months, in principle in an open ward, on a voluntary basis) is provided in an environment away from electronic devices such as smartphones. In addition, since 2014, the centre has also been running a 9-day/8-night treatment camp (Self-Discovery Camp) in late August every year, working with the National Institution for Youth Education, which was commissioned by the Ministry of Education, Culture, Sports, Science and Technology (MEXT). The camps combine therapeutic approaches such as CBT and lectures with physical activities, cooking, etc., and have reported some positive effects, such as a decrease in internet-use-time for participants after the camp. In addition, at our hospital, we have created a manual for GD consultation responders and are working to spread awareness of it.

S-5G5

Gaming disorder in Korea: Recent changes in policy and future prospect

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The pandemic and related social distancing measures has accelerated the digital conversion of our society. With the advent of the 'untact' society enabled by wider use of smartphones and digital technologies, the gaming problems intensified along with the increased home-schooling and telecommuting. However, there were major setbacks regarding the policy against gaming disorder. For instance, monthly online gaming payment limit regulation and the 'shut down' act that limited the online game access by minors under 16 years of age are now all abolished. With the anticipated economic down turn, the business–government collusion will likely to exert greater influence against gaming policy as what is currently being observed with recreational marijuana legalization. Although, public health perspectives have been weakened, there has been also a recent movement to introduce regulation in the sense of consumer right protection.

S-5G6

Incidence and associated factors of positives on screening tests for gaming disorders under COVID-19 lockdown

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Background: This study aimed to determine the incidence and associated factors of positive screening tests for gaming disorder in the general population during the COVID-19 lockdown in Japan. *Methods:* Of the 4862 participants in the National Survey of Gaming Behavior conducted in October 2019, 1829 individuals agreed to a follow up test and responded in July 2020. Those with negative screening tests for gaming disorder in October 2019 were included in this analysis. The GAMing Engagement Screener test (GAMES test) was used as a screening test for gaming disorder. The proportion of those who tested negative in October 2019 and then positive in July 2020 was calculated. We also examined the associated factors that led to new GAMES test positives. *Results:* The overall incidence proportion of GAMES test-positive participants was 1.9% [95% confidence interval 1.2–2.6%], with males aged 10–29 years having the highest rate of 10.1% [4.7–15.5%]. Those who became GAMES test positive reported more gaming time in March to May 2020 and more gaming time as of the July 2020 survey. Reasons for the increased gaming time detected were: relieving stress from restricted outings, increased invitations from gaming friends, and increased family disputes. *Conclusion:* Stress under lockdown increased gaming time and was associated with the development of gaming disorder.

S-6A1

Exploring the feasibility of Contingency Management for the treatment of harmful gambling

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Background: Contingency Management (CM) is an empirically validated behavioural treatment for substance use disorders (SUDs) that involves providing incentives (e.g., vouchers) contingent on evidence of target behaviour related to recovery. Despite evidence of its efficacy in SUDs, its feasibility for the treatment of other addictive disorders is unknown. This presentation will summarise outcomes of the first UK-based feasibility trial of CM for the treatment of harmful gambling (CONGAM). *Methods and results:* In the first phase of this research, the views of gambling treatment providers and service users were recruited to explore potential barriers to the adoption of the approach for harmful gambling treatment. Both groups of participants had concerns about CM for gambling, but these concerns varied depending on how CM was implemented. Treatment providers often reported that CM clashed with their treatment philosophies, but were supportive of the research being carried out, with most suggesting they would be willing to trial the approach. In the second phase of this research, both groups' feedback was incorporated into the design of an 8-week trial intervention of CM for harmful gambling. We will report findings of a preliminary case-study that explored the practicality of delivery of CM for gambling, acceptability of the procedures, and any perceived benefits and negative impacts of the approach. Conclusions: CONGAM holds promise among both treatment providers and service users and is feasible as an adjunct treatment for harmful gambling.

Keywords: gambling treatment, Contingency Management, feasibility study

S-6A2

The Inclusion service model for treatment of gambling harms in the UK: Key principles and effectiveness data

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Background: Harmful gambling is a significant public health concern with impacts on the individual, their families, and society. Approximately 2.2 million individuals are at risk or experiencing harms in the UK (NHS England, 2022) with only a very small percentage accessing treatment. A new service model has been implemented in the West Midlands region, as part of the NHS England investment in treatment. *Methods:* The present study will present an innovative service model based on eight principles, including: (i) a person-centred, recovery/outcomes oriented delivery; (ii) constructional approaches– building on individual and local community resources; (iii) specialist, evidence-based treatment combined with the use of new technologies and informal support networks; and (iv) use of psychometrically valid outcome measures that track service users' progress on a sessional basis. *Results/Discussion:* The study will present a new service model for gambling treatment in its first year of operation. Service users' outcome data will be discussed along with the key components of the service model, challenges in delivery and lessons learned. The Inclusion service model for gambling treatment is based on interactive, evidence-based, innovative tracking and digital technologies to deliver specialist gambling harms treatment through a centralised hub with local communities and neighbourhoods supporting recovery and inclusion. *Conclusion:* Effectiveness of treatment for gambling-related harms in the UK remains relatively unexplored. An evaluation of the Inclusion model and how it enables recovery over the longer term can inform subsequent service developments and add to a stronger evidence base for tackling gambling harms at a policy level.

Keywords: gambling harms, treatment, service model

S-6A3

Pandemic impacts on problem gambling treatment providers

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During the Covid-19 pandemic, online gambling venues remained accessible while treatment services were met with constraints. Mental health service providers needed to adapt quickly to continue supporting clients. This study examined how services for people who have gambling and other mental health problems adapted treatment during the Covid-19 pandemic. Counsellors from two provinces in Canada were surveyed using closed- and open-ended questions. The study was conducted in two waves, one in May to July 2021 in the middle of the pandemic, and the second from April to June 2022 as many public health restrictions were being removed and casinos reopened. Questions included how counsellors adapted their practice during the pandemic and what training they felt they required to help them deliver safe and effective treatment during a pandemic. The results indicated increases in counsellor distress during the pandemic. The counsellors also reported increased stress in their clients. The participants reported a shift towards phone and online treatment during the pandemic. The counsellors in this study had concerns over technological issues, privacy issues and problems with keeping clients engaged. There were also concerns regarding populations who do not have access to remote treatment methods and vulnerable populations such as seniors, Indigenous groups, and people who have serious dual diagnoses. There is a need for future preparation in mental health treatment protocols to mitigate shortfalls in remote client care.

Keywords: problem gambling, treatment service, pandemic, online treatment, mental health counsellors, remote care

S-6A4

Recovery from gambling disorder: The influence of Internet gambling

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Background: Gambling problems are more frequent among online gamblers. The objective
of the present study was to investigate the influence of the gambling medium (Internet vs.
land-based gambling) on recovery from gambling disorder (GD) in a clinical sample, one
(middle-term) and two (long-term) years after treatment initiation. _Methods:_ We included
237 outpatients who were assessed at treatment initiation and after 1 and 2 years. Data col-
lected included socio-demographic data, gambling characteristics and treatment, psychiat-
ric and addictive comorbidities (including ADHD), life events, personality and impulsivity.
Online and offline gamblers who had available follow-up data were compared on the fre-
quency of middle- and long-term recovery using bivariate analyses. Predictors associated
with middle- and long-term recovery were determined using two independent multivariate
logistic regressions adjusted on treatment received. _Results:_ Online and offline gamblers did
not differ on the frequency of middle- and long-term recovery. The gambling medium was
not a predictive factor of either middle-term or long-term recovery. Predictors of middle-
term recovery were a higher perceived self-efficacy (OR = 1.04 [1.01–1.07]) and having no history
of mood disorders (OR = 11.18 [2.53–49.50]) at inclusion. Predictors of long-term recov-
ery were a lower level of sensation seeking (OR = 0.70 [0.51–0.95]) and a higher level of
self-directedness (OR = 1.04 [1.00-1.08]) at inclusion. _Conclusions:_ The preferred gambling
medium does not seem to influence neither middle- nor long-term recovery. Adjusting treat-
ment to promote perceived self-efficacy, to treat mood disorders by specific medications, and
to modulate certain aspects of personality may help patients with GD to achieve recovery.

Keywords: gambling disorder, online gambling, treatment, recovery, gambling medium

S-6A5

Definitions and assessments of recovery in gambling disorder: A systematic review

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Background: While the concept of recovery is increasingly gaining interest in the framework of gambling disorder (GD), there is still a lack of consensus regarding its definition. As GD often affects numerous life areas (financial, educational, employment, mental health, personal wellbeing, social, familial, and legal), there is a substantial discrepancy regarding both what does recovering from GD mean, and what does it imply. The aim of this systematic review was to address this gap by examining the recovery-related outcomes and their operational definitions used in quantitative and validation studies, and by exploring the themes emerging from narrative descriptions of recovery in qualitative studies. *Method:* A systematic search was conducted in three databases (PubMed, ScienceDirect, PsychINFO), according to the PRISMA recommendations. *Results:* One hundred and thirteen articles were selected, including 5 validation studies, 76 quantitative studies, 19 qualitative studies, and 13 studies mixing the last two approaches. Despite some common features, results of this systematic review revealed a significant disparity in the definitions of "recovery" across the studies. In addition, within both the quantitative and the validation studies, there was an important variability in the reported outcomes, as well as in the variables used to operationalize those outcomes. *Conclusions:* Such a heterogeneity regarding recovery-related outcomes undermines the assessment of the effectiveness of clinical interventions, precludes valid cross-study comparisons, and hinders research advancement. Future research should adopt a consensual assessment of recovery-related outcomes to allow cross-study comparisons. This lack of definitional clarity also emphasizes the need for further qualitative studies that capture the view of multiple stakeholder perspectives.

Keywords: gambling disorder, recovery, systematic review

S-6B1

Risk Factors of Internet Addiction among Medical Students during the COVID-19 pandemic

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Background: Study found that medical students are more prone to mental health problems. Limitation of academic and social interaction, along with fast adaptation demand in the COVID-19 pandemic circumstances escalate the occurrence of mental health disorders among medical students. Internet use also become the alternatives to cope up with stress during pandemic that could lead to excessive internet use and increase risk of internet addiction. The study was aimed to identify factors associated with internet addiction among medical students during COVID-19 pandemic in Indonesia. *Methods:* A sample of 1,146 participants answered an online survey including the Kuesioner Diagnostik Adiksi Internet (KDAI) to screen internet addiction, Indonesian version of Self Reporting Questionnaire 20 (SRQ-20), and Indonesian version of Rosenberg Self Esteem Scale (RSES). The risk factors of internet addiction were assessed using a multivariate logistic regression test. Participants' mean age was 20.24 ± 2.15 years and they were originated from public and private medical faculty. *Results:* Prevalence of internet addiction during COVID-19 pandemic among medical students in Indonesia was 25%. Logistic regression results indicated that emotional problems; purpose of internet use for playing online game, social media and entertainment; low self-esteem; onset of internet use ≤ 8 years old; and pre-clinical education stage increased the risk of internet addiction. *Conclusions:* Our findings suggests the role of several risk factors associated with internet addiction among medical students. Thus, mental hygiene can be implemented as a measure to prevent emotional problems and to detect excessive internet use that potentially leads to internet addiction.

Keywords: internet addiction, medical students, COVID-19, risk factors

S-6B2

Has problematic smartphone use changed from before and three years into the pandemic?

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Background: According to the literature, smartphone usage has increased during the COVID-19 pandemic (Madigan et al., 2022). Consequently, levels of problematic smartphone use (PSU) may also be on the rise. The current study investigated the changes in PSU shortly before the COVID-19 outbreak and three years into the pandemic. *Method:* Initially, data were collected on smartphone use and mental health in December 2019. The project was extended to investigate the impact of the COVID-19 pandemic. Participants were adults registered on a research survey company in Japan, carrying smartphones, and aged between 18 and 70. PSU was measured by Smartphone Addiction Scale, Short Version (SAS-SV; Kwon et al., 2013). Data collection took place seven times during the period of December 2019 to December 2022. *Results:* For the first data collection point, 90,122 participants responded to the questionnaires, and 15,114 participants for the seventh. The mean (SD) age was 44.82 (12.53) years old. Decreased changes in SAS-SV were reported with a negligible effect size, Cohen's d = –0.09, 95% CI [–0.09, –0.09]. Exploratory analyses suggest that checking the pandemic-related information on social networking sites (SNS) was a moderator and associated positively with the decrease of SAS-SV, β = .001, 95% CI [.001, .001]. *Discussion:* As more individuals relied on digital technology during the pandemic, they perceived smartphone use as slightly less problematic, particularly among individuals who checked the pandemic-related information on SNS more often. For many, more smartphone use may have been normalized and become adaptive three years into the pandemic.

Keywords: problematic smartphone use, SAS-SV, COVID-19, pandemic, longitudinal study

S-6B3

The impact of the COVID-19 pandemic on the pattern of behavioural addictions: Evidence from a nationwide survey in the Republic of Korea

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Aims: This study examines the impact of the COVID-19 pandemic on the pattern of behavioural additions by analysing the results of a nationwide survey. *Methods:* Cross-sectional data of 1,017 participants collected by a web-based survey was analysed. The participants provided their responses on the pattern of online gaming, smartphone use, gambling, watching adult content and general mental health such as depressive mood, anxiety, insomnia, and quality of sleep. *Results:* When comparing the time periods of pre- and post-COVID-19, a significant increase has been noted in the subjects using their smartphones 3 hours or more (46.4% after COVID-19 vs. 35.8% before COVID-19). Among all subjects, 44.3% responded that the time of smartphone use has increased. The subjects reported that they used smartphones for social network services and communication, reading news, and mobile shopping. On the other hand, the pattern of online gaming, gambling and watching adult content has not shown significant change between pre- and post-COVID-19. Among all respondents, 45.5% reported an increased frequency of depressive mood. *Conclusion:* Because the pandemic has caused mental health problems, this study demonstrated that a substantial proportion of the study subjects experienced an increase in smartphone use while indicators of other behavioural addictions may show insignificant change. The results of this study suggest continued public health attention to smartphone addictions to provide interventions and establish national policies on behavioural addictions in general.

Keywords: COVID-19, behavioural addiction, mental health, survey

S-6B4

The impact of COVID-19 anxiety on young adults' social media addiction: The mediating role of depression and intolerance of uncertainty

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Background: Since the outbreak of COVID-19, it has had a great negative impact on individual's physical and mental health. Negative emotions related to this pandemic also posed a major threat to mental health and increased social media use among young adults. Therefore, this study aimed to investigate the relationship between COVID-19 anxiety and social media addiction, and further tested the mediation of depression and intolerance of uncertainty on such relationship. *Methods:* This study included 566 university students who aged 18 to 26 years old in China. All participants filled in an anonymous questionnaire, including main variables (i.e., social media addiction, depression, intolerance of uncertainty, and COVID-19 anxiety), and demographic information (i.e., age and gender). *Results:* The results showed COVID-19 anxiety was positively associated with social media addiction, depression, and intolerance of uncertainty. Depression and intolerance of uncertainly also had positive correlations with social media addiction. Moreover, depression and intolerance of uncertainty partially mediated the relationship between COVID-19 anxiety and social media addiction, respectively. *Conclusions:* Findings indicated that COVID-19 anxiety would have negative effect on social media addiction. It would also raise a higher level of depression as well as intolerance of uncertainty, and further increase more severity of social media addiction. The study provides insight into factors and mechanisms that contribute to the development of social media addiction in young adults.

Keywords: social media addiction, emotional distress, intolerance of uncertainty

S-6C1

ABC in behavioral addiction neuroimaging:
Advancing the basic science for better clinical care

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Symposium summary: Behavioral addictions impact people across the globe. While once addictions were seen solely by some as substance-based, nowadays a broader range of addictive behaviors has been considered. Like with substance addictions, precisely deciding the boundaries of disorders behavior may be complex, as these behaviors may be conducted recreationally by many. Psychometrically validated instruments have been developed for both substance and behavioral addictions. Exploring additional state-of-the-art diagnostic methods may help with diagnostic assessments and preventation and treatment development. This symposium will focus on the use of neuroimaging and its outcomes, along with the implications for future studies. Professor Marc Potenza from Yale University will present theoretical frameworks for considering treatment of behavioral addictions and data specifying potential neural mechanisms underlying such treatments. Professor Jin-Tao Zhang from Beijing Normal University will discuss a study of emotional bias modification and how it has been found to weaken game-related compulsivity and reshape frontostriatal pathways in individuals with internet gaming disorder as a novel treatment for this disorder. Dr. Kristiana Siste from Universitas Indonesia will discuss the presence of an altered resting state network in adolescents with problematic internet use, establishing a framework research on for future therapeutic measures. Dr. Kosuke Tsurumi from Kyoto University who will present on clinical implications of imaging studies of gambling disorder. This symposium aims to provide new diagnostic information on behavioral addictions and mechanisms underlying their treatment.

Keywords: addictive behaviors, gaming, gambling

S-6C2

Using neuroimaging to understand transitions and treatment outcomes in behavioral addictions

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Background: Behavioral addictions, like gambling and gaming disorders, are less well understood than substance addictions. Significant inroads have been made with respect to understanding how specific brain mechanisms may underlie recovery from and link to active ingredients of specific therapies for substance use disorders. However, less work has been conducted in this regard with respect to gambling and gaming disorders, among other behavioral addictions. *Methods:* In this presentation, data will be presented on substance and behavioral addictions, considering how regional brain activations or brain networks identified through functional or structural magnetic resonance imaging may link to transitions to recovered states. Theoretical frameworks, including the Interaction of Person, Affect, Cognition and Execution (I-PACE), reward deficiency and dual process models, and current conceptualizations of recovery will be discussed. *Results:* Brain imaging data support the involvement of reward, default-mode and salience networks in behavioral addictions. Specific nodes within these networks (e.g., striatal, insular and prefrontal cortical) appear relevant to behavioral addictions transitions and recovery. *Conclusions:* Paths for moving forward include harnessing neuroscientific data to advance treatments for people with behavioral addictions. Integrate brain imaging measures into randomized clinical trials may and analyzing obtained data using traditional and advanced analytic approaches may promote advances towards personalized interventions.

Keywords: addictive behaviors, gaming, gambling

S-6C3

Emotional bias modification weakens game-related compulsivity and reshape frontostriatal pathways in internet gaming disorder

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Background: Internet gaming disorder (IGD) is a global concern. Positive emotional association biases (EABs) towards addiction cues based on reward conditioning may underlie IGD-associated compulsivity. Interventions targeting compulsivity in IGD have not been adequately tested. _Method:_ We developed an EAB modification (EABM) protocol and examined whether modifying EABs via cognitive training would alter neurocognitive aspects of addiction-associated compulsivity in IGD. We recruited 90 IGD participants who were randomly assigned to receive EABM or sham training in a 1:1 ratio. The EABM intervention involved six consecutive days of exposure to negative emotional terms linked to gaming stimuli and positive terms linked to non-gaming healthy-alternative stimuli. The sham training involved similar stimuli linked to neutral words. Participants underwent fMRI while performing a regulation-of-craving task and received several behavioral assessments pre-training, post-training, and follow-ups. Primary efficacy measures were changes in gaming-related positive EABs, compulsive gaming thoughts and behaviors and IGD severity. _Results:_ Behaviorally, EABM (versus sham) training decreased gaming-related positive EABs, compulsive gaming thoughts and behaviors and IGD severity. Neurally, EABM training involved decreased activation in the bilateral dorsal striatum in the regulation-of-craving task and altered left-dorsal-striatum-centric functional connectivity with ventral prefrontal cortical regions, which correlated with decreases in gaming-related EABs or compulsive gaming thoughts and behaviors. EABM training also implicated activation changes in the right medial frontal gyrus and posterior insula. _Conclusion:_ EABM may reduce compulsive gaming thoughts and behaviors via reshaping functional organization of frontostriatal pathways and insular activity in IGD. The therapeutic potential of EABM should be further examined.

Keywords: addictive behaviors, gaming, fMRI

S-6C4

Altered resting-state network in adolescents with problematic internet use in Indonesia

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Background: The prevalence of problematic internet use (PIU) has been on the rise, with an estimated rate of 20% among Southeast Asian. The resting-state functional connectivity (rsFC) of a triple-network model has been described inconsistently in PIU adolescents. *Methods:* A total of 30 subjects with PIU and 30 healthy Indonesian adolescents were recruited. IAT was used to determine the presence of PIU. Focusing on the DMN, SN, and CEN, we compared rsFC values of the fMRI between PIU and control groups. Additionally, associations with personality traits, utilizing Temperament and Character Inventory, and affective/behavioral problems, using the Strength and Difficulties Questionnaire, were explored. *Results:* Higher rsFC values of the left lateral prefrontal cortex (LPFC(L)) with the left anterior insula were observed for PIU than in control. While rsFCs of the LPFC(L) with the medial PFC (MPFC) as well as with the right lateral parietal cortex were lower for PIU. Among these significant group differences, the rsFC between the LPFC(L) and MPFC was mediated by emotional symptoms (standardized $\beta=-0.12$, 95% CI $-0.29, -0.0052$).The dysfunctional attention switching and incentive salience regulated by the SN was implicated as a possible neural correlate of PIU,potentially explaining the relationship between emotional dysregulation and PIU in adolescents. *Conclusion:* Increased connectivity between the nodes of the CEN-SN and decreased connectivity among the nodes of the CEN-DMN were found among PIU adolescents. These findings suggest an underlying neural mechanisms of poor cognitive and emotional response inhibition, which is a potential intervention target for PIU.

Keywords: resting state, functional connectivity, adolescent, internet addiction, triple-network model, emotional symptoms

S-6C5

The clinical implication from imaging studies of gambling disorder

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Background: Gambling disorder (GD) is a common behavioral addiction which affects the well-being of patients and those around them in multiple ways (e.g., large debts and interpersonal problems). Although imminent casino opening and the high prevalence of GD in Japan, countermeasures to tackle GD are behind schedule. This delay might stem from diverse factors. These factors are exemplified by stigma, large treatment gaps, low treatment persistence and lack of effective pharmacotherapy. To tackle this situation, incorporating different perspectives, such as neuroimaging findings, might help to establish better intervention and prevention. *Methods:* Summarizing our functional and structural magnetic resonance imaging studies of GD, clinical implication will be proposed. *Results:* Some of our studies of showed associations between neural activity or connectivity strength and the duration of illness or abstinence of GD. Other studies showed heterogeneity in GD. *Discussion:* These findings underscore the importance of early diagnosis and intervention as well as the need for the importance of subtype-based interventions, providing insight regarding how to refine interventions for GD.

Keywords: behavioral addiction, gambling disorder, magnetic resonance imaging

S-6D1

Are gaming disorder diagnostic tools based on the DSM-5 framework conflating core and peripheral addiction criteria?

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Background and aims: Gaming disorder, since its first conceptualization as a behavioral addiction, has been assessed through various scales and associated criteria. These criteria, according to Charlton and Danforth (2007), can be divided in two categories representing either core addiction features or peripheral features not necessarily indicative of a problematic behavior. Nonetheless, peripheral features have been included in the tentative Internet Gaming Disorder DSM-5 diagnostic. The current study therefore aimed to test whether the distinction between core and peripheral features can be reproduced using a screening instrument inspired from the DSM-5 framework. *Methods*: Open access data retrieved from the OpenScienceFramework (https://osf.io/v4cqd/) comprising data for the DSM-5-based Internet Gaming Disorder Test (IGDT-10) were used (N = 6,027). Data were analyzed through structural equation modeling and network analyses. *Results:* The analyses yielded four structures for the IGDT-10, one replicating the original unifactorial model, and three suggesting bifactorial models with minor variations between them. Overall, the first factor (e.g., withdrawal, loss of control) corresponded to the core addiction features identified by Charlton and Danforth, whereas the second factor (e.g., preoccupation, tolerance) corresponded to the peripheral features. *Discussion and conclusions:* The present results indicated that the IGDT-10 conflates core and peripheral criteria. These findings therefore suggest that the DSM-5 framework is not well positioned to distinguish between problematic and non-problematic gaming behavior.

Keywords: gaming disorder, IGDT-10, network analysis

S-6D2

Development and validation of structured diagnostic Interview of gaming disorder(SDI-GD) based on the ICD-11 criteria

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Objective: The purpose of this study was to develop and verify the gaming disorder diagnostic interview(SDI-GD) based on the ICD-11 criteria for gaming disorder. *Methods:* The criteria for the diagnostic interview tool were set to the three core criteria of ICD-11 gaming disorder(impaired control, increasing priority, continuation or escalation of gaming despite the occurrence of negative consequences) and functional impairment. To develop preliminary items of SDI-GD were created based on information obtained through literature review, in-depth interviews with game users and guardians, and expert consultation. Next, a preliminary survey was conducted to evaluate the validity of the preliminary questions of the SCI-IGD, recruiting a total of 41 adolescents and adults from community and clinical settings. In the preliminary survey, the final diagnostic interview tool items were confirmed by reviewing the items in which the diagnostic evaluations of psychiatrists and clinical psychologists were inconsistent, and the items were modified. In this study, 76 adolescents and 56 adults who regularly use games were recruited to review the psychometric properties of the final question. As for the analysis method, to evaluate the reliability of the developed game use disorder diagnosis interview questionnaire, the degree of agreement between general interviewers was confirmed. The degree of agreement and the degree of agreement of diagnosis results of gaming disorder were analyzed. In addition, to evaluate the predictive power of the diagnosis of game use disorder, the degree of agreement between the diagnosis result of the psychiatrist and the general interviewer was confirmed, and the kappa value was used for each evaluation result of the psychiatrist and the two general interviewers. The degree of agreement between each diagnosis criterion for use disorder and the final diagnosis was analyzed. Finally, the validity of the tool was verified by analyzing the classification sensitivity and specificity of the diagnostic interview tool using ROC analysis. *Results:* First, to evaluate the reliability of SDI-IGD, the kappa value was used to analyze the degree of agreement between two general interviewers who conducted diagnostic interviews using the same interview tool. As a result of the analysis, the agreement of each criterion for each item showed a high kappa value of .920 to 1.00, and the agreement of each criterion showed a kappa value of 1.00 except for criterion N (.984), which confirmed a very high level of agreement. could In addition, the degree of concordance between the diagnosis of gaming disorder was 1.00, and the evaluations of the two general interviewers were consistent, confirming the high reliability of the interview questionnaire for diagnosing gaming disorder. Second, the diagnostic agreement between SDI-IGD and the diagnostic findings of psychiatrists was excellent. The concordance

between the diagnosis of gaming disorder by a psychiatrist and the diagnosis of gaming disorder by two general interviewers using an interview tool showed a high kappa value of .9 or higher in all criteria (.902 to .976). The final diagnosis of gaming disorder also showed a very high level of concordance at .976. In addition, in the ROC analysis to confirm the classification sensitivity and specificity of the interview tool, the sensitivity and specificity were higher than .94 in all criteria, and the classification sensitivity of the final game disorder diagnosis was .963 and the specificity was 1.00, which is very high. levels of sensitivity and specificity. These analysis results can be seen as the result of objectively confirming that the game use disorder diagnosis interview questionnaire developed in this study is a valid tool for diagnosing gaming disorder.

Keywords: Gaming Disorder, ICD-11, development and validation, structured diagnostic interveiw, SDI-GD

S-6D3

Development and validation of the Korean Gaming Disorder Screening Scale based on the ICD-11 criteria

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The purpose of this study was to develop and validate a gaming disorder screening scale based on the ICD-11 criteria for Gaming disorder. 12 main items and 5 supplementary items were created to measure functional impairment and the three basic criteria of ICD-11 for gaming disorder. A total of two samples were used to select items and analyze psychometric properties. The first sample was collected from 252 adolescents and adults who had regular game use experience, some of which corresponded to Repeated measurement data were collected after 6 weeks on 202 subjects. The second sample data was collected from 132 people in the game disorder subclinical group. In both samples, a single-factor model best explained the data. A total of 9 questions were finally selected among the main questions, and the questions showed high factor loadings and reliability. In addition, as a result of evaluating validity through correlation analysis with factors related to gaming disorder, all showed excellent official validity and convergent validity. As a result of the ROC analysis, the total score was determined as 10 points for the criteria for the classification of game disorder risk groups in the finalized selection tool.

Keywords: gaming disorder, ICD-11, screening scale, scale development and validation

S-6D4

Psychometric properties of the Video Game Dependency Scale and the assessment of hazardous gaming in children

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Background and aims: Since the (Internet) Gaming Disorder (IGD) has been included in classification systems, interest in this disorder has increased constantly. The Video Game Dependency Scale (CSAS; Rehbein et al. 2015) is a questionnaire that is commonly used and well researched. It is one of many valid questionnaires that can be applied within adolescents and adults. However, in practice risky gaming behaviour can already be observed in children. Yet, no diagnostic tool for that age group exists. Against this background, this study aims to test if the CSAS shows comparable psychometric properties in children and to test if the CSAS is fit to assess Hazardous Gaming in children. *Methods:* For the current study, CSAS data from N = 708 schoolchildren and N = 169 patients of a psychotherapeutic outpatient clinic were collected. The school children were in primary or high schools in the Rhine-Neckar metropolitan region. Patients were in treatment for mental disorders in general. The CSAS was filled in by a legal guardian, mostly parents. Data from 8- to 12-year-olds (M = 10.25, SD = 0.90) were investigated. The data were first analysed descriptively at the overall and item level. Reliability and factor analyses were carried out afterwards. *Results:* The psychometric properties in the child sample are comparable to the psychometric properties in adolescents. Of the children, 2.8 % fulfil enough criteria for an IGD, 10.2 % fulfil enough criteria for a subthreshold IGD and 10.4 % for Hazardous Gaming. *Discussion and conclusion:* An adjusted version of the CSAS is suggested on the basis of the analyses. This shall help to detect risky computer game use in children prospectively.

Keywords: Internet Gaming Disorder, diagnostics, questionnaire, psychological assessment, children

S-6E1

Challenging the components model of addiction: an illustration through "addictive" use of social media

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Background and aims: he components model of addiction posits that all addictions share six components, namely salience, tolerance, mood modification, relapse, withdrawal, and conflict. This highly influential model has resulted in the development of numerous psychometric instruments that measure addictive behaviors according to these criteria. However, recent research suggests that, particularly in the context of behavioral addictions, certain components constitute peripheral features that do not distinguish intensive but healthy behavior from pathological behavior. Using "addictive" use of social media as a representative example, we examined this perspective by testing whether these six components actually assess central features of addiction, or whether some of them constitute peripheral features that are not indicative of a disorder. *Methods*: Four independent samples totaling 4,256 participants from the general population completed a six-item psychometric instrument derived from the components model of addiction to assess social media "addiction" along with four psychometric instruments assessing psychopathological symptoms. Data were analyzed by performing structural equation modeling and network analyses. *Results:* We showed that the six components did not form a unitary construct and, crucially, that some components (i.e., salience, tolerance) were not associated with measures assessing psychopathological symptoms. *Discussion and conclusions*: Taken together, these results suggest that psychometric instruments based on the components model conflate central and peripheral features of addiction when applied to behavioral addictions. This implies that such instruments pathologize common behaviors. Our findings call for reconsideration of the conceptualization and assessment of behavioral addictions beyond "addictive" social media use.

Keywords: behavioral addiction, components model, network analysis, problematic social media use, structural equation modeling analysis

S-6E2

Predicting adolescents' problematic social media use from profiles of Internet-specific parenting practices and general parenting dimensions

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Background: Although both Internet-specific and general parenting have been linked to adolescents' problematic social media use (PSMU), until now they have been investigated as separate predictors of adolescents' PSMU. As specific parenting practices occur in the broader general parenting context, this study examined how different Internet-specific parenting practices (Internet-specific rule setting, reactive restrictions towards Internet use, and co-use) and general parenting dimensions (responsiveness and autonomy-granting co-occur, and act together in predicting adolescents' PSMU. Additionally, adolescents' age and gender were tested as moderators. _Method:_ Four-wave adolescent data of the Digital Family project were used (N=400, M = 13.51, SD = 2.15). Results: Latent profile analysis identified three distinct parenting profiles: (1) Internet use restrictions in less supportive parenting context (13.5%), (2) fewer Internet use restrictions in supportive parenting context (25.5%), and (3) Internet use restrictions in supportive parenting context (60.8%). Membership to profile 2 (fewer Internet use restrictions in supportive parenting context) predicted lower scores on PSMU later in time than membership to profiles 1 (Internet use restrictions in less supportive parenting context) and 3 (Internet use restrictions in supportive parenting context). Besides, membership to profile 3 (Internet use restrictions in supportive parenting context) predicted lower scores on PSMU than membership to profile 1 (Internet use restrictions in less supportive parenting context). No convincing moderation effects were found. _Conclusions:_ These findings suggest that a supportive general parenting context rather than Internet use restrictions should be the focus when considering the prevention of adolescents' PSMU. Restricting Internet use may even be counterproductive.

Keywords: adolescents' problematic social media use, parenting profiles, Internet-specific parenting practices, general parenting dimensions

S-6E3

Couple's problematic social media use, time perspective and pregnant woman's mood

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The aim of the study was to investigate the associations of pregnant woman's and her partner's problematic social media use and time perspective with woman's prenatal depression symptoms and affective balance. The participants were 85 pregnant women and their partners. Research was conducted in the first trimester. The Zimbardo Time Perspective Inventory and the Facebook Intrusion Questionnaire were used to measure woman's and her partner's time perspective and social media problematic use, respectively. Moreover, the Edinburgh Postnatal Depression Scale and the Scale of Positive and Negative Experience (SPANE) were administered solely in the group of women. Women completed the SPANE on seven consecutive days, using a mobile phone application. The results showed the associations of woman's past negative and fatalistic perspectives with social media problematic use, prenatal depression and low affective balance. Man's future negative perspective was positively correlated to man's social media problematic use and woman's prenatal depression and low affective balance. There was the indirect effect of man's problematic social media use on woman's low affective balance through woman's future negative time perspective. The presented results emphasize the contributing role of social media use in prenatal depression and may find application in prevention programs against prenatal depression, that would focus on teaching healthy use of social media during pregnancy.

Keywords: social media intrusion, pregnancy, prenatal depression, affective balance

S-6E4

Symptoms of Internet Gaming Disorder and Social Media Disorder Are Predicted by Different Emotion Regulation Deficits in Adolescents: A Longitudinal Study

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Background: Previous studies identified deficient emotion regulation as a risk factor for developing Internet Use Disorders (IUDs). Currently, Internet Gaming Disorder (IGD) and Social Media Disorder (SMD) are the most studied IUDs in adolescents. Adolescence is a critical period for developing emotion regulation skills. Yet it is unclear which deficits in emotion regulation are linked to the development of IGD and SMD. *Methods:* In a longitudinal study, a total of N = 750 adolescents from German secondary schools between 12 and 18 years were assessed at baseline (t1) and re-assessed 4 months later (t2) with the Internet Gaming Disorder Scale, the Social Media Disorder Scale and the Short Form of the Deficits in Emotion Regulation Scale. *Results:* Difficulties in emotion regulation could be identified as risk factors for developing IGD and SMD. Furthermore, symptoms of IGD and SMD were predicted by different aspects of emotion regulation. *Conclusion:* This is the first longitudinal study that examines specific deficits in emotion regulation as a risk factor for developing IGD and SMD in adolescents. Further research is needed to replicate the results and to investigate the associations between emotional dysregulation and other specific IUDs. Implications for prevention and therapy are discussed.

Keywords: Internet Gaming Disorder, Social Media Disorder, Emotion regulation, Adolescents, Longitudinal study

S-6E5

Problematic use of social networks und online buying/shopping: Are they really different disorders or do the similarities outweigh the differences?

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Theoretical Background: With the increasing convergences of online applications, shopping no longer takes place exclusively on e-commerce platforms, but also on social networks. Previous studies have been able to draw certain similarities but also differences between online compulsive buying-shopping disorder (oCBSD) and social-networks-use disorder (SNUD). This prompts the investigation of individuals with oCBSD or SNUD in terms of their usage behaviors and personality traits. *Methods:* In an experimental setting, we compare women with either oCBSD or SNUD regarding sociodemographic variables, use time of the first-choice application, oCBSD/SNUD severity (ACSID-11), general internet use, impulsivity (BIS-15), materialism (MVS), and perceived chronic stress (TICS). *Results:* Results showed differences in age, qualification, and daily usage. Higher materialistic values were observed in women with oCBSD compared to women with SNUD. The groups did not differ regarding their general internet use, impulsivity, and stress vulnerability. However, stress vulnerability could be shown as predictor of the symptom severity for women suffering from SNUD but not from oCBSD. *Discussion:* The results suggest both similarities and differences in the characteristics of oCBSD and SNUD. Future research may address the technological features potentially contributing to oCBSD or SNUD as well as affective and cognitive mechanisms involved in either oCBSD or SNUD or in the convergence of the two types of Internet-use disorders.

Keywords: online compulsive buying-shopping disorder, social network use disorder, usage behavior

S-6F1

Behavioural addiction & gender differences with a female perspective: Session 2

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Symposium summary: Literature and studies on women and Gambling Disorder and other Behavioural Addictions are scarce, both in Europe and worldwide. The existing data are often not specific to female population but inferred from mostly male samples. Nevertheless, more and more women are affected by pathological gambling and other non-substance related addictions, even if they rarely ask for help: so, with little specific data, it is not easy to have dedicated research and understanding of peculiarities of this invisible population. Because of the crucial role in family and society, women's addictive behaviours may have a deep impact on their social and personal life. One key point, beyond the shame issue, is that women often experience great difficulty in finding appropriate treatment services. Most health clinics are not "female friendly", and very rarely offer female-specific treatment approaches and prevention strategies. That is why it is so important to learn from our experiences as researchers and clinicians, sharing data from all over the world to enrich our understanding of these issues. That's the aim of our new book "Behavioural Addiction in Women: An International Female Perspective on Treatment and Research", F. Prever, G. Blycker & L. Brandt, which gather transcultural contributions to compare, discuss and improve research and treatment for the women on whose behalf we are working on.

Keywords: gender, women, behavioural addictions

S-6F2

Higher burden of withdrawal symptoms, depressive mood, loneliness, anxiety, and agitation among women with Internet gaming disorder (IGD) in South Korea

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From the survey on smartphone overdependence in 2020 in South Korea by 'Ministry of Science and ICT(MSIT)', the high- risk group was 3.7% and the potential risk group was 18.4% in 2020 for smartphone addiction in women. Since there has been little literature on female behavioral addiction in the past, the secondary data of the Nowon- gu Addiction Center project were analyzed. The survey was conducted in 2017 and included 3,937 students. Of the total 3,593, 62 (1.7%) women showed high risk for the Internet gaming disorder. The symptoms of depression, anxiety, and withdrawal of female were significantly higher than that of male. Further identification of the factors that cause a higher burden in women with Internet Gaming Disorder (IGD) in Korea will provide a basis for establishing policies appropriate for women.

S-6F3

Gender and specific impulsivity profile in adults with ADHD

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Background: Impulsivity is a core feature of attention-deficit hyperactivity disorder (ADHD). From the literature gender differences in the phenotypic expression of ADHD include a greater tendency for females to present predominantly inattentive symptoms and more rarely hyperactive/impulsive symptoms than males. This aspect is often proposed as an explanation for the greater rates of ADHD diagnosis in males. *Methods:* 80 adult ADHD outpatients (40 males and 40 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. Psychometric tests evaluated depressive symptoms, ADHD symptoms, presence of Behavioral Addictions. Neuropsychological assessment using computerised and non-computerised instruments allows us to highlight attention, response time, inhibitory control and executive functions. *Results:* The results of the comparison between males and females, in impulsivity profile evaluated by means of neuropsychological assessment and its correlation with Behavioral Addictions, will be presented, with specific focus on female population.

S-6F4

Self-discrepancy, shame-proneness, and negative emotional symptoms in individuals with excessive exercise behavior, and their relationships with gender

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Background: Evidence has shown that exercise behavior might be problematic if it turns into an addiction. It is suggested that exercise addiction is closely linked to coping with negative emotional experiences; however, why those individuals struggle with their negative emotions remains unclear. The present study aimed to examine the mediator roles of shame-proneness between self-discrepancy (i.e., ideal, and undesired) and negative emotional symptoms in individuals with excessive exercise behavior, considering gender. Moreover, gender differences in each study variable were also explored. *Methods:* A total of 178 participants (M age = 32.7, SD = 9.7) including 91(51,1%) males and 87 (48,9%) females were recruited. The participants were asked to complete the Exercise Dependence Scale-21, Integrated Self-Discrepancy Index, Test of Self-Conscious Affect-3, and Depression, Anxiety, and Stress Scale-21. PROCESS Macro 4.0 was used for simple and moderated mediation analyses. Independent samples t-test analysis and content analysis were conducted to examine group differences. *Results:* The results showed self-discrepancy (i.e., both ideal and undesired) was associated with negative emotional symptoms through shame-proneness; however, the moderating effect of gender was not significant. Females had lower levels of ideal self-discrepancy and exercise addiction. On the other hand, their shame and negative emotional symptom levels were higher compared to males. Additionally, the content analysis for ideal self-discrepancy and undesired self-discrepancy revealed some differences between genders. *Conclusion:* The present study provides new insights into how the way individuals with excessive exercise behavior look at themselves and experience their negative emotions, with specific consideration on the female population harms.

S-6F5

Women & gambling: A case study on their relational system aspects (family&friends and care services) and criminological aspects

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The hypothesis of the presented research is based on the idea that treating female gambling necessarily means contextualizing it by recognizing the plurality of socio-relational, political-economic, regulatory and criminological dimensions as predictive factors or amplifiers of gambling behaviors. The study, built on a qualitative methodological design, detects the relational system of female gambling and some criminological aspects: the relationship with the game that is the modes of use and the places of gambling, the personal meanings of gambling and the condition of dependence; the relationships between female and male gamblers and family members; the proximity to deviant environments and relationships with recovery services. The ultimate goal is to understand the complexity of traditional and online female gambling, considering the significant changes related to the increasingly feminized gambling market, the nature of increasingly additive games and the more markedly social dimension (and therefore sociological) of female gambling in front of local specificities due to Covid-19 that has revised the spaces, times and structures of individual biographies, of the city and the individual districts within the public space and in the aftermath of the consequent health and economic crisis, whose effects affect gambling behaviors. Among the main outcomes we find the victimological dimension of female gambling. *Funding:* The research entitled "Gambling, female gamblers and social networks" was promoted by the Fondazione IPSSER - Istituto Petroniano Studi Sociali Emilia-Romagna.

S-6F6

Food Addiction in the adult Indonesian female population

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This study aimed to determine how common Food Addiction (FA) is in the adult Indonesian female population and what factors may contribute to FA. A total of 194 Indonesian women completed the Yale Food Addiction Scale 2.0 (YFAS 2.0) and a questionnaire to assess socio-demographic characteristics, Body Mass Index, and their eating habits. Less than four percent (3.6%) of participants met the threshold for FA (85.7% severe FA and 14.3% moderate FA). Among those with FA, the majority were obese (57.1%) and exhibited a preference for high-sugar and flour-containing foods. Withdrawal symptoms were the most commonly reported symptom among participants with FA.

S-6G1

Conditioned Reflex Control Technique(CRCT) for behavioral addiction

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Symposium summary: CRCT bases its phenomenon on Pavlov's classical conditioning theory to explain why pathological behaviors are repeated even with various pharmacological and cognitive behavioral treatments. CRCT was initially designed to help drug addictions, but now it is a widely used treatment for general addictions such as alcoholism, sexual problems, kleptomania, pathological gambling, eating disorder, obsessive compulsiveness, and self-harm. This abstract will address the effectiveness of the Conditioned Reflex Control Technique when treating patients with various behavioral addictions.

Keywords: CRCT, Conditioned reflex control technique, behavioral addiction, pavlov, Conditioned reflex

S-6G2

Mechanism of behavioral addictions and their treatment

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Living organisms can exist through physiological activities such as defense, nutrition (feeding), and reproduction. Species of animals that survived had a tendency to reinforce the neural activity that resulted in successful physiological behavior, and a tendency to inhibit the neural activity which resulted in unsuccessful physiological behavior. Non-human animals have only one behavioral center- The First Signal System; This is the center that reproduces past successful physiological behavior through reflexes. Humans have two behavioral centers – The First Signal System and the Second Signal system. The Second Signal System allows them to think and create successful social behaviors for the future. These two behavioral centers receive stimuli from the environment. They operate and stimulate each other but each system operates in its own way. When the two systems are operating in different directions, the stronger system drives the behavior. Behavioral Addiction is a condition in which the First Signal System controls a particular behavior and the Second Signal System fails to stop that behavior. The basic method of Conditioned Reflex Control Technique is to introduce stimuli related to the problematic behavior, in a controlled setting that does not produce a physiological reward or similar response. The problematic neural activities are suppressed by the repetition of a non-rewarded behavior causing it to weaken and die out. The second signal system then becomes dominant and the problematic behavior ceases to occur. In this method about 90% of the patients who initially experienced a strong response, had a weakened response.

S-6G3

Our CRCT (Conditioned Reflex Control Technique) centered approach toward cases related to socially inappropriate Sexual behaviors

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Hotto Station is a multifunction psychiatric clinic. We have various initiatives for law offending clients, including psychiatric daycare programs, job assistance, drug detection kits, addiction meetings, interviews with narcotics officers, care conferences and CRCT. In our clinic we have been practicing CRCT for various problems such as sexually inappropriate behaviors, drug addiction, kleptomania, pathological gambling, and so on. We analyzed the outcome of the CRCT treatment of 102 male clients whose inappropriate sexual behavior led to police intervation. Each was treated with CRCT from December 2010 to the end of December 2022. According to the statistics from the Ministry of Justice, the re-offending rate of persons who were not eligible for parole and released after completing their sentence was 19.5% within 1 year after released. The re-offending rate of sex offenders who have not participated in a CBT (Cognitive Behavior Therapy) program but were released on parole was 12.7% within 1year after released. And the re-offending rate of persons who participated in a CBT program while in prison and then while post-parole probation was 5.6% within 1year after released (2015). In our program, the re-offending rate of sex offenders who carried out CRCT was 4.2% within 1 year after release We think that CRCT can contribute to reducing the rate of re-offending of sex offences. However, because of different underlying conditions it is not possible to simply compare the results.

S-6G4

Conditioned Reflex Control Technique (CRCT) for challenging cases of behavioral addictions

SANG WOON PARK

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Daedong hospital runs under the philosophy of a therapeutic community, offering more than 30 treatment groups. The principle of therapeutic community was adapted from Nozoe hospital, Fukuoka, Japan. Our hospital emphasizes short-term hospitalization and rehabilitation, using different treatment strategies from classical Cognitive Behavioral Treatment (CBT), group psychotherapy, and psychodrama to newly emerging methods such as Mentalization Based Cognitive Treatment(MBCT), Dialectical Behavioral Therapy(DBT), and Conditioned Reflex Control Technique(CRCT). This abstract emphasized CRCT as the next hotspot of behavioral addictions in various challenging cases. Daedong hospital introduced CRCT in 2018 for the first time in Korea. Besides algorithmized therapy, CRCT has been applied to

diverse behavioral addiction cases such as Obsessive Compulsive Disorder (OCD), gambling, wrist-cutting, pornographic addiction, skin-picking disorder, shop-lifting, intermittent explosive, and so on. CRCT is based on the conditioned reflexes by Ivan Pavlov, explaining that patients with addictive behaviors cannot control their urges by their logic alone. When one falls into the addiction, it is no longer a matter of suppressing desires but a new reflex formed by numerous repetitive behavior. CRCT has comforted many patients with addictive behaviors and helped them stay on the treatment pathway. Also, our hospital offers CRCT group psychotherapy to make this treatment more effective and sustainable.

S-6G5

Conditioned reflex control technique in gambling disorder

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Since the COVID-19 pandemic, gambling has shifted its field rapidly from offline to online, bringing out alarming changes in treatment strategy. The increased prevalence of home working is also an important consideration for future treatment for gambling disorder, as the temptation to gamble online, amplified by clever advertising, is always there. Young adults and adolescents have become vulnerable targets of this behavioral addiction. This abstract will address the effectiveness of the Conditioned Reflex Control Technique when treating patients with gambling disorders. CRCT has four stages. The first stage, Key-Word-Action (KWA), helps patients to build a neutral stimulus setting. Patients reset their reflexes for gambling desire in a controlled environment. The Pseudo stage induces target behavior intentionally to help decrease reflex by repeating addiction behavior without its rewards. Naturally, patients become less reactive to various stimulations, which before led them to gambling behavior. The third is the Imagination stage. Patients repeat several regular days of addiction and become neutral to their urge-triggering stimuli. These three stages take approximately three months to complete in an in-patient setting, but the duration varies by treatment environment. The final stage is the Maintenance stage. This is a lifelong stage of preserving the effect of negative stimulation and keeping targeted reflex chain operability reduced. By finishing each stage, patients showed reduced urges for gambling behaviors and, more importantly, didn't have to fight against their desire.

S-7A1

WHO Structured Session - Addressing Gaming Disorder based on Global Perspective

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Symposium summary: It has already been more than three years since it was decided that gaming disorder be included in ICD-11. At that time, there were objections from the game industry and some related academia, and it was a social issue. However, such discussions were not conducted in scientific ways or produced productive conclusions. This is also due to the lack of a basis for the biological pathophysiology of behavioral addiction, but there was also a limitation that the opposition originated from the interests of the digital media industry such as games. In any case, health problems caused by excessive use of games are an existential problem, so mental and behavioral health experts in each country, including the WHO consultation team, have continued to make their own efforts to develop the diagnosis, prevention, and treatment system of gaming disorders. In particular, in the area of the diagnostic system, the WHO consultation team conducted well-designed research internationally, and standardized diagnostic interview tools were almost developed. In addition, a similar type of behavioral addiction-related monitoring system to the Global Information System on Alcohol and Health is being discussed. In addition, there are cases in which prevention policies and responses to game addiction are well underway in various countries such as Indonesia, Japan, and Switzerland. The WHO Symposium introduces these efforts, and aims to help behavioral addiction experts from each country share information with each other and effectively cope with game addiction problems.

Keywords: gaming disorder, global perspective, diagnostic interview, monitoring system, prevention policy, treatment system

S-7A2

The nature and characterisation of Gaming Disorder in ICD-11

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Background: Gaming Disorder (GD) is a newly listed addictive disorder in ICD-11. Its diagnosis requires the presence of (i) impaired control (IC) over gaming, (ii) increasing priority (IP) over other activities, (iii) continued gaming (CG) despite adverse consequences, (iv) demonstrable impairment (IM), and (v) a course of 12 months or more. This presentation will

describe the nature and characteristics of GD, how it compares with substance use disorders in ICD-11, and will present the findings from a four-country study which aimed to identify key features that contribute to the assessment and diagnosis of GD. *Method:* A sample of 796 adults who played online games for at least three hours per week was recruited from Australia, Canada, the United States and the United Kingdom. Participants completed a survey of GD features (76 items) and measures of duration and frequency of gaming. After exploratory factor analysis, GD domains were appraised by Item Response Theory (IRT) analyses. *Results:* Items which reflected the more severe end of the IC spectrum included (i) gaming despite others pleading, and (ii) spending more money than was affordable (IRT coefficients >0.5), whereas longer duration or more frequent gaming reflected the milder end (~0.2). IP items reflecting more severe gaming included (i) losing an important relationship and (ii) forgetting to eat (0.6-0.7). For CG this was continued gaming despite evident problems with family or friends (0.6). The most severe IM items included (i) trouble at school or work and (ii) lost relationships (0.9-1.0), whereas sleep disturbance and physical pain represented the less severe end (0.5). *Conclusions:* Within the GD symptom domains, there is a wide spectrum of severity. Caution must be taken in devising screening and diagnostic instruments not to include items that are commonly seen across a spectrum of videogamers in order to avoid diagnostic hyperinflation.

S-7A3

The need for a global monitoring system based on national ones

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In 2019, ICD-11 included gaming disorder and created a chapter on behavioral addiction. The World Health Organization's decision means that behavioral addiction can pose a public health threat, that it should be reflected in the International Classification of Disease-11 to respond, that there are diagnostic guidelines agreed upon by experts in the health sector, and that the current health systems can address the behavioral addiction problems with additional capabilities and options. However, the presentation of diagnostic guidelines is only a declaration of the beginning of a response to the problem of behavioral addiction. In order to respond to the problem of behavioral addiction, it is necessary to monitor and share the natures of the problem and the response of member countries. Monitoring the present and finding and reflecting future improvements is the basis of public health policy. Already, in the field of alcohol and drugs, such an monitoring platform is being established. Behavioral addiction is also the result of three aspects of interaction: agent, host, and environment, so an survey and monitoring system can be established with a concept similar to substance addiction. In particular, since the behavioral addiction problem is a newly emerging health problem, there are many differences between countries, cultural contexts, and intervention systems. Therefore,

the establishment of such a monitoring system can play an important role in establishing a standard and effective behavioral addiction intervention system at each country and even at the global level.

S-7A4

Policy and practice challenges in addressing gaming disorder in Indonesia

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Gaming disorder has emerged as significant public health concerns worldwide, including in Indonesia. There is a huge gap in providing addiction treatments in Indonesia. With a population of more than 277 million, there are only 32 addiction psychiatrists nationwide. A prior study identified that out of 600 samples, 16% of Indonesians were at high risk of IGD with more adolescents than adults. Of those identified, none have ever sought professional care. In Indonesia, gaming disorder is associated with aggressive and delinquent behavior which leads to confinement and altogether increases challenges in addressing the disorder. To date, there is a lack of specific policies in Indonesia addressing problematic internet use. The Ministry of Communication and Information has initiated a national gaming rating system (IGRS) that categorizes games into five groups based on age, genre, and platform. However, there are no evident consequences for violating the IGRS system. Indonesia has collaborated through various avenues involving governmental entities and non-governmental organizations. It is essential to advocate to the government regarding the harms associated with gaming to establish national policies and strategies. Raising public awareness about gaming disorder is crucial as it helps people comprehend the negative impact caused by this disorders and encourages them to seek help when needed. Engaging general physicians, counselors, and other mental health professional are also necessary to address the issue. Various studies have been conducted to determine effective management for patients with gaming disorders. Psychological treatment, such as Dialectical Behavioral Therapy, effectively improves symptoms and increases motivation for behavioral change. Nevertheless, universal and selective prevention must be developed as a future step in delineating effective therapy for gaming disorders.

S-7A5

Evolution of prevention and treatment practices for gaming disorder in Japan

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The prevalence of probable gaming disorder (GD) among people in Japan, aged between 10 and 29 years old and those aged between 10 and 79 years old, was estimated in 2019 at 5.1% and 2.8%, respectively. Several Japanese government ministries have been involved in the prevention of GD, but measures taken so far have been less than robust, especially in comparison to government promotion of the gaming industry, which it views as a key industry to attract overseas interest. However, there are authorities at local government level that are active in prevention activities, such as establishing ordinances targeting GD prevention and the holding of camp programs for adolescents engaged in excessive gaming. Based on an increasing treatment demand, the number of medical facilities providing specialist treatment has constantly increased since 2011 and stands at approximately 200 in 2023, but this is insufficient to meet demand. In addition, these facilities are unevenly distributed and concentrated in urban areas. Overflow patients with GD often have little choice but to visit child and adolescent psychiatrists or pediatricians who lack expertise in addiction treatment. Various types of treatment programs including CBT-based, day-treatment, inpatient, and camp programs have been developed, but with some exceptions, an assessment of their efficacy has yet to be conducted. At our center, capacity building for treatment experts has been undertaken since 2014, with support from the government. To tackle increasing problems associated with GD, concerted efforts are required from a range of sectors. In order to achieve this goal, the establishment of an act, similar to the Basic Act on Measures against Gambling Addiction, targeting the prevention of GD is necessary.

S-7A6

Health system response to Gaming Disorder in Switzerland - A quality approach towards access, identification and management

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In Switzerland, Gaming disorder is of public health concern since mid-2000, with scarce national specialized treatment response being a challenge. The facility ReConnecte established in 2007 served as a national reference and resource for public health entities. Its development followed a Quality approach made of 6 aims in addressing treatment needs and demands for Gaming Disorder (GD). We present this approach concrete implementation for benchmark. Safety. ReConnecte is a voluntary outpatient facility, operating based on alliance with patient without constraint components; despite challenging pressure from social environment for non-voluntary care. Psychotherapy is run by trained professionals in addiction psychiatry, going through an additional clinical training for addictive behaviors (2-3years) and regular supervision (each 1 or 2 weeks). Effectiveness: the care offer adapted to scientific knowledge, with a first care process model in 2014 updated in 2021, presented here.

The assessment covers the spectrum of Gaming related disorders (harmful, hazardous and GD), avoiding over-pathologizing. Underuse of the facility is addressed in 2012 by the creation of an email address for patients (to take advantage of any motivational stage), and in 2017 by offering a webpage with information, self-assessment and easy online option to seek appointment (40 demands from 2021 to 2023). We offered treatment during lockdowns and 2-4 teleconsultations per week since then.

Patient-centeredness. The personalized approach aims at reconnecting patients to themselves, their life objectives, and their social environment- rather than disconnecting them from gaming. All clinical and functioning decisions are made jointly with the patient. Timeliness: the usual timeframe for an appointment is less than 2 weeks. Efficiency: the standardizing care process model along with Flow management of patients and resources, serve this goal. Equity: It is a public offer covered by basic health insurance adapted to meet gender and languages needs.

S-7B1

Connectome-based prediction of problematic usage of Internet in early adolescents

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The problematic usage of Internet (PUI) in adolescents has become a promising domain of interest for researchers, yet valid predictors remain lacking, especially at the neural level. Therefore, it is necessary to explore the underpinning neural mechanisms associated with the PUI in adolescents. A total of 112 adolescents aged 11-15 years were recruited in the present study, of which 85 were included in the data analysis. A connectome-based predictive modeling (CPM) analysis was used to explore the neurophysiological basis of resting state (RS) associated with PUI in adolescents. In addition, the reconfiguration coefficients of the positive PUI network from RS to reward task were calculated in the present study to investigate its degree of changes in brain activities across different states. Results showed that there existed a positive network pattern (216 edges) in the RS that significantly predicted the severity of PUI in adolescents, mainly involving inter- or intra-connectivity between the salience network (SN), default mode network (DMN), frontoparietal network (FPN), subcortical network (SCN). The predictive power of PUI was significantly reduced when simulating lesions in the SN-SCN, DMN-DMN, and DMN-SN. Moreover, this positive PUI network showed promising reconstruction coefficients for the RS-reward task and was significant positively correlated with adolescents' PUI. In conclusion, the present study suggested that the interactions of DMN, FPN, SN and SCN may be the neurophysiological basis of PUI in adolescents. Similarly, the smaller changes in positive PUI networks from RS-to-reward processing also may serve as a risk neural predictor for PUI in early adolescents.

Keywords: problematic usage of Internet, connectome-based prediction, resting-state, monetary incentive delay, brain network, reconfiguration coefficients

S-7B2

Reduced loss aversion in value-based decision-making and edge-centric functional connectivity in patients with internet gaming disorder

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Background: Impaired value-based decision-making is a feature of behavioral addictions and drug addictions. Both reward and loss aversion are key elements in value-based decision-making. Studies have consistently investigated reward in behavioral addictions and drug addictions, however, few studies explored loss aversion especially in behavioral addictions. In this study, we investigated loss aversion in the Internet gaming disorder patients. *Method:* In this study, Internet gaming disorder patients (PIGD) and healthy controls (Con-PIGD) performed the Iowa gambling task (IGT), under functional magnetic resonance imaging (fMRI). We investigated group differences in loss aversion, brain functional networks of node-centric functional connectivity (nFC) and the overlapping community features of edge-centric functional connectivity (eFC) in IGT. *Results:* PIGD performed worse with lower average net score in IGT. The computational model results showed that PIGD significantly reduced loss aversion. There was no group difference in nFC. However, there were significant group differences in the overlapping community features of eFC . Furthermore, in Con-PIGD, loss aversion was positively correlated with the edge community profile similarity of the edge between left IFG and right hippocampus at right caudate. This relationship was suppressed by response consistency in PIGD. In addition, reduced loss aversion was negatively correlated with the promoted bottom-to-up neuromodulation from the right hippocampus to the left IFG in PIGD. *Conclusions:* The present study consistently demonstrated that Internet gaming disorder showed loss aversion deficit, a key element in the value-based decision-making. These findings may have important implications for the definition, diagnosis, and prevention of Internet gaming disorder in the future, and we calls for future research to investigate loss aversion in other behavioral addictions.

Keywords: internet gaming disorder, loss aversion, value-based decision-making, neuroimaging

S-7B3

Neural correlates of cue reactivity and inhibitory control: A meta-analysis of fMRI studies

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Background: Cue reactivity and inhibitory control play a crucial role in the development and maintenance of behavioral addictions. Over the last decades, an increasing number of research projects have investigated the neural basis of these processes in addictive behaviors, such as gambling disorder (GD), internet gaming disorder (IGD) and pornography use disorder (PUD). This work aims at integrating and comparing findings from this research across the different addictive behaviors. *Method:* An activation likelihood estimation (ALE) based meta-analytic approach was used to identify peaks of shared activities across neuroimaging studies on cue reactivity and inhibitory control in behavioral addictions, specifically GD, IGD and PUD, as well as alcohol use disorder (AUD) for comparison. Thus, neural activity could be contrasted across addictions. *Results:* In total, 56 functional neuroimaging studies have been included in the ALE meta-analysis, with most studies investigating cue reactivity in AUD and IGD. Only one study on inhibitory control in GD and PUD, respectively, were identified, which were not included in the analysis. Peaks of activity found include several frontal areas, such as the inferior frontal gyrus in inhibitory control (AUD, IGD), as well as parietal and occipital regions, such as the gyrus fusiformis in cue reactivity (all groups). *Conclusions:* Beyond some differences, the current analysis showed overlaps with previous meta-analyses on cue-reactivity and inhibitory control in addictions, including regions associated with self-regulation, habits, and attention. Future studies should focus on the systematic identification of common and specific neural correlates of behavioral addictions.

Keywords: neuroimaging, meta-analysis, cue reactivity, inhibitory control, internet use disorders

S-7B4

Neurogenetic evidence in support ofthe early identification of preaddiction using the genetic addiction risk sverity (GARS) assessment

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GWAS studies of depression and suicide in 1.2 million veterans1, 2 confirmed the first psychiatric candidate gene study finding from Blum et al. 1990; a significant association between the minor DRD2 allele, Taq A1 (rs 1800497 C>T) and severe alcoholism.3 The DRD2 rs1800497 associated with suicide behaviors at P=1.77 X 10.7.A meta-analysis of 62 studies showed a significant association between DRD2 rs 1800497 and Alcohol Use Disorder (AUD)4 others showed that the haplotype block of the DRD2 gene A1 allele was associated with AUD and heroin dependence.5 An amino acid substitution, identified within the 11th ankyrin repeat of ANKK1 (p.Glu713Lys), of rs 1800497 SNP, effected substrate-binding specificity.7 The genetic addiction risk severity (GARS) assessment was designed to evaluated eleven SNPs, antecedents of hypodopaminergia.8 Since 1990, published addiction psychiatry articles have exceeded 11,495. Several from Blum et al. showed the clinical relevance of the GARS, identifying risk for reward deficiency behaviors in cohorts from polysubstance and pain clinics, post-surgical bariatrics, and DWI offenders facing prison time. 9-11 Statistical evaluation of n=74,566 AUD with case-controls validated risk alleles measured by GARS showing significance for DRD2, DRD3, DRD4, DAT1, COMT, OPRM1, and 5HTT at 5% CI. These alleles captured risk for greater than the 8% general population's alcoholism prevalence,12 indicating their importance in the induction of reward deficiency behaviors. While we have found a constructive tool for identifying risk for preaddiction (~ 2 billion) and other.

Keywords: genetic factors, reward deficiency

S-7B5

Youth screen media activity patterns and associations with behavioral developmental measures and resting-state brain functional connectivity

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Background: Screen media activity (SMA) consumes considerable time in youth's lives, raising concerns about the effects it may have on youth development. Disentangling mixed associations between youth's SMA and developmental measures should move beyond overall screen time and consider types and patterns of SMA. We here aimed to identify reliable and generalizable SMA patterns among youth and examine their associations with behavioral developmental measures and resting-state brain functional connectivity (RSFC). *Method:* Three waves of the Adolescent Brain and Cognitive Development study (ABCD) data were examined (N=11,876 at baseline). K-means clustering with sensitivity analyses were used to identify SMA patterns. The generalizability and stability of the identified SMA patterns were examined in the Lifespan Human Connectome Project in Development data (HCP-D, N=652) and ABCD follow-up waves, respectively. Relationships were examined between SMA patterns and behavioral measures and RSFC using linear-mixed-effect modelling. *Results:* Available SMA data from 11,817 children (Mean(SD)age = 119.0 (7.5) months; 6,159 (52.1%) boys) were examined, and 3,151 (26.7%) demonstrated a video-centric higher-frequency SMA pattern (group 1) while 8,666 (73.3%) demonstrated an overall lower-frequency pattern (group 2). The identified patterns were validated in similarly-aged HCP-D youths. Compared to group 2, youths in group 1 showed poorer neurocognitive performance (Standardized Beta [95%CI] = -0.12 [-0.08, -0.16], p<.001, all p-values are FDR-corrected), more total behavioral problems (0.13 [0.09, 0.18], p<.001), and more severe prodromal psychotic symptomatology (0.31 [0.27, 0.36], p<.001). Group 1 demonstrated higher impulsivity, more sensitivity to punishment/reward and altered RSFC among brain areas implicated previously in cognitive processes. Most of the associations persisted with age growth, and more individuals (N=3,378, 30.4%) were assigned in the video-centric higher-frequency SMA group at one-year follow-up. *Conclusion:* Video-centric SMA patterns are reliable and generalizable during late childhood. Group 1 showed altered RSFC and poorer developmental measures that persisted longitudinally. The findings suggest public health strategies aiming to decrease excessive time spent by children on video-entertainment-related SMA are needed.

Keywords: youth; screen media activity; resting-state functional connectivity, adolescent development

S-7B6

Affective and physiological processing in standard computer display vs VR gaming

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Background: Use of virtual reality (VR) in video gaming is becoming more widespread. The transition from standard computer screen (SCS) gaming to VR gaming using head-mounted displays (HMDs) is increasing rapidly with advancing technology. However, little is known about the implications the intensified emotional experience provided through VR gaming may have on problematic gaming behaviors. The aim of this study was to investigate the difference in emotional and physiological experience during SCS versus a VR HMDs in gamers and non-gamers, and how this may correlate with problematic gaming behaviors. *Methods:* N=43 participants (21 Gamers/22 non-gamers) completed baseline personality and gaming questionnaires alongside their emotional experience (PANAS, SAM) before and after playing a video game on standard computer screen (SCS) and VR HMD (in counter-balanced order). EEG and heart rate were recorded. Gaming experience was assessed after each exposure. *Results:* Participants reported higher levels of positive and lower levels of negative affect (PANAS) after VR compared to baseline and SCS exposure (with no differences after SCS exposure compared to baseline). Participants reported greater pleasure, arousal and dominance (SAM) during baseline than after VR and SCS exposures, and greater arousal and dominance after VR than SCS exposure. There was no difference in pleasure between the VR and SCS condition or between gamers and non-gamers. (Physiological data analyses pending). *Conclusion:* Initial results support greater self-reported physiological and positive affective experience in VR as opposed to SCS video gaming, though pleasure was the same. This experience does not differ for gamers versus non-gamers.

Keywords: virtual reality, gaming disorder, EEG, heart rate, head mounted display

S-7C1

Addiction "spectrum" disorder: A conceptual framework for understanding the relationship between behavioral and drug addiction

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Background: Although psychiatric disorders are diagnosed and categorized on the basis of symptoms with diagnostic manuals, it has now been recognized that such categorizations of disorders hider the advance of psychiatric research, due to significant heterogeneity and comorbidity of symptoms, as well as substantial overlaps of genes and molecular pathways involved in disorders, leading to initiation of the project, such as Research Domain Criteria (RDoC), toward dimensional (spectrum) conceptualizations of psychiatric disorders. Understanding disorders under the spectrum conceptualizations has been propelled in some psychiatric conditions, such as schizophrenia, which is now often referred as schizophrenia spectrum disorders. It remains unclear whether addiction can also be understood as spectrum disorders. _Method:_ Literatures including our studies regarding behavioral addiction (BA), food addiction (FA), and substance use disorder (SUD; drug addiction) were reviewed for constructing a conceptual framework to elucidate relationships of BA, FA, and SUD.
Results: Although symptoms of BA, FA, and SUD could be heterogeneous, substantial similarities, if not identical, are found in deficits of RDoC domains and constructs and associated genetic, neural, and physiological mechanisms not only among BA, FA, and SUD, but also in some psychiatric conditions categorized in disorders other than addiction, such as impulse control disorders and eating disorders. In particular, FA could exhibit characteristics of both BA and SUD, suggesting that BA, FA, and SUD structure a consortium, with FA as an intermediate between BA and SUD. _Conclusions:_ BA, FA, and SUD could be a spectrum of disorders under the umbrella term "addiction".

Keywords: behavioral addiction, food addiction, drug addiction

S-7C2

Gaming disorder, unusual experiences, and Game Transfer Phenomena among gamers with and without a psychiatric diagnosis, and experience using drugs

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Background and aims: The comorbidity between gaming disorder (GD), psychiatric disorders, and the use of psychoactive substances is well established. However, little is known about hallucinations and dissociations among gamers. Game Transfer Phenomena (GTP) research have shown that non-clinical gamers experience cognitive/sensory intrusions with game content and discontinuity of sense of agency without being under the influence of substances in fully awake states. This study compares GD, hallucinations/dissociations and different forms of GTP among gamers with and without psychiatric diagnoses (Dx/noDx) and with and without drug experience (Drugs/noDrugs).*Method:* Online survey, N=1,301; Mage 28.14, SD=7.41, 83% male. Measures included items on positive symptoms of psychosis (CAPS), dissociations (DES) and sleep/dream-related phenomena (ISES), IGD-9 and GTP-MDS.*Results:* Gamers with Dx compared to noDx showed significantly higher scores in hallucinations, GD, drug experience, and GTP manifesting as intrusive thoughts and misperceptions/imagery. The Drugs-group, compared to noDrugs, had significantly higher scores on hallucinations, dissociations, conflicts due to GD, GTP manifesting as dissociations/corporeal adaptations, cognitive mix-ups, intrusive thoughts, misperceptions/imagery and auditory intrusions. *Conclusions:* A wider range of manifestations of GTP appears to be more common in gamers with drug experience. The Dx and Drugs groups showed significantly higher scores in hallucinations, dissociations, and sleep/dream-related phenomena, but not for all manifestations of GTP, not even those GTP that some may consider more pathological, e.g., images hovering over people's heads. Future studies should investigate the relationship between GTP, specific psychiatric disorders and neural adaptative mechanics involving game features and prolonged playing that may explain many GTP experiences.

Keywords: Game Transfer Phenomena, gaming disorder, mental disorders, psychoactive drugs

S-7C3

Investigation of gambling behavior in fathers of adolescent with drug addictive and and non-drug addictive

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The purpose of this current study is to examine the perceived father attitudes of adolescents with and without substance addiction and their fathers' gambling behaviors. The sample of the study consists of male adolescents ages ranged between 13 and 18, receiving and not receiving inpatient treatment in a Psychiatry Clinic with their fathers in Gaziantep. The Questionnaires Adolescent and Father Personal Information Form, EMBU/Father Sub-Dimension and SOGS were applied. The results showed that adolescents whose fathers gambled were more likely to receive emotional and physical punishment from their fathers than those who did not. While there was a significant negative relationship between fathers' gambling levels and adolescents' perceived emotional warmth and overprotection/interventionism; a significant positive relationship was found between emotional punishment and physical punishment. The level of gambling of the fathers of adolescents with substance addiction is significantly higher than the fathers of adolescents without substance addiction.

Keywords: adolescent, gambling, perceived father attitudes, perceived parental attitudes, drug addiction

S-7C4

Problem gambling, drug abuse, alcohol use disorder, compulsive Internet use, social-bonds, social media identity bubble reinforcement and self-control in Thai young adulthood sample

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Background: Gambling is common among young people, and studies have documented adverse consequences for youth. Previous research suggests that problem gambling (PG) is highly co-morbid with other psychosocial conditions. Important correlates of PG are drug abuse (DA), alcohol use disorder (AUD), self-control (SC), and social-bond (SB). *Methods:* This study examined psychosocial factors as interstitial variables between DA and PG, such as PG -related AUD, CIU, SC, SB and the social media identity bubble reinforcement (SMIBR). Data were collected by a cross-sectional, online survey. The South Oaks Gambling Screen (SOGS-RA) was used to assess PG, and the Drug Abuse Screening Test (DAST-10) was used to assess DA. The sample comprised Thais age 15–23 (N = 1,538) studying at the undergraduate level. *Results:* There was a positive correlation between PG and AUD (r=0.31), CIU (r=0.09), SMIBR (r=.06), online belonging (r=.10), and DA (r=.27). PG was negatively associated with self-control (r=−.08) and offline belonging (r=−.16). Results of the parallel multiple mediation analysis showed that AUD, CIU, and SC mediated the relationship between DA and PG. However, SB (offline and online belonging) and SMIBR was not found to be a significant interstitial variable. *Conclusion:* Studies of prevention of PG in Thai youth have not analyzed various factors in order to design appropriate interventions. The findings suggest that individuals who have experienced DA may be at increased risk of developing PG. Psychosocial variables which correlate with youth gambling should be taken into account, such as AUD, CIU, and SC.

Keywords: problem gambling (PG), drug abuse (DA), alcohol use disorder (AUD), compulsive Internet use (CIU), self-control (SC)

S-7D1

Gambling and gaming addicted patients at a treatment clinic in Sweden

ANNA GORDH

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Symposium summary: This symposium will describe ongoing research at a treatment clinic for patients with gambling and gaming disorder in Sweden. We study gender differences, subjective effects of gambling in recreational gamblers, severity levels of gambling disorder and characteristics of gaming addicted individuals. We also present a pilot study of a CBT treatment developed in Sweden for patients with gaming disorder, and a randomized controlled study of internet delivered CBT-treatment for gambling disorder.

Keywords: gambling disorder, gaming disorder, gender, severity, subjective effects, treatment

S-7D2

High recreational gamblers show increased stimulatory effects of an acute laboratory gambling challenge

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Introduction: Gambling in moderation is a socially acceptable behavior and over 60% of the Swedish population gamble every year. It has been seen that slot machines are one of the most addictive and problematic forms of gambling and contribute highly to an addictive behavior. It is unclear why some individuals intensify their gambling behavior over time to extreme levels while others do not. Initial positive response of a drug or as in this case a gambling behavior, most likely influences the likelihood of continuing use in non-addicted individuals. Therefore, we wanted to investigate if recreational gamblers show an altered subjective response to an online gambling challenge, e.g. to casino gambling. *Aims:* The present study was designed to examine the subjective effects after an acute gambling challenge, in healthy recreational gamblers compared with non-gamblers. *Method:* Eighty-two subjects participated in the study. They were challenged with an acute online slot machine gambling challenge and self-report questionnaires of mood and blood pressure were taken before and after gambling. *Results:* The gamblers, and more specifically the high recreational gamblers, reported increased simulative effects after the gambling challenge in comparison to the non-gamblers. *Conclusion:* Findings suggests that gamblers experience significantly higher arousal effects to an acute online slot machine challenge. Even though casino gambling is not their first choice of gambling preference they may have an increased risk of gambling addiction.

S-7D3

A Swedish cognitive behavioral treatment method for gaming disorder: Pilot data findings from the GOT-TO-GO manual

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Background: Gaming disorder is a brand-new diagnosis included for the first time in the latest edition of the International Classification of Disease 11. Recently conducted international studies suggest a prevalence rate close to 2% for gaming disorder, highlighting the need for effective treatments for this patient population. Internationally there are very few studies investigating effective treatments for this condition. In this pilot study, we wanted to test a newly developed GOT-TO-GO Swedish manual of a 15 week cognitive behavioral therapy treatment for gaming disorder. *Method:* This study utilized a single group design with pretest, post-test and a 3 and 6 month follow up. Patients (n = 20) were treatment seeking young adults with gaming disorder (mean age 27). Measures of the severity of gaming disorder and mood were taken at baseline, during and after treatment and follow up measures were conducted at 3 and 6 months post treatment. *Results:* The results show a statistically significant decrease in symptoms of GD after treatment. Hours of gaming per week also decreased concomitantly with a 100% increase in non-gaming leisure hours. The decrease in symptoms of GD was maintained at the 3-months follow-up after treatment. Correspondingly we saw a decrease in both depression and anxiety that also was upheld 3 months after treatment. *Conclusion:* As GD is a new diagnostic concept more research is needed, also taking psychiatric comorbidity into consideration, to arrive at evidence-based conclusions regarding effective treatments. Considering the promising results in this small pilot study with large behavioral changes and reduced symptoms of GD, upheld at least 3 months after treatment, a larger randomized controlled study is warranted.

S-7D4

Gender differences and clinical differences of mild, moderate, and severe gambling disorder in a sample of treatment seeking pathological gamblers in Sweden

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Introduction: Gambling disorder (GD) is classified among the addictive disorders in the DSM-5 and the severity of the diagnosis can be specified as mild, moderate and severe. It has been seen that individuals with more severe gambling problems have a higher rate of

comorbid disorders and other health problems compared to individuals with a milder clinical picture. Women with GD are generally older, have a higher rate of affective disorders, engage more in casino games and are more often "emotionally vulnerable gamblers" according to the pathways model. *Aims:* The aim of the following studies was to explore clinical psychiatric differences related to the severity of disorder and gender in treatment-seeking disordered gamblers. *Method:* A sample of 163 disordered gamblers in the severity study and 204 in the gender study, seeking treatment at an outpatient clinic was diagnosed using the SCI-GD, screened for comorbid diagnoses using the MINI, and further completed a range of self-report questionnaires measuring alcohol-, and drug-problems, symptoms of depression and anxiety, emotion regulation, cognitive distortions, and quality of life. *Results:* Greater severity was associated to more problems with alcohol and illicit drugs. Severe gamblers were more likely to gamble to "escape", and had more symptoms of depression and anxiety. Moderate and severe gamblers had more difficulties with emotion regulation. Cognitive distortions were the same between severities. All groups had Quality-of-Life problems at a clinical level. Women were generally older, more often single parents, more often engaged in casino gambling, had more symptoms of depression and anxiety and were more likely to be "emotionally vulnerable gamblers". *Discussion:* There are some distinctive differences between disordered gamblers of different severities. The features shown by patients with severe GD indicates a more emotionally vulnerable group with increased symptom severity. Further knowledge about the features of GD severity levels is important for treatment planning in the clinic. Gender differences were similar as found in previous studies.

S-7D5

Gaming disorder: Patient characteristics and co-morbidities - investigating age differences in a treatment-seeking sample

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Background: With the recent introduction of gaming disorder (GD) as a diagnosis there is a need to extend the knowledge of clinical characteristics of patients seeking treatment for GD. Evidence is accumulating about psychiatric co-morbidities associated with gaming disorder in the general population but less is known about clinical populations. Both population studies and clinical studies often focus on younger population. Thus, more knowledge is needed about clinical characteristics of patients with GD, including psychiatric co-morbidities, and potential age differences. *Aims:* This study aimed to describe characteristics about gaming, demographic information and psychiatric co-morbidity in patients seeking treatment for GD, and to investigate how adult patients differ from patients who are young adults or adolescents. *Method:* A sample of 53 patients (m = 27.4 years) seeking treatment at an outpatient clinic were diagnosed with GD according to a structured diagnostic interview. Symptoms of other psychiatric conditions were screened using questionnaires. *Results:* Preliminary results

show differences between older and younger patients regarding at what age they started gaming and at what age they started to experience problems due to excessive gaming. There were no differences in psychiatric co-morbidity between the age groups, except for differences in problematic alcohol use. *Conclusions:* This study adds to the knowledge about common psychiatric co-morbidities in clinical samples which is important to be able to implement and deliver treatments for this group of patients. Both older and younger patients with GD present with significant psychiatric co-morbidity, having had problems with gaming for several years, demonstrating the importance for treatment clinics to target both older and younger groups of patients.

S-7D6

Internet-delivered therapist-assisted cognitive behavioral therapy for gambling disorder: A randomized controlled trial

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Objectives: Gambling Disorder (GD) has a prevalence of 0.5–7.6% worldwide and is associated with several negative consequences. It is thus a problem warranting treatment, however only 21 % with GD worldwide seek treatment. Offering treatment over the internet might be a way to close the treatment gap. The aim of this study is to assess the effectiveness of an internet-delivered CBT-based program with therapist assessment, compared to a control treatment of internet-based motivational enhancement and support. *Methods:* Diagnosed GD patients seeking treatment at an outpatient clinic were recruited and randomized to either the CBT or control treatment (8 weeks). Both treatments offered telephone support each week, whereas the content was delivered in modules over the internet. Gambling symptoms were measured using the NORC Diagnostic Screen for Gambling Disorder (NODS) at first visit, baseline (treatment start), during treatment, and post-treatment. In addition, a gambling diary and self-assessment measures of depression, anxiety, gambling-related cognitive distortions, and quality of life were administered. *Results:* A total of 71 participants were randomized, with 33 starting each treatment after drop-outs. Submission of results is ongoing and will be published at a later date.

S-7E1

Gambling problems and treatment of gambling disorders in Japan

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Symposium summary: Pachinko is a type of mechanical gambling game that originated in Japan and resembles an upright pinball machine. Pachinko parlors are located in many parts of Japan and are open to anyone of legal age (18 years old). Due to the availability of pachinko, gambling in Japan is unique. The Integrated Resort Bill, which was passed in Japan in 2018, attempted to institutionalize casinos; however, they remain illegal to date since no corporations have government permission to operate. Although gambling is harmless for most individuals, in some cases it can be addictive and problematic, with severe negative consequences. Therefore, the expansion of legalized gambling is an important public health concern. Researchers worldwide have investigated the epidemiology of gambling to reveal the incidence of gambling disorders and the effectiveness of policies implemented to prevent harmful gambling. However, in Asia, studies within this field are relatively scarce.
This symposium aims to present data on the current situation of gambling, prevalence of gambling disorder and gambling disorder treatments and their outcomes in Japan.

S-7E2

The prevalence of pathological gambling and gambling-related problems: Data from the latest national survey of the general Japanese population

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Background: Since the Integrated Resort Bill was passed in 2017, Japan has been preparing to open casinos in Osaka and Nagasaki. Previous studies have shown that accessibility to casinos is positively correlated with the prevalence of gambling disorders. In response, the Japanese government has enacted the Basic Law against Gambling Addiction, and has started a fact-finding survey on gambling addiction every three years. This study aims to understand the prevalence of pathological gambling (PG) and gambling-related problems (e.g., multiple debt, child-rearing difficulties, suicide, depression and harm from significant others gambling, adverse childhood experiences; ACEs, etc.). *Methods:* A self-administered (paper and pencil or internet) questionnaire was mailed to 17,955 people from October to December 2020 using a random sampling based on the Basic Resident Register. PG was assessed using the South Oaks Gambling Screen (SOGS). In addition, gambling behavior (gambling experi-

ence, frequency, and bet amounts) and original or standardized scales regarding gambling-related problems were examined. *Results:* A total of 8,223 valid responses (3,955 men and 4,268 women) were obtained. The age-adjusted past-year prevalence of PG was 2.2% overall (95% confidence interval = 1.9–2.5); however, the prevalence was higher among those who responded on the Internet. A comparison of respondents with and without PG found that those with PG had higher rates of depression, suicidal ideation, suicide attempts, and ACEs. *Conclusions:* The prevalence of PG in Japan is relatively higher than in other countries. A survey method is necessary to obtain comparable yearly prevalence rates.

Keywords: prevalence, pathological gambling, general population

S-7E3

Development of a brief screening instrument for problem gambling

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While gambling is highly profitable for corporations and governments, gambling causes serious harms for some individuals, and one of the most serious harms is gambling disorder (GD). Besides GD, gambling is associated with various adverse consequences, called gambling-related harms, including significant monetary losses or bankruptcy, criminal behavior, domestic violence, and suicide. In order to reduce the public health burden of gambling-related harms, early detection and intervention are required. There is growing evidence to suggest that individuals with problem gambling are over-represented in primary care, substance use services, and psychiatric services, as well as in other services such as family violence counselling and financial counselling. Although screening for problem gambling in these areas is especially important, health and legal service providers tend to have negative attitudes towards screening because of lack of time and skills. Therefore, a gambling screen that is easy to use and requires minimal administration time should encourage those service providers to screen their clients for problem gambling. The purpose of this study is to develop a brief screening instrument for problem gambling. A total of 533 internet monitors who gambled at least once a month were recruited and completed a questionnaire including existing screening tests, such as Problem Gambling Severity Index, as well as 11 original questions. Diagnosis of GD was based on online interview using SCID-5-RV. Multiple logistic regression analysis revealed six items that differed significantly between participants with GD and non-GD. The ROC analysis indicated a cut-off point of three to differentiate GD and non-GD.

S-7E4

Treatment program for gambling disorders at Kurihama Medical and Addiciton Center: A trial of treatment aftercare using a web application

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Background: Since opening Japan's first alcoholism treatment ward in 1963, our center has functioned as a national center for the treatment and research of alcoholism. Recently, we have been actively working on behavioral addictions, such as gambling disorder (GD) and Internet/gaming disorders. Currently, GD is treated on an outpatient and inpatient basis. The mainstay of treatment is a cognitive behavioral therapy-based (CBT) short-term program. CBT has been shown to be effective, with little change in the environment during hospitalization; however, after discharge, its relapse prevention effect and long-term sustainability are limited. Therefore, at the Department of Occupational Therapy, we developed self-care and pre-discharge preparation programs, in addition to CBT, for the purpose of long-term relapse prevention for inpatients with GD. *Methods:* The self-care programs consist of relaxation, impulse control, and cognitive improvement to acquire appropriate alternatives to addictive behaviors. On the other hand, the pre-discharge preparation programs focused on life rhythms, work, and daytime activities that are likely to cause problems after discharge. This program includes facility tours and information from support facilities. *Results:* Both programs seem to provide participants with an opportunity to consider specific measures to prevent relapse before discharge. Participants responded positively and had improved access to support after discharge. In addition, as a new tool, we have just started to provide after-discharge care using a web application. *Conclusions:* On the day of the symposium, we will report on the preliminary effects of post-discharge aftercare using a web application.

Keywords: occupational therapy, behavioral addiction, self-care program

S-7E5

Long-term effectiveness of treatment programs for gambling disorder (GD): Collaborative research at multiple medical institutions in Japan

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Background: To understand the clinical situation of GD who visited medical institutions and to clarify the effectiveness of treatment programs in Japan. *Methods:* Subjects were recruited with the cooperation of 20 medical institutions treating GD in Japan. Baseline data were acquired at their respective medical institutions, and an online follow-up survey using ICT was conducted. *Results:* 202 subjects were enrolled (men = 96.5%). The average age was 36.2 ± 8.7 years for men and 39.1 ± 9.8 years for women. The average age at which gambling began for the participants was 19.1 ± 3.3 years for men and 20.1 ± 3.1 years for women. Pachinko was the most common form of gambling, with an experience rate of 64.1% for men and 85.7% for women. The median total amount of debt each participant carried was ¥5 million for men and ¥5.75 million for women. All the subjects met the diagnostic criteria for GD on the DSM-5—36.4% of men and 42.9% of women had severe symptoms (a score of 8 points or more). A total of 144 (71.2%) subjects responded to the survey 6 months after the first visit. 78 patients (54.6%) remained on treatment. 81 cases (56.3%) were not gambling 6 months after the examination. *Conclusions:* A follow-up study using ICT investigated the prognosis of GD treatment. In the symposium, a follow-up survey after 12 months will be added to discuss the factors that influence prognosis.

Keywords: Gambling Disorder, prognosis, online survey

S-7F1

No mass effect of the genre: Gaming disorder and need satisfaction networks

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Background: Among the factors of developing gaming disorder (GD), need satisfaction (NS) plays a significant role. According to the Self-Determination Theory, unfulfilled needs of relatedness, competence, or autonomy can make one seek satisfaction elsewhere, e.g., in gaming. However, when gaming brings conflict into life, needs dissatisfaction could also become a consequence of gaming. Although some game genres tie GD and NS more strongly than others, the existing evidence is limited so far. *Methods:* We propose the network framework to explain the structure of GD and NS. 2,541 adult gamers (Mage = 25.7, SDage = 6, 83.4 % men) completed an online questionnaire containing the AICA-C and the Balanced Measure of Psychological Needs. We assumed differences among three genre-based networks. *Results:* The MMO, MOBA, and FPS genres did not differ in the structure of the networks. In all networks, Escapism was the main bridge between GD and NS. In both MMO and MOBA networks, the Autonomy need was linked to GD. The FPS network differed the most: GD and NS were least connected. *Conclusion:* Somewhat unexpectedly, needs satisfaction and gaming disorder are related similarly across the genres - genres might not play such a significant role in the feedback loop of NS and GD. This could be due to the increasing complexity of games; they include similar features to increase engagement. Therefore, specific game genres might not be riskier than others.

Keywords: gaming disorder, need satisfaction, network analysis

S-7F2

Motivation and outcomes of video gaming:
A daily diary study on adolescent gamers

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Daily diary methodology brings advantages such as the reduction of retrospective bias and the possibility to examine within person relationships, but it was rarely used in gaming research. This study used the framework of the Self Determination Theory (Ryan & Deci, 2017). Its aim was to explore the relations between basic psychological need satisfaction and frustration within video games and real life and gaming time, and between gaming time

and well being and sleep. The study was conducted in Croatia on N=125 adolescent gamers (Mage= 17.28 years), who attended high schools and played video games daily. They filled in a baseline questionnaire, and then filled in questionnaires via a mobile app every morning and evening for 8 consecutive days. In the morning they answered questions about their sleep quality and quantity (Monk et al., 1994) and in the evening they answered questions about basic psychological need satisfaction and frustration within video games and real life (adapted from Mabbe et al., 2018), gaming time on that day, positive and negative affect (Diener & Emmons, 1984), vitality (Ryan & Frederick, 1997), and physical symptoms. Data were analyzed with multilevel structural equation modelling. Daily real life needs frustration was negatively related to gaming time, i.e., gamers played less on days when their needs were frustrated. Daily needs satisfaction within video games contributed to daily vitality. Daily gaming time was not related to any indicator of daily well-being nor to sleep. Daily real life needs satisfaction and frustration are key in predicting adolescent gamers well-being.

Keywords: video gaming, adolescents, self-determination theory, well-being, daily diary

S-7F3

The positive effect of perceived long-term and short-term benefits of internet gaming on internet gaming disorder among adolescent internet gamers in China: Mediation effect via internet gaming time

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Background: Perceived benefit of internet gaming was positively associated with internet gaming time and internet gaming disorder (IGD). Yet, most studies looked at potential impacts of immediate benefits on IGD instead of various short-term and long-term benefits and IGD simultaneously. No previous study has investigated mediators of such associations. *Methods:* A cross-sectional survey was conducted among 1,707 secondary school students who played internet games in the past 12 months in classroom settings during October 2019 and January 2020, in Guangzhou and Chengdu, China. *Results:* The prevalence of IGD was 16.9%. Only 18%–25% perceived no short-term or long-term benefits of internet gaming on his/her mental health, social relationships, and personal achievement; 13%–20% felt strong benefits in these regards. Within individual differences in the levels of the corresponding pairs of short-term versus long-term benefits were non-significant. All perceived short-term and long-term benefits were significantly associated with IGD and all (except one) such associations were either partially or fully mediated by internet gaming time, i.e., perceived benefits may increase gaming time to result in IGD. *Discussion:* The findings suggest that

adolescents commonly perceive some long-term and short-term benefits regarding internet gaming. Both perceived short-term and long-term benefits are potentially impactful as both of them were associated with IGD via internet gaming. Future longitudinal studies are needed to confirm the findings. Innovative interventions acknowledging the potential existence of short-term and long-term benefits of internet gaming should be piloted.

Keywords: Internet gaming disorder, benefits; rewards, adolescents, time perspective

S-7F4

Identifying video game players' profiles from healthy behavior to Gaming Disorder in adolescents and adults

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Background: The World Health Organization's International Classification of Diseases and Related Health Problems diagnosis of gaming disorder (GD) has been a subject of debate regarding the differentiation of behavioral addiction from other behaviors and symptoms. The development and maintenance of this range of behaviors are influenced by psychological factors. This research aims to identify reliable video game players' profiles in terms of their psychological and interpersonal interaction factors in a determined continuum from healthy to addictive behavior criteria based on GD diagnosis and examine their differences. These profiles' novelty consists in examining the video game players' differences in terms of attachment styles, emotional regulation, motives for play, mental health, interpersonal interactions, and socio-demographics with gaming disorder. *Method:* Through latent class analysis, this cross-sectional research identified different video game players' profiles in a sample (N = 5020) of adolescents above 16 years old and adult video game players from novice to professional e-sports, including all game genres. It was assessed through an online survey with validated questionnaires for the English-speaking population. Results: Several psychological video game players' profiles were identified, differing in the intensity of symptoms and behaviors. *Conclusion:* The psychological and interpersonal profiles can contribute to identifying and better understanding the range from healthy to addictive behavior in video game use, helping to focus prevention and clinical interventions. They provide a useful framework for understanding which characteristics and why different people develop different game behaviors.

Keywords: video games, profiles, behavioral addiction

S-7G1

Neuro, psycho and social studies of Internet Gaming Addiction

KUNHUA LEE (chair)

National Tsing Hua University, Taiwan

Symposium summary: The psychopathology and treatments of Internet gaming addiction were called lots of attention in past. A diversity of evidence attempted to illustrate the nature and adverse consequences of internet gaming addiction. Until now, a comprehensive study could provide more information about the etiology of internet gaming. This symposium would explore the nature of internet gaming addiction in line with neuropsychology, emotional regulation, and social cognition. There will be five presentations in the symposium. The topic of the first presentation is to consider the effects of social cognition on internet gaming addiction. A cross-sectional study found the importance of social cognition (attitudes and intention) in internet gaming addiction. The second presentation will focus on the relationship between social cognitive determinants and positive emotion, and find gender differences in social cognition and positive emotion. After confirming the effects of social cognition, neuropsychology will be applied to examine the mechanism of internet gaming addiction. Therefore, the third and fourth presentations focus on impulsive control and decision-making of internet gaming addiction. The last presentation will provide a framework of time perception in internet gaming addiction through reviewing articles. The presenters suggest perception tasks, especially time perception, could be examined in further.

Keywords: neurocognition, psychology, social factors, internet gaming addiciton

S-7G2

The roles of attitude toward play online game between positive emotion and the duration of play online game: The results from a cross-sectional study

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Purpose: Based on social cognition theory, attitude and intention are important factors of human behaviors. The present study examined the role of intention between attitude and internet gaming addiction. *Method:* one hundred seventy-five participants were recruited from social networking sites (i.e., Facebook) (female = 85, 49.1%). After informed consent, they were assessed by their positive attitudes toward to game, intention to play, and duration of playing per day. Hierarchical regression analysis was to examine the potential role of intention between attitudes and duration for playing. *Results:* correlation test showed the positive attitudes toward to game, intention to play, and time for playing the game were significantly related to each other. Regression results showed attitude could have an impact on the dura-

tion of playing, however, attitudes and intention could not have significant impacts on the duration of playing as the intention was entered in the second step. *Discussion:* Despite the intention could not be a mediator between attitude and duration of playing, however, the moderated role of intention and larger sample size could be considered in the future.

S-7G3

Gender difference in the moderating role of wellbeing in the path linking accessibility, peer influence, positive internet gaming use expectancy with Internet Gaming Addiction among adolescents

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Objectives: Previous literature have suggested the mediating role of internet gaming expectancy and the protective role of well-being in the path linking accessibility and peer influences with Internet Gaming Addiction. This study further examined the gender difference in the moderating role of wellbeing in the pathway relating accessibility, peer influence, positive internet gaming use expectancy with Internet Gaming Addiction among adolescents. *Methods:* A total of 6,081 adolescents (age: 11–18 y/o; male: 50.1%) completed a comprehensive survey during classes after informed consent was obtained from adolescents and their legal guardians. *Results:* The results showed that, both in females and males, peer influence predicted internet gaming addiction, fully mediated through the positive Internet gaming use expectancy; moreover, accessibility, directly and indirectly, predicted Internet gaming addiction mediated by the positive internet gaming use expectancy. However, well-being significantly moderated the mediating effect of the positive Internet gaming use expectancy in the linking of Internet game accessibility and peer influence to Internet gaming addiction only in females, not in males. Further analyses indicated that the predictive power of the positive Internet gaming use expectancy on Internet gaming addiction weakened as the levels of well-being increased in females. *Conclusions:* Results proved the gender difference in the moderating role of wellbeing in the path linking accessibility, peer influence, positive internet gaming use expectancy with Internet Gaming Addiction. The underlying mechanisms of genetic vulnerabilities and their interactions with parenting and adverse childhood experiences, leading to this gender differences were discussed.

S-7G4

The executive function, behavioral systems, and heart rate variability in college students at risk of Mobile Gaming Addiction

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Background: This study focuses on the association between physiological indicators and behavioral measurements, including BIS/BAS, executive function, and negative emotion among college students at risk of mobile gaming addiction. *Method:* A total of 52 participants were included (aged 18-23, 8 males and 44 females). The Chinese version of Problematic Mobile Gaming Questionnaire (PMGQ) was used to classify the high and low-risk groups (the cut point was 29/30). There were 16 people in the high-risk group and 36 in the low-risk group. The scales were BIS/BAS scale, the daily executive function scale (DEFS), and the brief psychiatric symptom rating scale (BSRS-50). The psychophysiological (heart rate variability [HRV]) profiles of resting state, stress state (Stroop color-word test and mobile gameplay), and recovery state were used to investigate the association between physiological indicators and psychosocial measurement of mobile gaming addiction. *Results:* The significances between the two groups were in PMGQ, DEFS, drive and BAS subscale of BIS/BAS, depression and total scale of BSRS-50. In terms of physiological indicators, there were significant differences in the VLF and IBI Peak during the interference phase and heart rate during the gaming state. *Discussion:* The study revealed that poor executive functioning, behavioral activation, and negative emotions may be risk factors for mobile gaming addiction and showed adverse effects on the autonomic nervous system. Further research might focus on the endophenotype's role of executive function and HRV in mobile gaming addiction.

S-7G5

To study the decision-making ability in problematic mobile gaming

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Background: Previous studies have shown the impact of internet gaming on various domains of neuropsychological performance. With the smartphone embedded with the internet and application programs, mobile games programs are increasing as well. However, the differences between internet gaming and mobile gaming are unclear. This study proposed to compare

the effect between internet gaming and problematic mobile gaming. *Methods:* Participants were collected and screened using a problematic mobile gaming questionnaire (PMGQ) (cut of score 29/30) to screen the risk of problematic mobile gaming. Each participant was given decision-making task and required to complete the behavior questionnaires. *Results:* Thirty participants completed the tasks and questionnaires. There were thirteen (male/female = 6/7 with a mean age of 20.62 years old) in the high-risk problematic mobile gaming group (HR), and twenty-seven (male/female=6/11 with a mean age of 20.35 years old) were in the low-risk of problematic mobile gaming group (LR). The HR showed a tendency of impulsivity with a short reaction time after receiving a positive reward and tended to make more decisions and get greater bonuses. *Discussion:* Our preliminary results showed that mobile gaming has a similar impact on decision-making abilities as internet gaming does. A significantly higher number of decision-making in the high-risk PMG group with higher impulsive behavior and less flexibilities.

S-7G6

A comprehensive review in the association between time perception and addictive behavior

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Background: Impulsivity and addiction are inseparable, which leads people to act immediately without considering negative consequences. A task, of Delay Discounting Task has been documented to measure the impulsivity for people with addiction, and the results showed that compare to the non-addicts, by weighing immediate but smaller rewards against those that are delayed but larger. Time perception may play a key role in this process, as a distortion of time may make it difficult for people to make accurate evaluations. *Method:* Total nine empirical studies were selected through PubMed on the relationship between substance and behavioral addiction and time perception. *Results:* This review showed that limited number of studies and inconsistent results between studies on the time perception with addictive behavior. This may make it difficult to draw clear conclusions, and the heterogeneity among different addictions may also affect the conclusion. It is observed that addicts may not generally have impaired perception abilities, but rather show more consistent and significant differences only in certain time perception tasks and at certain time durations. *Conclusions:* Addicts may not have extensive time perception impairment, but only in a specific time interval. We believe that the degree of craving during the task is also a key factor affecting the performance of time perception tasks. Considering that the current research focuses on time perception within 1 minute, follow-up research can try to design experiments with longer time intervals.

S-8A1

Gaming Disorder and addictive digital behaviors: Developmental aspects & psycho-social management

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Symposium summary: Although gaming disorder or problematic internet use is not confined to children or adolescents, such conditions are more prevalent among the young population like substance problems are more pervasive in the younger population. The child and adolescent phase is a critical period of life where both physical and psychosocial development occur. The mismatch of fronto-striatal neurodevelopment renders them more vulnerable to risky behaviors as well as gaming disorder or internet pornography. In addition to biological risk, this is the period that socialization takes place and the relative significance of peer influence increases. Although children or adolescents may become less influenced by their parents as the psychological individualization process occurs, attachment, parenting, and the quality of the parent-child relationship will still act as a fundamental foundation for the developing mind. In this symposium, important developmental perspectives will be discussed and research will be presented on how the interplay of social and parental factors affect the onset and course of gaming disorder and potentially addictive digital behaviors.

Keywords: gaming disorder, pornography, parent, development, treatment

S-8A2

Peer bullying & online pornography among children and adolescent

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Background: To examine the impact of peer victimization on digital media consumption in children and adolescents *Methods:* After informed consent, psychosocial measurements and variables related to digital media use were collected from 186 children and adolescents recruited from three university hospitals in the Seoul metropolitan area. The participants were stratified by peer victimization status and group comparisons were performed. The group that experienced peer bullying was significantly more likely to be depressed and use online pornography. However, other digital media consumption did not demonstrate significant differences between the two groups. *Discussion:* Peer victimization was associated with online pornography use in children and adolescents. They may use such explicit content as a means

to modify their depressed mood status, resulted from bullying. Exposure to age-inappropriate or harmful content may further exert a negative impact on mental health such as shame or guilt. More attention will be required to monitor the use of digital media among children experiencing social exclusion and bullying.

S-8A3

Effect of parent-evaluated children's mental health problem on incidence of internet gaming disorder in adolescents: A two-year longitudinal study

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We evaluated the effects of parent-evaluated children's mental health problem on incidence of internet gaming disorder in adolescents using two-year longitudinal study. A total of 1,970 family dyads without the presence of IGD feature at baseline included in the current study. Face-to-face interview of the parents using Diagnostic Interview Schedule for Children, version IV (DISC-IV) was performed by trained laypersons to detect children's mental health problems at baseline. "Caseness" was defined as either any disorders present in the past month or year confirmed by the diagnostic algorithm of the DISC-IV. A high risk of IGD (HRIGD) was assessed by the Internet Game Use Elicited Symptom Screen, a self-reported questionnaire based on the fifth version of DSM-5 IGD criteria by self-reported assessment 2-year follow-up. Of 1,970 subjects, 72 (3.7%) were classified as caseness at baseline. At 2-year follow-up, 11.1% of caseness and 4.2% of non-caseness at baseline development of HRIGD (P = 0.012). As compared with non-caseness, caseness showed an approximately 2.8-fold greater incidence of HRIGD over the two-year follow-ups after adjusting for potential confounders including baseline IGD scores (aRR:2.8; 95%CI: 1.2-6.1). Children's mental health problem increases the likelihood of occurrence of HRIGD in adolescence. The results suggest that the risk of IGD in adolescents can be reduced by detecting and appropriately managing children's mental health problems. *Funding:* This research was supported by a grant of the R&D project, funded by the National Center for Mental Health (grant number: MHER22B03).

S-8A4

Psychoeducation on developmental needs to assist parents of adolescent gamers

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Flinders University

Background: Many parents express concerns about the risks of adolescent excessive gaming, including negative mood, reduced sleep, and interference with school and homework activities. Self-determination theory (SDT) suggests that gaming can fulfil basic developmental needs of autonomy, competence and social relatedness. This experimental study tests whether providing parents with psychoeducation about SDT may assist parents to recognise positive aspects of gaming and influence parenting responses to adolescent gaming. *Methods:* This talk will summarise an experimental study involving different case vignettes of adolescent gaming. The study involved a 2 (psychoeducation vs control) x 3 (vignette: casual, avid, and problematic gamer) design. A total of 851 parents (64% female) were randomly allocated to either the psychoeducation condition or control. Outcome measures focused on parenting perceptions and strategies in relation to each vignette. *Results:* The psychoeducation was successful based on a manipulation check. This talk will summarise the effects of SDT psychoeducation on parenting perceptions and responses to each of the 3 vignettes, including parents' appraisals of problem gaming in different case scenarios and associated supportive and controlling responses to gaming behavior. *Conclusions:* Many families encounter difficulties in regulating adolescent gaming time, and in having a shared understanding of the developmental value of gaming. This study contributes needed experimental data to a largely correlational body of evidence on parenting and gaming. With growing recognition of problem gaming in health nomenclature, it is important that both the benefits and harms of gaming are included in public health discussions.

S-8A5

Lessons from an intervention study: How to engage and support parents in treatment of adolescent Internet Gaming Disorder

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This presentation will discuss evidence on family domain outcomes of an intervention that combines Cognitive-Behavioral Therapy (CBT) techniques and parent support components for adolescents with Internet Gaming Disorder (IGD). A sample of 115 secondary school students presenting IGD participated in the study. By enhancing protective factors of IGD at the individual level and the familial level as mediating outcomes including self-regulation, resilience, parental supervision, and parent-child attachment, the intervention aimed to mitigate IGD, and subsequently negative consequences of IGD (depression and parent-child conflict). The study found that compared with the non-intervention group, the intervention group reported improvement in the individual-level mediating outcomes, the severity of IGD, and the level of depression. In contrast, there were no positive changes in family domain outcomes in the intervention group. Based on the results, we recommend that the intervention should improve on parent support components for its substantial effect on the family-level outcomes.

S-8B1

Understanding the measurement of behaviour in smartphone addiction: Results from a scoping review

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Smartphone addiction has been proposed as a behavioural addiction, but there have been conceptual concerns about the nature of the proposed disorder and its relationship to other behavioural addictions (i.e. internet addiction) and related constructs (e.g. nomophobia) that have led to critical debate regarding its phenomenology. One consideration that informs this debate is the relationship between self-perceived smartphone addiction and specific types of user behaviour. To this end, this talk reports the findings of an extensive review of the smartphone addiction literature. We conducted a scoping review of the empirical smartphone addiction literature to examine how smartphone use behaviours were measured and conceptualised in the literature, reviewing 1305 empirical papers measuring smartphone addiction. Approximately half of papers did not measure any behaviour. Most studies measure a common set of behavioural markers: screen time (duration of phone use), number of phone pickups, type of use, and length of phone ownership. A small minority (around 10%) of papers used actual behaviour logged from users' phones. The number of papers reporting any self-report behaviour, or using logged data were found to be decreasing over time. Most of these markers can be collected using proprietary apps available and usually already active on users' phones. We proposed a number of recommendations for collecting behavioural data in smartphone addiction research.

Keywords: smartphone addiction, behaviour, nomophobia

S-8B2

The Relationship between parental overprotection and college students' mobile phone addiction: Mediating roles of self-concept clarity and anxiety

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Parental overprotection and mobile phone addiction are common phenomena in our daily life that can lead to physical and psychological maladaptation. Although parental overprotection has been considered to be correlated with mobile phone addiction, the underlying mechanisms of their relation are still unclear. The purpose of this study was to investigate the internal influencing mechanisms of parental overprotection on mobile phone addiction, with

a focus on the multiple mediating effects of self-concept clarity and anxiety. An online survey was completed by 699 college students (55.79% male). The results showed parental overprotection exerted a significant and positive influence on mobile phone addiction. Self-concept clarity played a partial mediating role between parental overprotection and mobile phone addiction. Anxiety also played a partial mediating role between parental overprotection and mobile phone addiction. Moreover, both self-concept clarity and anxiety were found to play a chain mediating role between parental overprotection and mobile phone addiction. This study highlights the potential mechanisms of action between parental overprotection and mobile phone addiction and found that parental overprotection is a risk factor for mobile phone addiction. Consequently, educational programs that improve the parent-child relationship should be developed to reduce and prevent mobile phone addiction among college students.

Keywords: parental overprotection, mobile phone addiction, self-concept clarity

S-8B3

A preliminary study on the relationship among smartphone addiction and subjective/objective sleep in real life situations

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Background & aims: Previous studies have shown the association between smartphone addiction and sleep quality, prolonged bedtime, and chronotype of sleep. However, most reports use subjective reports may bias the measurement. In addition, the gender factor could be a moderating variable in the association between subjective and objective measurements. With the development of technology, a wearable device could be applied to measure sleep pattern and plays as an important role with more objective measurement. In order to explore the stabilities and differences between the subjective and objective markers of sleep measurement, this study proposed to investigate the relationship among smartphone addiction, gender, and subjective/objective sleep. *Methods:* Forty-nine university students (18Males, 31females) were recruited, and were evaluated using Ko Internet User Behavior Inventory – Smartphone Addiction Subscale (Cutoff =4/5) to define the group with Smartphone Addiction (SPA, n=19) and non-SPA (n=30). Each participant was assessed using Chinese version of Pittsburgh Sleep Quality Index (CPSQI) for the subjective measurements. In addition, each participant was required to wear a wearable device to measure their daily sleep patterns for a continuous month. *Results:* 3-Way MANOVA found a significant difference between the subjective and objective reports of the sleep onset($p<.05$) and awake time($p<.05$), but not the total sleep time($p>.05$). Moreover, a significant difference of total sleep time($p<.05$), total awakening time($p<.05$) between the SPA and non-SPA group. Taking gender effect into account, the results showed a significant difference of wake-up time between male and female($p<.05$). Furthermore, Pearson product moment correlations showed a significant association between the subjective reports of total sleep time($p<.05$) and the sleep onset($p>.05$)

measured by the wearable device. *Conclusions:* In conclusion, university students with SPA may appear similar sleep chronotypes with those without SPA, however, the SPA group exhibits shorter sleep time and poorer sleep quality compared to the non-SPA.

Keywords: smartphone addiction, wearable device, sleep, wake-up

S-8B4

A proposed explanatory theory in digital media: Approach-avoidance media theory and direct evidence from three empirical studies

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Background: The new phenomenon (the co-occurrence of digital addiction and digital stress, specifically, the digital approach and digital avoidance) is gaining prominence. However, few theories can adequately explain the phenomenon. This research formulated a new theory, the approach-avoidance media theory (AAMT), and conducted three empirical investigations to demonstrate it. *Method:* First, the AAMT was proposed by analogizing approach-avoidance conflict theory in animal models and human behavior. Second, study 1 used an adolescent sample (N=2,333, male=1,182) to discriminate digital addiction and digital stress, study 2 used a large sample (N=74,642, male=39,428) to test principle 1 of AAMT, and study 3 used a longitudinal design (N = 570, male = 337) to test principle 2/3/4 of AAMT. *Results and Conclusion:* The AAMT advocates five principles: (1) Digital media use can lead to three phenomena: addictive use, avoidant use, and approach-avoidance conflict use; (2) individuals experience psychological tension when confronted with approach-avoidance conflict use; (3) they may choose different coping strategies; (4) addictive and avoidant use can be mutually reinforcing; (5) addictive and avoidant use can only occur with the same type of digital media. (1) there were adolescents with only highly addictive smartphone usage, adolescents with only highly avoidant use, and adolescents with approach-avoidance use; (2) high approach-avoidance use predicted low mental health, adolescents with high approach-avoidance use displayed more maladaptive coping behaviors; and (3) smartphone addiction and stress predicted each other in the cross-lagged model. In addition, an AAMT-based psycho-behavioral-social model is developed, and its consequences and future prospects are discussed.

Keywords: approach-avoidance media theory, approach-avoidance conflict, digital addiction, digital stress

S-8B5

Less smartphone use – more well-being and a healthier lifestyle?
An experimental longitudinal study

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Background: Smartphones allow permanent availability and provide up-to-date news around the globe. However, excessive smartphone use can negatively impact subjective well-being. It fosters addictive tendencies, depressive and anxiety symptoms. The current experimental study investigated whether an abstinence from or a reduction of daily smartphone use time by one hour over seven days can influence one's addictive tendencies, well-being (life satisfaction, depressive and anxiety symptoms), and lifestyle (physical activity, nicotine consume). *Method:* The study had a randomized controlled trial design with three groups: Experimental abstinence group (N = 200), experimental reduction group (N = 226) and control group that used smartphone as usual (N = 193). Data were collected at four measurement time points via online surveys (1. Day prior to the intervention beginning; 2. Day after the intervention; 3. One month after intervention; 4. Four months after intervention). *Results:* Repeated measures analyses of variance revealed significant group differences. Both interventions reduced addictive smartphone use, depressive and anxiety symptoms significantly. In both experimental groups, life satisfaction and physical activity increased significantly. Effects were stronger and remained more stable over four months after the reduction than after the abstinence. Furthermore, in the reduction group only, the number of daily smoked cigarettes decreased significantly. *Conclusions:* The present findings demonstrate that less time spent on the smartphone leads to more well-being and a healthier lifestyle; a complete smartphone abstinence is not necessary. Thus, programs that aim to reduce addictive tendencies, to protect well-being and to foster a healthier lifestyle should focus on a conscious and controlled reduction of smartphone use.

Keywords: addictive smartphone use, well-being, experimental longitudinal study

S-8B6

Subjective socioeconomic status, academic factors and smartphone addiction among Korean adolescents

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This study investigated the dual mediating effects of academic performance and academic stress on the relationship between subjective socioeconomic status and smartphone addiction among Korean adolescents. The study used data from a cross-sectional survey. The sample included 1,593 adolescents aged between 12 and 17. To examine the mediating effect of academic performance and academic stress on the relationship between subjective socioeconomic status and smartphone addiction, a serial-multiple mediation model (model 6) was conducted using the PROCESS macro in SPSS 26.0. There were significant correlations between the main variables. Subjective socioeconomic status was negatively correlated with smartphone addiction and academic stress. The direct effect of adolescents' subjective socioeconomic status on smartphone addiction was statistically significant. Both academic performance and academic stress had dual mediating effects in the relationship between subjective socioeconomic status and smartphone addiction. This study showed that subjective socioeconomic status and academic factors have significant impact on smartphone addiction among adolescents. Implications of the study include the need for intervention strategies that focus on socioeconomic gap and academic environment in order to reduce smartphone addiction among youths.

Keywords: adolescents, subjective socioeconomic status, smartphone addiction, academic stress.

S-8C1

Psychosocial predictors of Compulsive Sexual Behavior Disorder

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Symposium summary: Given the severe subjective distress and functional impairment caused by CSBD, it is important to identify and intervene early to vulnerable populations based on knowledge of risk mechanisms for CSBD. Nevertheless, the psychosocial risk factors of CSBD have not yet been sufficiently identified. In this symposium, presenters will introduce the latest research findings obtained from various cultures. Jae Woo Park investigated the effect of stress on CSBD and the mediating effects of active coping strategies and self-control. Yuna Matsuoka investigated the indirect effect of childhood sexual abuse on CSBD through self-objectification and examined whether self-compassion could change this relationship. Kyeongwoo Park investigated the effect of relative deprivation on CSBD and tested the moderated mediating effect of shame and self-compassion in this relationship. Émilie Gaudet investigated the relationship between impulsivity and compulsivity with CSBD based on data from 43 countries and examined the country and gender differences. The above findings may provide critical information to interventions and public health policies for the CSBD.

Keywords: predictor, CSBD, International survey

S-8C2

The effect of stress on Compulsive Sexual Behavior Disorder: Active coping strategy and self-control as mediators

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The mediating effects of active coping strategies and self-control in the effects of stress on compulsive sexual behavior disorder were explored. The subjects were 300 adult men and women aged 20 to 39 years. The scales used were the Perceived Stress Scale, Internet Version Compulsive Sexual Behavior Scale, Active Coping Strategies Scale, and Self-Control Scale. According to the results of the structural equation analysis, the effect of stress on compulsive sexual behavior was significant, and it was found that self-control and active coping strategies sequentially mediated this relationship. The implications of these results were discussed, and the direction of follow-up research related to other variables that could affect compulsive sexual behavior disorder was discussed. Finally, cognitive-behavioral therapy interventions that can help intervene these symptoms are discussed.

S-8C3

The relationship between compulsive sexual behaviors and childhood sexual abuse: Focusing on the role of self-compassion and self-objectification

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Background: In previous studies, the association between Compulsive Sexual Behavior Disorder (CSBD) and childhood sexual abuse (CSA) has been discussed (Slavin et al., 2020). However, the mechanism that CSA leads to CSBD has not been clarified in detail. Some studies have described that CSA related to self-objectification (e.g., Talmon & Ginzburg, 2016). Furthermore, it has been suggested that self-objectification increases sexual risk behaviors (e.g., Ingram et al., 2023). In short, self-objectification may mediate the association between CSBD and CSA. This study aimed to examine a model of the effects of CSA, self-objectification, and self-compassion on CSBD. *Methods:* 935 participants via online were included in the analysis (Korean: n = 329, Japan: n = 377, the UK: n = 229). The scales were the CSBD-19, Self-Compassion scale, Childhood Trauma Questionnaire, and Objectified Body Consciousness scale. *Results:* Moderated mediation model indicated that the mediation effect of self-objectification measured by body surveillance, and moderation effect of self-compassion were not significant. Additional exploratory analyzes showed that body shame significantly mediated between CSA and CSBD in three countries, and self-compassion mediated in only the UK and Korea. *Conclusion:* The result indicates that individuals with CSA experiences may develop CSBD through Body shame in three countries. Therefore, it is necessary to focus on body shame when reducing the risk of CSBD. Self-compassion intervention may be applicable to support CSBD with CSA in the UK and Korea. However, in Japan, it was shown that it is necessary to further examine the function of self-compassion.

S-8C4

The role of self-compassion on the relationship between relative deprivation, shame, and compulsive sexual behavior among Young Adults

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Relative deprivation has been suggested as an important predictor of mental health problems, including problematic game use, that can replace or supplement socioeconomic indicators. However, information on the effect of relative deprivation on compulsive sexual behavior and the psychosocial factors that involved in this relationship is insufficient. This study aimed to examine the effect of the relative deprivation on compulsive sexual behavior and to test the moderated mediating effect of shame and self-compassion. Subjects consisted of 657 adults (male 322, female 335), ranged from 19 to 34 years of age (M = 27.19, SD = 4.34). All variables were measured using the self-report questionnaires via online. The results of analysis using PROCESS macro indicated that the mediation effect of shame in the association between the relative deprivation and compulsive sexual behavior, and the moderation effect of self-compassion on this association were both significant. Specifically, the indirect effect of relative deprivation was significant regardless the level of self-compassion but was weaker in the high self-compassion group. On the other hand, the direct effect of relative deprivation was not moderated by self-compassion. These findings suggest that individuals who perceive socioeconomic gaps with people around them and experience negative feelings can become vulnerable to compulsive sexual behavior by internalizing the shame and promoting self-compassion can be considered as an effective intervention strategy for them.

S-8C5

How strongly is Compulsive Sexual Behavior Disorder related to Impulsivity and Compulsivity? Findings from the 43-country International Sex Survey

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Background: Compulsive sexual behavior disorder (CSBD) can be as prevalent as depression in general populations, with important gender differences. Impulsivity and compulsivity are among the most frequently examined transdiagnostic features in the case of problematic sexual behaviors. Yet, previous studies on CSBD and its associations with impulsivity and compulsivity were mostly conducted on relatively homogenous samples, limiting generalizability. In the present study, we investigated how impulsivity and compulsivity relate to CSBD using a cross-cultural lens. *Methods:* The International Sex Survey is a 43-country self-report survey study (N=82,243, 57% women; Mage=32.4 years, SD=12.5). Kruskal-Wallis tests compared country/gender-based differences in CSBD, compulsivity and all five dimensions of impulsivity. Associations between CSBD, impulsivity, and compulsivity were examined using multiple linear regression analysis. *Results:* Kruskal-Wallis tests indicated significant differences between genders on CSBD, compulsivity, and all dimensions of impulsivity (e.g., men scored the highest on CSBD: $p<0.001$, dCohen= 0.44). For all genders, multiple linear regressions showed that impulsivity and compulsivity were positively associated with CSBD. Yet, some country- and gender-based differences were also observed; for example, we found specific impulsivity dimensions were associated with CSBD in men and women but not in gender-diverse individuals. *Conclusions:* Understanding the roles of impulsivity and compulsivity in CSBD may help in its diagnostic classification (e.g., impulse control vs addictive disorder) and contribute to improved treatment and public health interventions. Findings from diverse samples (e.g., culturally diverse populations) may also provide basis for more tailored care when working with individuals with CSBD.

S-8D1

The relationships between emotional dysregulation, cognitive distortions and dark triad personality traits in patients diagnosed with gambling disorder

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Objective: Gambling can be defined as risking a certain amount of money on an event of uncertain outcome in order to win larger sums of money. When this behavior reaches pathological dimensions, we encounter behaviors such as not being able to stop gambling, illegal activities, problems with work and family life, and gambling again to regain the lost. The dark triad personality traits including narcissism, machiavellianism and psychopathy have been shown to be associated with substance or behavioral addictions. Emotion dysregulation and cognitive distortions are also known to play a role in gambling disorder. In our study, it was aimed to examine the relationship between dark triad features and cognitive distortions in gambling disorder. *Materials and methods:* 101 men who applied to the hospital for treatment and agreed to participate in the study and were diagnosed with Gambling Disorder according to DSM-V criteria were included in our study. Participants were asked to answer questions on the Sociodemographic Data Form, South Oaks Gambling Screening, Short Dark Triad Scale, Difficulties in Emotion Regulation Scale, and Cognitive Distortion Scale. *Results:* When the relationships between the scale scores of the participants were examined, a significant positive relationship was found between the dark triad characteristics and difficulty in emotion regulation. A significant positive relationship was also found between dark triad features and cognitive distortions. While no significant relationship was found between narcissism and difficulty in emotion regulation, it was observed that machiavellianism and psychopathy had a significant and positive relationship with dysregulation of emotion. A significant positive correlation was found between dark triad features and cognitive distortions. While there is no significant relationship between narcissism and cognitive distortions, there is a positive relationship between machiavellianism and psychopathy with cognitive distortions. *Conclusions:* In our study, the relationship between the dark triad traits -narcissism, machiavellianism and psychopathy-and emotional dysregulation and cognitive distortions was investigated and discussed in 101 individuals diagnosed with gambling disorder seeking treatment. Emotion dysregulation and cognitive distortions were thought to be features that should be emphasized in the course of the treatment of gambling and may negatively affect the response to treatment. When taken into consideration in treatment, this may also positively affect the prognosis of gambling disorder.

Keywords: gambling, dark triad, emotional dysregulation, cognitive distortion

S-8D2

Problem gambling in Canada: An under served Asian community (Vietnamese)

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The Vietnamese community in Toronto, Ontario Canada is a minority group that comprises less than 1% of the population. They have been in Canada since 1970's and are considered a long-term and established residential group that is not prioritized for funding for newcomers assistance programs . As 2020 to 2022, they have zero financial support for addressing problem gambling problems amongst youths, families and seniors in this community. On the other hands, the gambling industry have been targeting Vietnamese community as one of their major clientele groups. When many casinos are running expensive variety shows to attract members from this community, an outreach worker is running back and forth to talk to a group of 10 or 15 persons in ESL or Tai-Chi class held in a basement of in an old community centre. Free bus tickets for those who attend the problem gambling awareness meetings are no comparison with the two hundred dollar free tickets to attend those shows in casinos (where they can meet their music idols). After the shows, they then exit to the gambling area and become trapped there. There is only one problem gambling counsellor (Hung Ton) who speaks Vietnamese language in the Ontario province and in Canada at large amidst the 70 casinos in Ontario or more than 200 licensed gambling facilities in Canada. He has been lonely in all un-equal "battles" for the last 25 years. Nowadays, he is still fighting over there with or without funding support to the program. Presenter Biography Hung Ton received training in Problem Gambling Counselling from University of Windsor. He is currently the only Vietnamese speaking Certified Gambling Counsellor in Canada. Hung began addressing problem gambling with Vietnamese community in Toronto since 1998 as the volunteer and sub-contract to Vietnamese community groups. In the topic of problem gambling and during the last almost 25 years, he was invited as a guest speaker in many Vietnamese language television programs in Canada, or on VOA and BBC. Hung has received numerous awards from all kind of government levels for his tirelessly community services. One of the most recognizable was the Diamond Jubilee Medal from the Queen Elizabeth II. He is also the active member of PEN Canada and gave speeches at many PEN International Congresses from North America to Europe and Asia.

Keywords: under served Asian, Vietnamese, problem gambling, minority, stigma

S-8D3

Acceptance and commitment therapy for gambling disorder and posttraumatic stress disorder in military veterans: A brief review

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Military personnel are at increased risk of PTSD and gambling disorder (GD), and the two disorders are frequently comorbid. It is likely that gambling may provide an escape- and avoidance-based means of coping with traumatic experiences and associated reminders. Despite the heightened risk, little is known about comorbid PTSD and GD in veterans or the responsiveness of this population to new or existing treatment approaches. Third wave behavioral therapies such as Acceptance and Commitment Therapy (ACT) target a transdiagnostic process - experiential avoidance – believed to be at the root of human suffering. While it is known that ACT shows considerable promise and may improve both PTSD and GD outcomes, research into the potential effectiveness of ACT among veterans is scarce. Here, we systematically review the evidence relating to the use of ACT for military populations with PTSD and/or GD. Next, we outline several areas that warrant further research and clinical treatment development. Finally, we evaluate the potential of ACT-informed treatment of avoidant-based coping in veterans experiencing problems related to PTSD and GD.

Keywords: Veterans, gambling, PTSD, ACT, acceptance and commitment therapy

S-8D4

Eye movement desensitization and reprocessing, EMDR for addiction: A case series

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The aim of this case series are to share the therapeutic potential of eye movement desensitization and reprocessing(EMDR) in addiction. This addiction protocol of eye movement desensitization and reprocessing was delivered to pathological gambling, alcohol dependence and food addiction. The therapist gave three 60-min weekly sessions of the EMDR using bilateral stimulation (horizontal eye movements or alternative tactile stimuli) focusing on the hierar-

chy of triggering situations and the urge to initiate cravings. After treatment, self-reported craving for addiction and impulsiveness were all improved, and all the participants reported satisfaction with the therapy. Accordingly, we suggest that EMDR could be effective for the case of various addictions.

Keywords: Pathological gambling, alcohol dependence, food addiction, EMDR

S-8D5

Gambling as a side hustle during COVID-19 pandemic: A case-series in Indonesia

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Introduction: Several studies exclude financial factor as main motives of gambling (i.e., enhancement, coping, and social). However, In Indonesia, as a developing country, most gamblers do gamble as their side hustle. This phenomenon is increasing during COVID-19 pandemic due to economic crises in Indonesia. Nevertheless, most gamblers in Indonesia does not realize that gambling is presuppose more losing rather than winning. Moreover, increasing number of instant loans in Indonesia also increase the complexity of this issue. *Case presentation:* Two cases, 27-year-old male and 30-year-old male are involved in gambling behavior (i.e., trading and sport betting) and perceived it as their side hustle. Both diagnosed with gambling disorder and showed chasing-losses behavior. Moreover, they also access illegal instant loan to cover their debt, which worsen their economic stability. Their families finally help to cover their debt. However, both relapsed after they finished their debt. Therefore, psychoeducation about money management and Socratic dialogue about this issue for patients and family is performed and showed good result in both cases, which reflected in no relapse. *Conclusion:* Gambling as side hustle, although illogical, is common in Indonesia and increasing during COVID-19 pandemic. This phenomenon showed economic literacy in Indonesia is very poor. Moreover, maladaptive solution for financial crises due to gambling disorder might increase risk of relapse. Therefore, psychoeducation about money management, and Socratic dialogue about their motives to get money from gambling, might be beneficial to prevent relapse. Moreover, government and bank policy concerning loans in Indonesia must be evaluated to prevent worsening of economic problems.

Keywords: side hustle, COVID-19, gambling disorder, instant loan, motivation

S-8E1

The bio-medical discourse on gambling disorder among Jewish Ultra-Orthodox Rabbis

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Introduction: Perceptions toward gambling behaviors have been changed from immoral actions to disease and into a legitimate leisure-time activity in western countries. Judaism is ambivalent towards gambling. While prohibiting several gambling practices and comparing them to robbery, several Jewish customs might be considered a form of gambling. Jewish Ultra-Orthodox individuals are socialized to venerate the male religious leaders (Rabbis) and be subjected to their rulings. However, the Rabbis' authority in recent years has been continually challenged by the western lifestyle. The current study aimed to explore how Rabbis perceive gambling problems in their communities and how they cope with it. *Method:* Relying on a constructivist grounded theory approach, sixteen Rabbis from diverse Ultra-Orthodox groups were interviewed, creating a sample driven by theoretical concerns. *Results:* An abductive analysis revealed a process of sense-making divided into three stages. First, the Rabbis are aware of the bio-medical discourse on gambling disorder and recognize problem gambling as a disease. However, in Rabbinic Halacha, gambling is not prohibited. Hence, they cannot ban it. Second, this gap leads them to "shop" for Halachic rulings in other areas that can frame gambling as a moral problem and justify a religious ruling against it. Third, once they resolve the religious inconsistencies, the Rabbis develop a social plan to care for the gamblers and affected others instead of referring them to western mental health care. *Conclusions:* The findings present the process through which the Rabbis preserve their religious authority within the boundaries of their cultural enclave.

Keywords: gambling disorder, religion, authority, enclave

S-8E2

Psychological risk factors of problematic gambling in a sample of people with dual diagnosis: Attachment styles and alexithymia

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The present study examines the presence of problematic gambling behaviors in a sample of 369 persons with dual diagnosis and provides knowledge about the psychological risk factors (attachment styles and alexithymia) that can help to explain those gambling problems. The results show that insecure attachment is more frequent and alexithymia higher in people with dual diagnosis with problematic gambling than in those with not comorbid gambling problems. Moreover, alexithymia is a significant mediator in the relationship of insecure attachment style and problematic gambling behaviors. The final model is robust and shows an adequate discrimination of the co-occurrence of problematic gambling behaviors. The relationships with the sample characteristics indicated that men had a higher risk of gambling problems than women, and that the poly-consumption of substances is also related to higher risk of gambling problems. People with dual diagnosis with comorbid gambling problems show a higher prevalence of insecure attachment than those without that comorbidity. Also, the higher presence of impaired attachment in people with dual diagnosis with gambling comorbidity would explain that that group has early learnings of the management of emotions and feelings that increment the risk of addiction, because of difficulties in emotional regulation. This research extends previous literature and shows that insecure attachment is concretely a risk factor for gambling for substance disorders even controlling for poly-consumption, age or sex. Therefore, present results could indicate that insecure attachment is specially a risk factor for gambling over other substance addictions, also in a clinical population with poly-consumption. Our results also show that people with dual diagnosis and co-morbid problematic gambling behaviors have higher alexithymia levels than those without gambling problems and that those increased alexithymia levels act as mediators of the relationship in between insecure attachment and gambling problems working as an explanatory mechanism of the found effects. The role of alexithymia supports the relationship between insecure attachment and addition due to problems in self-regulation of emotions based on the self-regulation theory. In this sense, the worse difficulties in emotion identification and awareness promoted by insecure attachment may make insufficient the regulatory effects of substance consumption increasing increase the probability of appearance of behavioral addictions as problematic gambling in a population with dual diagnosis. In conclusion, this study shows that insecure attachment is an important risk factor for problematic gambling behaviors in people with dual diagnosis. Moreover, alexithymia is observed as an explana-

tory mechanism that indicates that problems in emotion comprehension and mentalization can worsen the addition complexity with behavioral new addictions. These results give novel information about the processes involve in summative severity for people with dual diagnosis giving clues for understanding and promote interventions with risk profiles, and have implications for research and therapeutic intervention.

Keywords: problematic gambling, dual diagnosis, attachment styles, alexithymia

S-8E3

Gambling and crime: An exploration of gambling availability and culture in an English prison

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Background: There is evidence that prisoners have the highest rate of problem gambling in any population, but little is known about the nature of in-prison gambling, the motives for it or how it relates to prior gambling behaviour. *Aims:* To investigate the prevalence and type of gambling prior to prison and the prevalence, type, and reasons for gambling in prison. *Methods:* Two hundred and eighty-two male volunteers in a Category B male prison in England completed a questionnaire which included the Problem Gambling Severity Index (PGSI). *Results:* One hundred and twenty-six (45%) reported gambling in prison, with eighty-one (30%) of participants reporting that gambling was a normal part of prison life. Pre-prison behaviour, whether type of index offence or prior gambling, had little relationship to in-prison gambling. Frequency of gambling in prison increased with increasing PGSI risk category. The most common types of gambling in prison were card/dice games, sports and ball games, while the most common motives were entertainment, excitement or sense of challenge and to win prizes, with significant differences in motive between PGSI risk categories. Prison canteen items formed the most common currency gambled. People within the higher PGSI risk category were more likely to have borrowed items from other prisoners. *Conclusions:* Our research has added to existing literature by identifying high rates of gambling in prison and showing that prisoners' perceptions of gambling are as a normal part of prison life. Findings suggest that screening and support should be available to manage gambling in prison, including support to reduce gambling-related debt, particularly given associations between debt and violence in prison. Relief from boredom and need for excitement were among the most common reasons for gambling in prison, indicating that there is a need to provide a more appropriately stimulating prison environment.

Keywords: gambling, disordered gambling, crime, mental health, prison

S-8E4

Criminogenesis, family victimisation and organised crime in gambling disorder

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The intervention is aimed at capturing in particular the development of the criminological and victimological relationships that gambling disorder produces, in order to develop a significant database on the relationship between "game", "gamblers" and "reference environment". The analysis draws from the documentary and statistical collection contained in the international literature (the most important research) produced to date on the theme of gambling and the careers of gamblers - traditional and online - and the cryogenic relationships that result as well as the specificity of a local reality in central Italy (Southern Lazio). The survey was carried out through questionnaires administered in Southern Lazio to students, adults and the elderly in relation to the activities of the anti-wear counters (anti-wear services). Specifically, it appears an examination of the criminological and victimological components: the first, relating to crimes committed by playing in contexts or in ways deemed by the legal system of reference to be illegal (in reference to the Italian legislature); another dimension concerns gambling as a factor of criminogenesis, for the gamblers is to commit crimes to finance their bets (theft, robbery, money laundering, prostitution) or to favor the result (scams); and again, problematic gambling behaviors as a cause of victimization processes involving specifically the children of gamblers (abuse, child abandonment); finally, gambling as extrication, aiding and abetting, activities for commercial purposes (lawful and not) organised crime.

Keywords: gambling disorder, criminogenesis, family victimisation, organised crime

S-8F1

The association between PSNS use and social well-being among young adults: A systematic review

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Background: Social networking sites (SNSs) (e.g., Instagram) have modified the way people communicate and interact (Vally 2019). Social media channels (e.g., SNS) provide various kind of interactions online (Obar & Wildman, 2015). The previous systematic reviews have covered the effects of SNS use on psychological well-being (Erfani & Abedin, 2018), health behavior (Laranjo et al., 2015), body image and eating disorders (e.g., Ryding & Kuss, 2020). No prior systematic reviews have covered how problematic social networking site use (PSNS) use affects social well-being. Therefore, this study aimed to examine the association between PSNS and social well-being and social relationships among young adults. _Method:_ The JBI systematic review methodology was followed during conducting the review. The data was collected from electronic databases (Scopus, EBSCO, PubMed, Cinahl, ProQuest, Web of Science, Medic) and manually from reference lists of selected studies. Grey literature was searched from MedNar. Two reviewers selected studies based on inclusion and exclusion criteria by screening titles, abstracts and full texts. Data synthesis was conducted using meta-analysis. _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' social well-being. The results can be used in health care and the results will help to identify factors which would cause PSNS use.

Keywords: problematic social networking sites use, social media, systematic review, social well-being

S-8F2

Investigating the bidirectional relationships between fear of missing out, problematic social media use and adolescents' well-being: A random intercept cross-lagged panel model

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Introduction: Problematic social media use (PSMU) is a societal problem, which impacts adolescents' well-being. Fear of missing out (FoMO) has been suggested as a core risk factor predicting both PSMU and adolescents' well-being. However, longitudinal research on the directionality of these relationships is scarce. The present study aims to fill this knowledge gap by testing the bidirectionality of the relationships between FoMO, PSMU and adolescents' life satisfaction in the total sample, as well as for girls and boys separately *Methods:* This study used four-waves annual longitudinal data collected from 2015 to 2018 among Dutch adolescents aged 11-15 years (n = 1419, Mage = 12.5±0.36, 45.9% girls). We applied Random Intercept Cross-lagged Panel Model (RI-CLPM) to separate within-person level from between-person level effects. *Results:* On the within-person level, findings suggest a unidirectional relationship whereby FoMO increased PSMU during mid-adolescence, particularly among girls, but not vice versa. Moreover, low life satisfaction predicted an increase in FoMO during early adolescents, and PSMU predicted an increase in life satisfaction during mid-adolescence. *Conclusion:* These findings underline that FoMO can be considered a risk factor of PSMU, especially among adolescent girls, and that low life satisfaction may be a risk factor for developing FoMO. These insights should be considered in intervention programs developed to effectively prevent unhealthy internet use in adolescents.

Keywords: fear of missing out, problematic social media use, well-being, adolescents, RI-CLPM

S-8F3

Different aspects of narcissism and Social Networking Sites addiction in Poland and Germany: The mediating role of positive and negative reinforcement expectancies

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Background: The present study aims to verify a part of the Interaction of Person-Affect-Cognition-Execution (I-PACE) model, indicating that personal vulnerability predisposing an individual to Social Networking Sites (SNS) addiction should be mediated by specific SNS use expectancies. 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). We expect that the self-enhancement-based aspects of narcissism should be more strongly related to SNS addiction via positive reinforcement expectancies. In contrast, the self-protection-based aspects of narcissism should be more strongly related to SNS addiction via negative reinforcement expectancies. *Method:* We test our hypothesis in two countries (i.e., Poland and Germany) using self-report measures of narcissism, SNS use reinforcement expectancies, and SNS addiction (total N = 1972). *Results:* The results indicate that all four aspects of narcissism (except communal narcissism in Poland) were positively related to SNS addiction. Furthermore, self-enhancement and self-protection aspects of narcissism were positively associated with reinforcement expectancies. In mediation analysis, the relationship between narcissism and SNS addiction was significantly more robust via negative reinforcement expectancies in both countries. *Conclusions:* Previous explanations linking narcissism to SNS use were primarily based on the assumption that SNS are convenient platforms for ego-boosting activities. Our research emphasizes the addiction perspective, showing that narcissistic ego-protection might be as important as ego-boosting in explaining SNS addiction development and maintenance mechanism.

Keywords: SNS addiction, narcissism, SNS use expectancies

S-8G1

Up-to-date knowledge of Behavior Addiction

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Symposium summary: Researchers from Japan, Korea, Thailand, and Taiwan present and discuss a variety of behavioral addiction-related studies in this symposium. In particular, it is anticipated that we will be able to present the most recent findings from behavioral addiction research following COVID-19 and explore the course of future behavioral addiction research. The detailed topics are as follows. 1. Changes in Addiction Medicine with COVID-19 in Japan; Addiction Behavior and Government Measures 2. Development of risk assessment tool of paraphilic sexual behavior: The Japanese Static-99 3. Internet gaming disorder and methamphetamine use during the era of COVID-19 pandemic 4. Facing internet gaming disorder: Impact on mental health and intervention 5. Altered core networks of brain connectivity in internet gaming disorder and excessive smartphone use.

Keywords: COVID-19, gambling disorder, internet gaming disorder, smartphone addiction

S-8G2

Changes in addiction medicine with COVID-19 in Japan: Addiction behavior and government measures

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COVID-19 is a newly emerging infectious disease cause illness ranging from the common cold to more severe conditions. COVID-19 threatens in many ways, and not just at the physical health. It also threatens the mental health of individuals and of whole societies. It makes the rising of concerns of widespread panic and increasing anxiety in individuals and society to the threat of the COVID-19 on many levels. Panic, anxiety, and stress have also been linked to the outbreaks This might be followed by anxiety-related behaviors, sleep disturbances, increasing consumption of substances, and overall lower perceived state of health. In Japan as well, the COVID 19 pandemic has had a significant social impact. Especially with regard to addiction treatment, it has brought about major changes in the therapeutic structure. Changes in treatment structure in Japan can be summarized in three points.1. Deterioration of mental symptoms due to difficulty in direct contact with people. 2. Deterioration of social withdrawal. 3. Difficulty in continuing to abstain due to restrictions on the activities of self-help groups. Because of the insufficient evidence, currently there is no concrete solution. Under the given current situation, it is essential to build a new lifestyle and treatment structure. As a result of the spread of coronavirus infections, Japan has reached a major turning point in the interpersonal support system. This presentation will describe the changes in addiction medicine caused by COVID-19 and the administrative response.

S-8G3

Development of risk assessment tool of paraphilic sexual behavior: The Japanese Static-99

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Although there is no established diagnostic criteria for sexual addiction, many researchers and practitioners agree that persistent and repetitive sexual behaviors which cause clinically significant distress and impairment can be considered as sexual addiction. At this time, ICD-11 compulsive sexual behavior disorder and paraphilic disorders are the disorders that closely resemble the state picture of sexual addiction. In Japan, paraphilic disorders have received a great deal of attention as sexual addictions because paraphilic disorders often involve victims and constitute sexual offenses and approximately 3,000 people are arrested for frotteuristic and voyeuristic behavior each year. Considering the repetitive nature of such behaviors, determining the recidivism risk is imperative. Globally, Static-99 is one of the most widely used actuarial risk assessment tools to predict recidivism among sex offenders. However, sexual offending is largely influenced by social and cultural backgrounds, and whether risk factors identified in the West are applicable to other countries is unknown. We developed a Japanese version of the Static-99 and examined its reliability and validity with 167 Japanese paraphilic sex offenders. The results showed good internal consistency (Cronbach's alpha coefficient=0.88) and predictive accuracy (area under the curve=0.76). The results indicate that the Japanese Static-99 can be used with Japanese sex offenders. Moreover, risk factors identified in the Western context are applicable to Japanese sex offenders despite the different nature and manifestations of their offending.

S-8G4

Internet gaming disorder and methamphetamine use during the era of COVID-19 pandemic

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Both internet gaming and substance addictions activate similar neural circuits in the brain and previous researches revealed several similarities in the brain pathophysiology of individuals with substance use and gaming disorders. While the whole world going through COVID-19 pandemic in the past 3 years, people spent more time on remote working/studying. At the same time, online internet gaming users increased rapidly. Though still under research, internet gaming can be problematic and potentially addictive, and problematic gamers may be at risk of having co-occurring behavioral or substance use-related problems. In this survey, we recruited 769 individuals with stimulant(s) use between August 2021 and October 2022. A semi-structured questionnaire was used to collect gender, education, sexual preferences,

marital status, the severity of stimulant addiction, and videogaming use status. Logistic regression was performed to examine the association of stimulant and gaming addiction after other demographics controlled. The results showed that 364 (47.3%) people were severely stimulant dependent and 114 (14.8%) had gaming addiction. Participants with severe stimulant dependence were more likely to be LGBTQ, single, and had college education. Results from logistic regression showed that severe stimulant dependence were significantly associated with gaming disorder after controlling for age, gender, employment, sexual preference, education and marital status. The results suggest that people with stimulant use also have higher risk of internet gaming addiction. This warrants further investigation.

S-8G5

Facing internet gaming disorder: Impact on mental health and intervention

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Internet gaming disorder or gaming disorder is a behavioral addiction characterized as a pattern of persistent gaming behaviors manifested by reduced control over gaming, increasing gaming priority, and continuing of gaming despite negative consequences. In Thailand, prevalence rates of gaming disorder among teenagers and young adults ranged from 12 to 28%. The high prevalence is attributed in part to increased accessibility to internet via smartphones and availability of online games. Longitudinal studies revealed a wide range of psychiatric comorbidities, including attention-deficit hyperactivity disorder, depression, anxiety, and low school performance. Hence, comprehensive psychiatric evaluation and intervention for individuals with gaming problems are needed. Various interventions for internet gaming disorder are available, which are mostly psychosocial interventions, such as, psychiatric comorbidities screening and treatment, counseling, psychotherapy, and therapeutic residential camps. Not only the addicts, but also their parents or caregivers, require training to improve parenting skills in dealing with difficulties and reduce conflict in the family. Basic psychoeducation alone was outperformed by combined therapies. In addition to the treatments listed above, artificial intelligence technology has recently been used to aid in the treatment of gaming disorder. A parenting education chatbot can provide parents with resources and information on a number of gaming addiction and parenting skills-related issues. Chatbots can also assist in answering simple, relevant questions. This could benefit parents in the early stages instead of seeing medical personnel. However, due to the complexities, chatbots must be improved to become more capable of consulting on a wide range of addiction-related issues.

S-8G6

Altered core networks of brain connectivity in internet gaming disorder and excessive smartphone use

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Although the Internet has provided convenience and efficiency in many areas of everyday life, problems stemming from Internet use have also been identified, such as Internet gaming disorder (IGD). Internet addiction, which includes IGD, can be viewed as a behavioral addiction or impulse control disorder. This study investigated the altered functional and effective connectivity of the core brain networks in individuals with IGD compared to healthy controls (HCs). Methods: Forty-five adults with IGD and 45 HCs were included in this study. To examine the brain networks related to personality traits that influence problematic online gaming, the left and right central executive network (CEN) and the salience network (SN) were included in the analysis. Also, to examine changes in major brain network topographies, we analyzed the default mode network (DMN). Results: IGD participants showed lower functional connectivity between the dorsal lateral prefrontal cortex (DLPFC) and other regions in the CEN than HC participants during resting state. Also, IGD participants revealed reduced functional connectivity between the dorsal anterior cingulate cortex and other regions in the SN and lower functional connectivity in the medial prefrontal cortex of the anterior DMN. Notably, in IGD individuals but not HC individuals, there was a positive correlation between IGD severity and effective connectivity and a positive correlation between reward sensitivity and effective connectivity within the ventral striatum of the SN. Problematic online gaming was associated with neurofunctional alterations, impairing the capacity of core brain networks.

MINI TALKS

MT-1A1

Sexual addiction predicts sexual objectification even after controlling for the frequency of pornography consumption

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Frequent online pornography consumption has been found to be associated with sexual objectification (SO), particularly in male consumers who report an increased tendency to perceive women as sex objects. However, previous studies have not considered that there is a subgroup of internet users whose consumption may become excessive due to their sex addiction and who may, in response to addiction symptoms, have an increased need to perceive women as sex objects. In a sample of male pornography consumers (N = 1272; M age = 32.93, SD age = 9.44), we examined whether and how sex addiction is linked to SO. We fitted a series of structural equation models and found that men who score higher on internet sex addiction were more likely to objectify women. This link did not cease to exist even when controlling for the frequency of pornography consumption, suggesting future research is needed to understand the link between sex addiction and SO.

Keywords: objectification, sexual addiction, sexuality

MT-1A2

Strength of Pornography Craving Experience (PCE-S): The validation of a new specific measure

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Pornography use remains a common sexual activity with potentially addictive use in part of some people. Even though craving is being recognized as an important characteristic of addictive behaviors, we note a lack of a specific validated instrument measuring the pornography craving experience. The present study aimed at adapting and validating an instrument

measuring the users' strength of pornography craving experience (PCE-S). Items from the "strength" part of the Craving Experience Questionnaire (CEQ) were adapted to pornography use and used to create the PCE-S. The PCE-S was then administered online to 1584 English-speaking participants aged 18 to 75 years old (M = 33.18; SD = 10.84]; 63.1% male, 35.2% female, and 1.7% non-binary). All participants completed an assessment of the Compulsive Cyberporn Use (CIUS adapted for cyberporn). Confirmatory factorial analysis (CFA) was used to examine the construct structure validity; Cronbach alpha coefficient, corrected item-total correlation, and discriminant analysis were used to assess the instrument's psychometric properties. After using the modification indices to improve the initial model, a relatively good fit for the three-factor model was confirmed. Concurrent validity with the compulsive cyberporn use (CCU) measure was demonstrated. The PCE-S discriminated between participants with high CCU scores and others with low CCU scores. A specific pornography craving experience instrument scale, based on the Elaborated Intrusion theory of desire seems to capture key constructs of the theory and correlate with measures of compulsive cyberporn use.

Keywords: pornography craving; compulsive cyberporn; pornography problematic use

MT-1A3

Is binge-eating associated with Compulsive Sexual Behavior Disorder? Findings from the 43-country International Sex Survey

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Background: Compulsive sexual behaviors are estimated to range between 3 to 10% of the population and often are characterized by impulsivity and emotion regulation difficulties, which also frequently exist in eating disorders. Yet, research examining associations between binge-eating disorder (BED) and compulsive sexual behavior disorder (CSBD) have only been conducted in small homogenous samples. The present study examined links between BED and CSBD, considering potential gender and cultural differences. *Methods:* Data from the International Sex Survey, an anonymous, self-report survey conducted in 43 countries (N=82,243, 57% women; Mage=32.4 years, SD=12.5), were analyzed. BED and CSBD tendencies were respectively measured using the BEDS-7 and the CSBD-19. T-tests compared BED scores between individuals with high and low CSBD risk, overall and for each gender group. Country-based differences in BED and CSBD scores were also calculated. *Results:*

BED scores were significantly higher ($p<0.001$, dCohen=0.35) for respondents with high CSBD risk than for respondents with low CSBD risk. These differences were present in the case of men ($p<0.001$, dCohen=0.42), women ($p<0.001$, dCohen=0.66), and gender-diverse individuals ($p<0.001$, dCohen=0.45), with the largest difference found among women. Participants had the highest CSBD levels in Algeria, Bolivia, and Bangladesh, while participants reported the highest BED scores in South Korea, Gibraltar, and Bolivia. Associations between BED and CSBD were positive and weak on average, with important country-based differences. *Conclusions:* This investigation provides a deeper understanding of the co-occurrence of CSBD and BED in different genders and cultures and may inform prevention and treatment efforts for individuals experiencing these concerns.

Keywords: compulsive sexual behavior, cross-cultural survey, binge eating disorder

MT-1A4

Food addiction and obesity stigma in the Czech adult women

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With the rising prevalence of obesity, food addiction has become a widely researched topic. The presented study examined the between food addiction and experienced weight stigma in the adult population of Czech women. The aim of the study was to investigate the impact of food addiction on women's mental health via the connection between food addiction and experiencing weight stigma. We translated and used Yale Food Addiction Scale (mYFAS 2.0.), and the Weight stigma scale SSI-Bb. The investigation was carried in over 1000 participants who completed the questionnaires online. Food addiction and weight-related stigma are connected to negative consequences on well-being, emotional health, and physical health. *Funding:* This work was made possible thanks to targeted funding provided by the Czech Ministry of Education, Youth and Sports for specific research, granted in 2022 to Palacký University Olomouc (Risky use of internet pornography in relation to selected personality characteristics IGA_FF_2023_057).

Keywords: food addiction, weight stigma, prejudices, eating disorders, adults

MT-1A5

Predicting body image satisfaction after liposuction surgery in patients with obesity using a longitudinal study and machine-learning analysis

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Body image is often conceptualized as subjective feelings and perception towards one's physical and psychological self that contribute to subjective well-being. While liposuction surgery is known to improve body image satisfaction among individuals with obesity, psychological factors associated with treatment outcomes and who benefits from the surgery remain largely elusive. In this study, we used a longitudinal study design to identify phenotypes that predict improvement in body image after liposuction surgery. A large group of individuals with obesity (N = 467, Body Mass Index > 25) visited the clinic before and after the surgery (5-6 weeks) to participate in data collection. We categorized individuals into two group based on their changes in body image satisfaction after surgery (the improved group, n = 196 vs. no change or worsened group, n = 271)). We measured their multi-modal phenotypes including body indices, self-reports on eating behaviors, and psychological factors (i.e., anxiety, depression, impulsivity, weight concern). We also assessed their decision-making behaviors (i.e., loss aversion, risk and ambiguity aversion, delay discounting). We developed novel weight-related decision-making tasks that employed weight loss instead of monetary gain as a reward. We utilized a machine learning (i.e., elastic net) model to identify variables that predict the body dissatisfaction outcome and make out-of-sample predictions.

Behavioral results showed that higher weight-related risk aversion significantly predicted improved body image. Additionally, bigger pre-surgery eating concern and interpersonal depression were significant predictors of sustained or worsened body dissatisfaction. We expect that these results with the large sample size would contribute to further development of individually-tailored interventions for body dissatisfaction.

Keywords: computational modeling, machine learning, body image dissatisfaction

MT-1C1

The impact of gaming disorder, action games and game context on cognitive control

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Background: Previous studies showed a negative relationship between gaming disorder (GD), engagement in action games and cognitive control. However, the effects of these factors on cognitive control have not been analysed simultaneously when comparing game-related and game-unrelated context situations. Consequently, the current study aimed to verify the impact of gaming disorder, action games and game context on cognitive control. *Method:* The study was carried out on seventy-seven active gamers (Mage = 24.00 years; SD = 5.26 years). The Internet Gaming Disorder Scale–Short-Form (IGDS9-SF) was used to assess gaming disorder, and the Characteristic Gaming Questionnaire (CGQ) was used to assess engagement in action games. The AX-Continuous Performance Test (AX-CPT) assessed cognitive control. Additionally, the AX-CPT experimental task was presented in game-related and game-unrelated contexts. Results. The findings showed that engagement in action games was negatively associated with proactive cognitive control in game-context condition. There was no analogous relationship in game-unrelated conditions. Additionally, gaming disorder and engagement in action games were negatively associated with the ability to use cue information to prepare their response to the probe, regardless of the task context. There was no difference between game-related and game-unrelated context conditions in cognitive control. *Conclusions:* The results may indicate that engagement in action games and gaming disorder were associated with lower levels of cognitive control, especially in a game-related context. This study was supported by a grant (UMO-2019/32/C/HS6/00340) from the National Science Center, Poland.

Keywords: gaming disorder, action games, cognitive control, game-related context

MT-1C2

The correlation between problematic gaming and resilience and its implications for resilience training

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It has been established that resilience is a protective factor for problematic gaming (PG) or internet gaming disorder (IGD), and that resilience training might be beneficial in treating PG/IGD. However, the precise relationship between resilience and PG/IGD is yet to be determined. Thus, we conducted a systematic review and a large sample survey to explore the correlation between resilience and PG/IGD and the implications of resilience training in this regard. The systematic review revealed that individuals with low resilience were found to be at a higher risk of PG/IGD, and that resilience had an effect on PG/IGD through the mediation of depression and negative emotions. Additionally, resilience mediated the connection between depressive symptoms and PG/IGD, and acted as a moderating effect between PG/IGD and stress levels or depressive symptoms. This research surveyed 4,671 freshmen at a Chinese university and found significant correlations between resilience, its dimensions (measured using CD-RISC scale) and PG/IGD and its dimensions (measured sing IGD-20 scale). Additionally, the resilience score was significantly associated with the presence of problematic gaming (as classified by the IGD-20 scale). An analysis of gender and place of birth (rural, urban, city) revealed significant differences in the presence of problematic gaming, whereas being an only child did not have a significant difference. These findings demonstrate the importance of resilience in relation to PG/IGD and the need for resilience training, as well as the necessity of conducting intervention studies to explore the effect of such training on PG/IGD.

Keywords: resilience, problematic gaming, training

MT-1C3

Changes in prevalence of gaming disorder among adolescent and young adult psychiatric and pediatric outpatients in Japan

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Background: Few longitudinal studies in clinical samples have addressed the prevalence of gaming disorder. The aim of this study was to examine the prevalence of gaming disorder and changes using several screening scales among adolescent and young adult outpatients. Method: We conducted a longitudinal survey among outpatients aged 9 to 29 years old who had problematic gaming use assessed by their psychiatrist or pediatrician. The Internet Gaming Disorder Scale (IGDS), the Gaming Disorder Scale for Adolescents (GADIS-A), and the GAMES test were included to assess gaming disorder. We assessed the proportions of gaming disorder at baseline and 6-month follow-up. This study was approved by the IRB of Tokyo Medical Dental University. *Results:* Among the participants at baseline (N=82), 60 participants responded to the follow-up survey (follow-up rate: 73.2%). The prevalence of gaming disorder at the baseline was about 50% (IGDS: 48.3%, GADIS-A: 46.6%, GAMES test: 54.6%). Approximately, 70% of the participants who corresponded to gaming disorder at the baseline still met the criterion of gaming disorder at the follow-up. About 26-29% of the participants who corresponded to gaming disorder at the baseline did not meet the criterion of gaming disorder at the follow-up. About 16-23% of the participants who did not correspond to gaming disorder at the baseline subsequently met the criterion at follow-up. *Conclusions:* Although most of participants still had gaming disorder six months later, about 30% showed an improvement in their condition. It is important to investigate factors that interfere or promote gaming disorder recovery in future studies.

Keywords: gaming disorder, longitudinal study, clinical sample

MT-1C4

The relationship between family dysfunction and gaming disorder prevalence among adolescent and young adult outpatients in Japan: A longitudinal study

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Background: Although family-related factors are associated with gaming disorder in youths, there are few studies exploring its long-term effects. The aim of this study is to investigate changes in gaming disorder prevalence among adolescent and young adult outpatients relative to their state of family dysfunction. *Methods:* A longitudinal study was conducted among outpatients (age: 9-29) who have problem game-use. The state of family dysfunction (Family APGAR), and gaming disorder prevalence (Gaming Disorder Scale for Adolescents) were assessed at baseline, with gaming disorder being assessed again at the 6-month follow-up. Mean Family APGAR scores were compared between those who improved their gaming disorder condition from baseline to follow-up, and those who didn't. This study was approved by the IRB in Tokyo Medical Dental University. *Results:* 57 participants who responded to both baseline and follow-up survey were eligible for analysis. Mean Family APGAR score was 5.9 at baseline, with a lower score indicating greater family dysfunction. Among the respondents who met the criterion for gaming disorder at baseline, those who didn't meet the criterion at follow-up averaged a Family APGAR score of 7.5 at baseline. On the other hand, respondents who continued to meet the criterion for gaming disorder from baseline to follow-up averaged a Family APGAR score of 5.0. *Conclusion:* There tended to be less average family dysfunction at baseline in participants who improved their gaming disorder condition over six months, compared to those who didn't. Further studies are needed to investigate the role family function plays in gaming disorder recovery.

Keywords: gaming disorder, longitudinal study, family dysfunction

MT-1C5

Introduction a new tool in Korean language – the Questionnaire of Digital Game Playing (QDGP)

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There is a lack of mapping of the issue of addictive digital gaming in the Czech Republic. The main goal of the research project was to develop a psychodiagnostic method to determine the acceptable level of gaming and to determine when this activity exceeds the normal limit and becomes risky. At the same time, the aim was to map the prevalence of risky gaming among Czech adolescents aged 11 to 19 years. The presentation will introduce a new psychodiagnostic method – the Questionnaire of Digital Game Playing (QDGP) – which aims to assess the relationship of adolescents to digital games in the Czech environment. The QDGP targets all digital games (online and offline) that can be played through different types of display devices (computer, mobile phone, etc.). The QDGP contains a total of 32 items. The method provides recommended score thresholds to categorise respondents into non-disordered, problematic (risky), and disordered (addicted). *Funding:* This work was made possible thanks to targeted funding provided by the Czech Ministry of Education, Youth and Sports for specific research, granted in 2021 to Palacký University Olomouc (Current online risk behavior in adolescents and relationship with selected psychological phenomena IGA_FF_2022_048).

Keywords: digital games, gaming, psychodiagnostic method, adolescence, addiction

MT-1C6

Towards a more nuanced understanding of screen time

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Background: Digital media has become an integral part of children's life. At the same time, studies have shown that excessive screen time is associated with negative outcomes in children. Previous research has tended to emphasize on the quantity of screen time, assuming that different types of screen media, content, and social contexts of screen usage influence children equally. This study used a more nuanced approach in examining the associations between screen time and emotional and behavioral difficulties in children. *Method:* It was a cross-sectional survey conducted in Hong Kong. The sample consisted of parents of 1428 primary school children (Mean age = 8.51 years; SD = 1.9). The parents were asked to report their children's screen time usage and behavioral and emotional difficulties (using the Strengths and Difficulties Questionnaire). *Results:* Logistic regression analyses showed that compared with children who used < 2 hours screen time/day, those who used ≥ 4 hours had increased odds for hyperactivity, emotional symptoms, conduct problems, and peer relationship problems (adjusted ORs = 1.54 to 2.06). Among different types of screen media, gaming was the only media that was associated with increased odds for hyperactivity, emotional symptoms, conduct problems, and peer relationship problems (adjusted ORs = 1.53 to 4.61). Also, higher ratio of solitary screen time vs. parental co-viewing was strongly associated with hyperactivity (aOR = 10.04). *Conclusion:* The findings provide important information for development of preventive measures to address excessive screen time in children. Additional research to examine children's solitary screen media use is needed.

Keywords: Screen time, media use, children, emotional and behavioral difficulties

MT-1D1

How do women gamers choose their avatar? Role of gender-based violence, self-esteem, and self-efficacy: A preliminary study

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Objective: Several studies have focused on the mechanisms and effects of online violence and sexism on female video game players. However, few have studied player strategies to preserve self-esteem and self-efficacy. The present study focused on the potential protective effect of the choice of avatar gender on self-esteem and self-efficacy considering the violence experienced during the game (general and gender-based). *Method:* 149 women completed an online questionnaire (mean age = 27.6). The questionnaires assessed the gender of their avatar in their favorite game, the general and gender-based violence, self-esteem, and self-efficacy. T-test comparison and linear regression analysis were performed. *Results:* In the sample, 76.5% (n=114) women choose a female avatar (FA) and 23.5% (n=35) choose a male avatar (MA). Women playing with a MA reported significantly higher level of general and gender-based violence, and a lower level of self-efficacy and self-esteem than women playing with a FA. The results of the linear regression analysis indicated that gender-based violence and playing with a MA negatively predicted self-efficacy (β=-.417, p=.030) and self-esteem (β=-.470, p=.015). *Discussion:* General and gender-based violence are related to the choice of avatar gender. Contrary to our expectations, choosing an MA is not associated with a better level of self-esteem and self-efficacy. Women choosing a MA reported a higher level of general and gender-based violence in the game. Moreover, they choose a MA to protect themselves from the violence that they previously experimented.

Keywords: women, games, avatar, violence

MT-1D2

Emotional & behavioural difficulties among adolescents engaging in excessive internet use

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Background: During pandemic, as schooling moved online, it also increased adolescent internet use for non-academic purposes. Literature suggests that excessive internet use have been linked to emotional and behavioral issues. Hence, this study aims to assess the association of emotional and behavioral difficulties with problematic internet use among adolescents *Methods:* Using multi-stage sampling, 935 adolescents were recruited from schools. Data was collected online and offline through administering following surveys over 5-month period from October 2021- January2022: Socio-demographic sheet, Technology Use Datasheet, Internet Addiction Test (IAT), & Strength and Difficulties Questionnaire (SDQ).
Results: The participants comprised of 24% male and 76% female, age range from 12 to 19 years, with a mean age and standard deviation of 15 and 1.5, respectively.

According to IAT scores, 0.9% had severe addiction, 10% had moderate level of addiction, 18% mild addiction and 71% had no addiction at all. Among the participants who struggled with internet addiction, 42% showed emotional symptoms, 44% displayed hyperactivity, 41% had troubles with their peers, and 50% had conduct problems. Additionally, the SDQ's 'Total Difficulty Score' indicated that most internet addict participants (about 80%) had emotional and behavioral challenges. Also, the participants' scores on the SDQ scale's sub-domains for emotional symptoms, hyperactivity, conduct and Total Difficulties all showed a moderate level of positive correlation with their scores on internet addiction. *Conclusion:* The study suggests the necessity of designing intervention that strengthens adolescents' resilience to assist them cope with emotional and behavioral issues and lower their likelihood of internet addiction.

Keywords: internet addiction, emotional & behavioral difficulties, Internet Addiction Test, Strength & Difficulties Questionnaire

MT-1D3

Examining of the relationship between sexting, cyber bullying, cyber victimization and self-harm behaviour in adolescents with online gaming disorder

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Background: Online behaviours were associated with a higher risk of self-harm among adolescents. However, the independent impact of each problematic online behaviour (online gaming disorder, cyberbullying, cyber victimization, sexting) on self-harm is controversial. The aim of this study is to investigate whether online gaming disorder increases the risk of sexting, cyberbullying, cyber victimization and self-harm. *Method:* 31 participants online gaming disorder and 31 healthy controls (without history of online gaming disorder) were included in the study. Internet Gaming Disorder Scale - Short Form, Sexting Form, Cyber Bullying, Cyber Victimization Scale and Self Harm Form were administered to the participants. Results: According to the results of the regression analysis, it was found that online gaming disorder, cyber bullying and cyber victimization predicted self-harming behaviour. Among them, cyber victimization was determined to be a stronger risk factor in predicting self-harming behaviour. The clinical group scored significantly higher on IGDSF-9, CBS and CVS scale. It was found that sexting and self-harm were significantly higher in the clinical group. *Conclusions:* In our study online gaming disorder, cyberbullying, cyber victimization were all independently associated with a self-harm risk among adolescents. Among them, cyber victimization was shown to be the stronger risk factor of self-harm behaviours. Online games are thought to facilitate cyber victimization compared to other platforms. In this context, it is considered important to identify young people who are involved in problematic online gaming behaviours, especially cyber victimization.

Keywords: gaming disorder, cyberbulling, cyber victimization, sexting, self harm

MT-1D4

Prevalence and associated factors of cyber-victimization/bullying among Turkish adolescents with Attention Deficit Hyperactivity Disorder

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Introduction: Cyberbullying is a form of digital harassment, acknowledged as a worldwide important mental health issue. It is also associated with various psychological consequences and school-related problems. Few studies have investigated cyberbullying among youth with attention-deficit/hyperactivity disorder (ADHD), a population potentially susceptible to bullying, and associated factors. In this study, we aimed to explore the frequency of cyber victimization and cyberbullying among adolescents with ADHD, and their relationship with several individual and clinical characteristics. *Methods:* A total of 92 clinically referred adolescents (14.37±1.78 years) with ADHD were included in the study. Cybervictimization and cyberbullying were evaluated by using Revised Cyberbullying Inventory. A semi-structured interview was used for screening for psychiatric disorders, and other individual factors were assessed by using self and parent-report scales. Results: 35.9% of the participants (n=33) were defined as cyberbullies and 38% (n=35) were defined as cybervictims. The symptoms of anxiety and problematic internet use were more severe, and social phobia was more frequent among the cybervictims than the non-cybervictims. Cybervictimization was associated with being overweight, having generalized anxiety disorder and online gaming. Parent-rated inattention, hyperactivity and defiant behaviors were significantly more severe and internet addiction scores were higher in cyberbullies compared to non-cyberbullies. Cyberbullying was associated with having generalized anxiety disorder, more severe problematic internet use, and downloading programs. *Conclusions:* Per our study, a major component of clinical assessment must include questions related to social experiences on the internet. This recommendation is especially valid for adolescents with ADHD with anxiety disorders, high BMI and online gamers.

Keywords: adolescent, ADHD, cyberbullying, cybervictimization

MT-1D5

Keep the balance by volunteering: young adults help others and themselves by sharing experiences of problematic gaming and social media use

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Background: Early interventions and support are needed to motivate young adults with excessive online behaviors to change before the condition worsens. Limitless Gaming & Social Media Program provides easy-access psychosocial support addressed to problematic gaming and social media use with the assistance of volunteers with a personal history of the problems. Here we suggest that this volunteer work per se can also promote controlled media consumption and well-being. *Method:* Volunteers (23–32-year-olds) act as peer coaches (e.g., group interventions) or experts by experience (e.g., public events) in various activities. Most of them participated in the program before the recruitment as a volunteer. Volunteers are provided with a short basic training (2-3.5 ECTS), task-specific training, recreational activities, and a peer community to join. Once a year, the volunteers complete a questionnaire to assess their volunteering experiences, problematic gaming or social media use (i.e., IGDT-10/BSMAS), and mental well-being (i.e., SWEMWBS). *Results:* 30 % of respondents (n = 30) met the criteria for problematic gaming (IGDT-10 score > 5; mean 3.8 ± 2.2) or social media use (BSMAS score > 24; 16.2 ± 3.3). However, 87 % of respondents reported that volunteering in the program positively impacted their well-being: the majority felt they belonged to an important community (87%), were trusted by others (83 %), felt close to other people (77%), and were optimistic about the future (73 %). *Conclusions:* Volunteer work containing elements of peer support and social inclusion can promote the well-being of those searching for help with gaming- or social-media-related problems.

Keywords: problematic gaming, social media addiction, psychosocial interventions, peer support

MT-1D6

Gender differences in pathological jealousy: psychiatric comorbidities, jealousy type, and attachment styles

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Pathological jealousy (PJ) can be defined as a complex of emotions and thoughts about a partner's infidelity. According to evolutionary psychology, jealousy can be divided into sexual jealousy, when one partner engages sexually with a third person, and emotional jealousy, when the partner forms a deep attachment with a rival. The current study aimed at investigating gender differences in PJ with a special focus on jealousy type. Thirty-six men and 54 women seeking treatment for PJ were compared regarding jealousy type, demographics, psychiatric disorders, attachment and love styles, personality, and social adjustment. In total, 61% of patients had previously sought mental health treatment, 50% had already attempted suicide and 25% were at risk, 58% had a comorbid mood disorder, and 58% had an anxiety disorder. Women reported more avoidant attachment style, higher harm avoidance, and greater frequency of past sexual abuse than men. Female patients reported greater distress by emotional jealousy than men, but both genders were equally distressed by sexual jealousy, and both female gender and emotional jealousy were associated with higher severity of PJ. The data partially confirmed the evolutionary hypothesis, but also pointed to relevant gender differences, which calls for future gender sensitive adjustments for PJ treatment.

Keywords: evolutionary psychology, gender, attachment, psychiatric comorbidity

MT-1E1

At-risk and problem gambling affects families – Finnish population-based study with register-linkage

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The effects of behavioral addictions are felt by the whole family. Families of problem gamblers experience harms, however, there are no population level estimates as to how many families in Finland are exposed to at-risk and problem gambling (ARPG) of a family member. The study analyzed data from Finnish Gambling 2019, a nationally representative study with register linkage, to derive how many families are exposed to ARPG of a family member. It also examined whether the exposing to ARPG of a family member would be more common among low-income families or in families that had received social assistance. The results showed that 9% of families were exposed to at-risk gambling (ARG) and 3% of families were exposed to moderate risk or problem gambling (MRPG) due to gambling of family member. These figures correspond to 176 084 families. Low-income families were not exposed more often to MRPG or ARG of a family member compared to families with higher income. However, families that had received social assistance were exposed more often to MRPG or ARG of a family member. In conclusion many people were exposed to gambling of a family member, especially among families who were experiencing financial distress. The findings expand the knowledge about the affected others. The large number of families exposed to gambling of a family member justify that gambling harm reduction should be implicated at the population level. Moreover, when developing and planning a support and treatment options for affected others of gamblers tailored approaches should be taken into account.

Keywords: gambling, family, significant others, at-risk and problem gambling

MT-1E2

From exposure to gambling behavior: Problem gamblers more impacted by advertising campaigns

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Context: Advertising campaigns promoting gambling are ubiquitous. Studies indicate that problem gamblers (PG) are more influenced by these messages. they recall, incite and trigger more gambling behavior. These studies focus on specific populations (youth or PG). The purpose of this study is to understand how gambling advertising and prevention campaigns impact (from exposure to behavior) individuals depending on the severity of gambling. *Method:* An online questionnaire was relayed by gambling operators, and through social networks. It assessed gambling severity (CPGI), recall of gambling advertisement, to what extent they felt incited and self-reported gambling behavior, as well as socio-demographic variables. Among the respondents to the questionnaire, volonteers took part in a virtual reality experiment (VR), reproducing an urban public space, including advertising campaigns. It measured the exposure to posters by eye-tracking. *Results:* The questionnaire was completed by 2089 participants (PG = 2%) and 36 participated in the VR experiment. Results from the questionnaire suggest that PG remember more about the campaigns ($p<0.05$), are more incited ($p<0.001$), and to engage in gambling behavior ($p<0.001$). The VR experiment suggest similar behavior among gamblers and non-gamblers, as well as better immediate recall ($p=0.01$). *Discussion:* These results demonstrate the impact of advertising campaigns according to the severity of gambling, showing a similar behavior during exposure, but leading to a better recall, which can be related to an easier encoding of this message in memory. These results emphasize the importance of developing ecological experimental protocols and understanding the impact of advertising campaigns on gamblers more globally.

Keywords: gambling, advertising campaign, attitudes, behavior, recall

MT-1E3

Longitudinal link between loot box spending and gambling initiation in a sample of Canadian video game players

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Background: Modern video games rely increasingly on the microtransaction monetization model. Players may purchase in-game items directly or purchase a randomized 'loot-box' that might contain valuable and/or rare in-game items, or non-valuable/duplicate items. The randomized nature of loot-boxes is similar to traditional gambling games. Cross-sectional research has described a correlation between loot-box use and problem gambling, but longitudinal studies are required to examine the temporal relationships between these behaviours to determine whether migration from loot-box use to traditional gambling is likely. *Methods:* We recruited an online sample of young adult video game players aged 19-25 and resident in British Columbia, Canada, via Reddit (Baseline n=222, Follow-up n=162). Participants reported their gambling involvement and spending on gambling, loot-boxes and direct purchase microtransactions (DPM) in video games, at baseline and again at a 6-month follow-up. *Results:* Using multivariate logistic regression we observed that for participants who had not gambled at baseline, loot box expenditure significantly predicted migration to gambling status at follow-up (OR=1.23, p=.021), while DPMs were not a significant predictor. A multivariate linear regression revealed that loot box spending at baseline predicted gambling spending at follow-up (B=.537, p<.001), with no effect of DPMs on gambling spending. *Conclusions:* Our data show support for the migration hypothesis and highlight the key role of randomized rewards in the links between gaming and gambling in a longitudinal design.

Keywords: loot-box, gambling, longitudinal

MT-1E4

Testing the malleability of illness representations of gambling disorder: An experimental study with repeated measurements

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Objectives: The commonsense model of self-regulation (CSM) deems that one's illness representations of a certain illness will guide one's self-management health behaviors against the illness. The application of CSM on gambling behaviors is still in an exploratory stage, and the present study hence aimed to test the plasticity of illness representations of gambling disorder (GD). To be specific, we experimentally examined whether illness representations of GD, such as perceived consequences that showed negative associations with GD symptoms, can be changed by external manipulations (e.g., watching related educational videos).

   Methods: A 2 (Experiment group: watching a video about consequences of GD vs. Control group: watching a video about consequences of alcohol consumption) × 2 (Pre-test of illness representations of GD vs. Post-test of illness representations of GD) mixed design with repeated measures on the second factor was adopted. Sixty-nine student participants were randomly divided into the experimental group (n=42; 54.8% females) and the control group (n=27; 55.6% females). *Results:* Experimental group reported significantly severer consequences regarding GD compared to their baseline level assessed one to two weeks ago. We also found a significant and a marginally significant increase in perceived demoralization and illness coherence of GD, respectively, among them. No significant differences were found in any illness representations of GD among participants in the control group. *Conclusion:* Illness representations of GD are malleable in practice. Educational materials are promising tools for altering related illness representations and in turn promoting self-control over gambling but further experimental research with behavioral outcomes is warranted.

Keywords: gambling disorder, commonsense model, illness representations, perceived consequences, experimental manipulation

MT-1E5

Discriminating depression and anxiety severity from SOGS-RA items: An application of item response theory

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Background: Gambling disorder is often comorbid with mood or anxiety disorder. Individuals with these disorders are known to have distorted cognitions that worsen the symptoms. Hence, we hypothesized that gambling disorder symptoms with cognitive components are experienced much earlier and more frequently by those with high depression/anxiety symptoms than those in low symptom group. *Methods:* Participants were randomly selected young adults (age 18–24) from the Japanese Basic Resident Register in 2019, and the final sample size for this study was 1078. The Japanese version of the South Oaks Gambling Screen-Revised for Adolescents (SOGS-RA) and the Japanese version of the Kessler-10 (K-10) were used. Based on K-10 scores, high and low depression/anxiety groups were created. For analysis, item response curves with the two-parameter logistic model were used to compare high and low depression/anxiety groups. *Results:* Our hypotheses were partially supported. The two symptoms with cognitive component were experienced much earlier (i.e., lower difficulty parameter values) by individuals in high depression/anxiety group, but the discrimination parameter values were not enough to differentiate the two groups. Surprisingly, items regarding borrowing and stealing money discriminated the high depression/anxiety groups from the low group. *Discussion:* This study successfully identified pathological gambling symptoms that are more likely to be experienced by young adults with high depression/anxiety problems. Possible factors influencing those results will be discussed.

Keywords: gambling disorder, depression, anxiety, symptom expression

MT-1E6

Effects of auricular acupressure on gambling withdrawal symptoms in people with gambling disorder

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Objectives: This study aimed to examine the effects of auricular acupressure on gambling withdrawal symptoms in people with gambling disorder. *Method:* This study was a randomized controlled trial. Data were collected from July 2021 to February 2023 in the Republic of Korea. 40 people with gambling disorders were randomly assigned to two groups: auricular acupressure or education. The experimental group received auricular acupressure for 6 weeks and the control group received educational materials on how to deal with withdrawal symptoms. The Gambling Withdrawal Symptoms Scale and the Problematic Gambling Severity Index were used. *Result:* 24 participants completed this study, and 6 participants are participating. Gambling withdrawal symptom scores were significantly decreased in the experimental group compared with that in the control group over 5 weeks (F = 5.03, p =.002). Among withdrawal symptoms, poor appetite, insomnia, and pain significantly decreased in the experimental group compared with that in the control group over 6 weeks. The mean difference of 1-6 weeks of anger(t = 2.39, p =.026), insomnia (t = 2.57, p =.016), pain (t = 3.28, p =.004), and depressive symptoms (t = 2.98, p =.007).was higher in the experimental group than in the control group, *Conclusion:* The results showed that auricular acupressure was effective in decreasing gambling withdrawal symptoms in people with gambling disorders.

Keywords: Gambling disorder, Withdrawal symptoms, Insomnia, Poor appetite, Depressive symptoms

MT-1F1

Is a female perspective really needed? Discussion is open!

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Gender approach is getting more and more relevant to gain a better understanding of female-specific aspects of behavioural addictions and to be more responsive to women's health needs. Literature on Women Behavioural Addiction in specific female population is still scarce and often inferred from mostly male samples, and this bring us to question about how diagnostic criteria really fit to describe Behavioural Addiction's harms in female population; more women are affected by pathological gambling and other non-substance related addictions, even if they rarely ask for help: so, with little specific data, it is not easy to have dedicated research and understanding of peculiarities of this invisible population, and different reach out strategies are strongly needed to fill the gap. One key point, beyond the shame issue, is that women often experience great difficulty in finding appropriate treatment services, since most health clinics rarely offer female-specific treatment approaches or harm reduction and prevention strategies. That is why it is so important to learn from our experiences as researchers and clinicians, sharing data from all over the world to enrich our understanding of these issues. That's WHY a ROUND TABLE is the best place to discuss, compare experiences and improve research and treatment for the women on whose behalf we are working on; and the aim of our new book "Behavioural Addiction in Women: An International Female Perspective on Treatment and Research" (F. Prever, G. Blicker & L. Brandt).

Keywords: female perspective, women, behavioural addictions

MT-1G1

Internet Gaming Disorder and risky behaviours among Czech adolescents: A nationally representative study

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Objectives: This study investigated the complex association between Internet Gaming Disorder (IGD), substance use, and other risky behaviours in Czech adolescents while providing psychometric information about the Czech Internet Gaming Disorder Scale–Short-Form (IGDS9-SF). *Methods:* To achieve this goal, a representative sample of 3,950 Czech adolescents (11–19 years) was recruited through stratified random sampling and using a paper-and-pencil survey administered in the school setting. *Results:* The Czech IGDS9-SF exhibited satisfactory psychometric properties. The overall prevalence of IGD in the sample was 3.62%. Although disordered gamers showed more incidence of substance use, specific substance use behaviours emerged among non-gamers, non-disordered gamers and disordered gamers. Moreover, conduct problems and in-game risky behaviours were significantly more common among disordered gamers. *Conclusion:* The association between gaming behaviours and substance use behaviours may be specific and nuanced depending on the severity of the gaming-related problems. Furthermore, disordered gamers may become more vulnerable due to higher incidence of conduct problems, bullying (victimization), and in-game risky behaviours such as risky engagement with loot box mechanics. *Funding:* This work was made possible thanks to targeted funding provided by the Czech Ministry of Education, Youth and Sports for specific research, granted in 2022 to Palacký University Olomouc (Current online risk behavior in adolescents and relationship with selected psychological phenomena IGA_FF_2022_048).

Keywords: Internet Gaming Disorder, substance use, conduct problems, risky behaviour, adolescence

MT-1G2

The effect of short-video using on memory

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As short videos (Tiktok) become more and more popular, its cost people longer and longer time on it. It also brings negative aspect. Here, in the current study, we focused on the effect of short video use on memory. We designed a series of experiments to explore this issue.

Keywords: short video, memory, disturb

MT-1G3

Urban upbringing and Internet addiction in Japan: A cross-sectional, multilevel study with retrospective recall

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Background: The purpose of this study was to show the association between urban upbringing and Internet addiction (IA). *Method:* The interview data of the sample (N = 2431) was obtained from the World Mental Health Japan Second Survey, and a multilevel model was used to investigate the association. Multiple imputations were also conducted in this study. *Result:* Growing up in a large city was significantly associated with higher Compulsive Internet Use Scale (CIUS) scores ($\gamma = 1.65$, Standard Error (SE) = 0.45) and Mild IA + Severe IA (Exp(γ) = 1.44; 95% Confidence Interval (CI) (1.04–2.00)) compared to growing up in a small mu-

nicipality, after adjusting for both sociodemographic characteristics and psychopathology. *Conclusion:* This study showed a possible association between urban upbringing and IA. Future studies with longitudinal design are needed to better understand this association.

Keywords: urban upbringing; Internet addiction; hierarchical model

MT-1G4

The wanting-liking dissociation of Internet gaming disorder: Comparing with tobacco use disorder

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Background: Although internet gaming disorder (IGD) has been included in the DSM-5 for approximately 10 years, debate remains regarding its existence and classification. *Methods:* The current research incorporated three approaches. First, implicit association tests were used to examine for potential dissociation between wanting and liking in IGD. Second, brain features in wanting and liking circuits were tested and compared with tobacco use disorder (TUD) when performing a cue-craving task to explore the neural features of wanting and liking. Third, dopaminergic systems were investigated in IGD and TUD using neuromelanin-sensitive MRI. *Results:* The implicit association test results supported a wanting-liking dissociation in IGD subjects. Functional MRI data suggested neural correlates underlying wanting-liking dissociation in IGD and TUD participants, with positive correlations suggesting greater dissociation with increasing addiction severity. The neuromelanin results suggested dopaminergic differences in IGD and TUD participants relative to healthy control participants. *Conclusions:* A wanting-liking dissociation in IGD subjects suggests gaming motivations in IGD relating to incentive sensitization rather than hedonic responses. The neuromelanin-sensitive MRI results suggest dopaminergic involvement in IGD and TUD. The findings suggest brain-behaviour mechanisms for IGD based on an incentive-sensitization model for addiction, having implications for potential therapeutic strategies and policy-based interventions.

Keywords: addictive behaviours, compulsive behaviours, video games, internet gaming disorder, internet addiction, wanting-liking dissociation, dopamine

MT-1G5

Male Internet gaming disorder subjects are more impulsive than females in inter-temporal decisions: Implications for their development to uncontrolled gaming behaviors

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Background: Impulsivity decision-making is known as a key factor for Internet gaming disorder (IGD), however, few studies have paid attention to the sex difference on this issue in IGD subjects. *Methods:* In this study, 49 IGD (26 females) and 64 recreational game-user (RGU) (23 females) were scanned when they were performing a delay-discounting task (DDT). Gender-by-group effect on behavioral and brain features were calculated and compared to find their preference to immediate over delayed rewards, and screen related brain features. *Results:* Significant interactions between group and gender were found in current study. The imaging results revealed the gender-by-group interaction in brain regions, including the bilateral superior frontal gyrus, bilateral medial frontal gyrus, left inferior frontal gyrus. Post-hoc analysis showed that, for female, RGU had hyper-activity than IGD; and for males, IGD have hyper-activity than RGU in all these brain regions. The addiction severity is correlated with impulsive decision-making and DDT-related brain activation IGDs.
Discussion: Gender plays an important role in the development and maintain of IGD. Male IGD subjects show impairment in inter-temporal decisions associated with neuro dysfunction. The results also suggest that impulsiveness could be a predictor for IGD, only for male subjects. The impulsive decision-making is a stable marker for male IGD subjects, but not for female ones.

Keywords: Internet gaming disorder; impulsive decision-making; gender difference; delay discounting

MT-1H1

A serial mediation model of insecure attachment and Internet Gaming Disorder: The role of psychological needs, social support and loneliness

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Background: Although Internet Gaming Disorder (IGD) has become a serious social problem around the world, there is paucity of studies that investigated the risk factors underpinning disordered gaming. In this study, we sought to examine the serial mediating roles of three universally inherent psychological needs (i.e., autonomy, competence and relatedness) and perceived loneliness and social support from family and friends in the association between attachment insecurity (i.e., anxiety and avoidance) and IGD. *Method:* Using a cross-sectional design, data were collected from 1510 respondents (female N = 776; 51.4%) with a mean age of 23.64±4.04 years. *Results:* Results of path analyses indicated that, controlling for the time spent gaming, attachment anxiety was sequentially associated first with autonomy and then with perceived loneliness and support for family, which were in turn related to IGD, whereas attachment avoidance was sequentially associated first with autonomy and relatedness and then with perceived loneliness and support for family, which was in turn related to IGD. We also conducted a multiple group analysis allowing paths to vary by gender, age and by online and offline gaming. Results of the multigroup analysis showed that the serial mediation worked in a similar way for both men and women, early and young adults and for both online and offline gamers. *Conclusions:* The study findings inform theory on the development of IGD and may guide development and delivery of treatment for problematic gaming behaviors.

Keywords: Internet Gaming Disorder, social determination theory, attachment, support

MT-1H2

Longitudinal and cross-sectional risk factors of logged and self-reported smartphone behaviour

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There is considerable concern within public and academic discourse over the way in which people use their smartphones and whether this can lead to addiction. Previously literature has focused on the measure of screen time as a metric. However, the preference has been to use self-report measures of screen time rather than utilizing logged behaviour which is inaccurate and largely cross-sectional. To address this, we are conducting a longitudinal study with 511 participants to examine changes in both self-reported and logged screen time, smartphone addiction, and mental health measures over time. This talk reports on our findings and various analyses from four waves of data collection spanning 18 months. Across this period, we have observed limited consistency across the various measures and the associations between them. The additional analysis explores the discrepancies between over- or under-estimation of usage with depression scores and the impulsivity facet of negative urgency and the direction of causality. The findings highlight various distinctions of screen time which supports the presence of measurement bias that confounds the associations between smartphone usage, mental health, and the possibility of smartphone addiction.

Keywords: smartphone addiction, logged behavior, impulsivity, depression, longitudinal

MT-1H3

Dark traits, dark behaviors: Relationship between the Dark Triad, problematic gaming, and problematic gambling

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The Dark Triad traits (i.e., Machiavellianism, narcissism, and psychopathy) are associated with various forms of problematic behavior ranging from different forms of aggressive behavior to different forms of risky behavior, including substance use. Previous research showed inconsistent results regarding the relationship between the Dark Triad and behavioral addictions; thus, the aim of this study was to further investigate the contribution of the Dark Triad in the explanation of two behavioral addictions: problematic gaming and problematic gambling. Data were collected within a larger project on a representative sample of Croatian citizens (N = 4994, 50% female), aged 15 to 64 years (Mage = 40.75, SDage = 14.59).

Dark Triad was assessed with selected items from the Short Dark Triad, problematic gaming with Ten-Item Internet Gaming Disorder Test, and problematic gambling with the Problem Gambling Severity Index. On a bivariate level, all three Dark Triad traits were positively associated with both problematic gaming and problematic gambling. Hierarchical regression analyses showed that the Dark Triad explained 4% of the variance of problematic gambling and 3% of the variance of problematic gaming, above gender and age. Higher psychopathy and Machiavellianism were associated with problematic gambling, while only higher psychopathy was associated with problematic gaming. Taken together, obtained results highlight the importance of psychopathy in the explanation of behavioral addictions.

Keywords: Dark Triad, problematic gaming, problematic gambling

MT-1H4

Identifying the association between Body Dysmorphic Disorder and Exercise Addiction: A pilot study among young adults in Indonesia

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Background: Individuals with Body Dysmorphic Disorder (BDD) are often preoccupied with the flaws of their appearance, including their bodies, which may trigger a need to continuously exercise to aid with the perceived distortion. A previous study has shown a significant prevalence of individuals at risk of BDD as well as Exercise Addiction (EA) in individuals in fitness settings. This study acts as a preliminary study to observe the presence of an association between BDD and EA in Indonesian young adults. *Methods:* A cross-sectional sample was provided with a questionnaire that included the Exercise Addiction Inventory (EAI) (Terry et al., 2004) and the Body Dysmorphic Disorder Questionnaire (BDDQ) (Phillips et al., 1999). *Results:* A total of 120 samples, comprising 71 females (59%) and 49 males (41%), participated in the questionnaire, with a mean age of 26 (SD = 4.63). 12 individuals (10%) were deemed at risk of BDD, and 9 Individuals (7.5%) scored beyond the EAI cut-off. A significant association was seen between EA and BDD ($P = 0.015$, $X2 = 5.886$) with a notable Odds Ratio of 5.886 (95% CI = 1.209-26.550). An association between gender and EA was also observed. ($P = 0.019$, OR = 0.174, 95% CI = 0.035-0.877) *Conclusion:* We found a significant, positive association between Body Dysmorphic Disorder and Exercise Addiction in our pilot study which corresponds with a prominent OR. Larger-scale, worldwide research should be conducted to strengthen these findings. We urge clinicians to be aware of the comorbidity of EA and BDD.

Keywords: Exercise Addiction, Body Dysmorphic Disorder

MT-1H5

Interventions for safer online gambling: A systematic review

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Background: With the rapid growth of the gaming industry, online gambling has become increasingly prevalent, accompanied by a surge in related issues and disorders. However, interventions designed for land-based gambling may not be directly applicable to the realm of online gambling. This study provides a systematic review of the existing literature on current interventions for safer online gambling. *Methods:* A systematic literature search was performed in PsycINFO, PubMed, Web of Science, and SCOPUS. Study selection, risk of bias assessment, and data extraction were conducted by two reviewers independently, and a synthesis was performed. *Results:* The majority of the identified studies centered on evaluating the effectiveness of responsible gambling tools, such as self-exclusion, behavioral feedback, and mandatory breaks. Additionally, many studies examined treatment methods, primarily based on cognitive-behavioral therapy. These interventions predominantly targeted active gamblers as well as those seeking for help. *Conclusions:* Based on the current body of literature, interventions aimed at promoting safer online gambling exhibit promise. There is a compelling need for further research to tailor interventions to specific user groups and enhance intervention delivery methods. Moreover, early prevention strategies geared towards addressing online gambling behaviors are urgently warranted.

Keywords: online gambling, interventions, systematic review

POSTER PRESENTATIONS

P-432

A longitudinal study of the impact of Covid-19 pandemic on gaming, aggression, and depression in adolescents

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This longitudinal study examined the impact of the Covid-19 pandemic on adolescents' online behaviour and their levels of aggression and depression. The aim of the study was to investigate how long-term exposure to the Covid-19 pandemic affects the prevalence of risky gaming among young adolescents and their levels of aggression and depression. The used measurements were: The Internet Gaming Disorder Scale–Short-Form, The Buss and Perry Aggression Questionnaire, and The Scale of depresivity Dolejš, Skopal, Suchá. The research was carried out using three data collections with six-month interval between them. The first and last data collection interval was one and a half years. In all three measurements, 45 respondents were included (Mean age=14.6; SD=0.6 at W1). The results help to understand better the impact of the Covid-19 pandemic on adolescents and the need to also focus on the impact of the pandemic on mental health. *Financial support:* This contribution was made possible thanks to targeted funding provided by the Czech Ministry of Education, Youth and Sports for specific research, granted in 2022 to Palacký University Olomouc (IGA_FF_2022_008; Bio-psycho-social-spiritual determinants and their relationship with risky online behaviour in adolescents during the Covid-19 pandemic).

Keywords: COVID-19, gaming disorder, aggression, depression, adolescence

P-193

A multimodal-based machine learning approach to classify internet gaming disorder and alcohol use disorder: A resting-state EEG and neuropsychological study

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Background: Addictions have recently been classified as substance use disorder and behavioral addiction, but the concept of behavioral addiction is still debatable. The present study used machine learning algorithms to investigate the neurophysiological and neuropsychological aspects of those addictions among individuals with internet gaming disorder (IGD) with alcohol use disorder (AUD) and healthy controls (HC). *Methods:* In all, 191 young adults (IGD: n = 67; AUD: n = 58; HC: n = 66) participated in the study. L1-norm support vector machine, random forest, and L1-norm logistic regression (LR) were used to create models for the classification of IGD, AUD, and HC. Based on EEG features combining sensor-level (absolute power, relative power, and coherence) with source-level data (source functional connectivity) and neuropsychological features (NFs) including depression, anxiety, impulsivity, and general cognitive function, we examined classification accuracies for three distinct models: a unimodal model-EEG features only, a unimodal model-NF only, and a multimodal model-both EEG and NF features. *Results:* The multimodal model through LR outperformed in distinguishing IGD and AUD groups (accuracy: 0.712) compared to the EEG unimodal (accuracy: 0.672) and NF unimodal (accuracy: 0.656) models. The features selected by LR highlighted that the IGD group had higher beta and gamma coherence and lower delta and alpha coherence and source connectivity between right intrahemispheric regions. Only sex and age were selected as the most important NFs. *Conclusions:* IGD and AUD groups show differences in neurophysiological, but similarities in neuropsychological features, which sheds light on our understanding of IGD and AUD.

Keywords: internet gaming disorder, alcohol use disorder, electroencephalography (EEG), machine learning

P-308

A systematic review of pharmacological treatments for Internet Gaming Disorder

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Introduction: Gaming disorder (GD) is an increasingly common behavioural addiction, with estimated global prevalence rates of 3%. A variety of pharmacological treatments have been used to treat GD, yet no review to date has synthesized clinical trials evaluating their efficacy. This systematic review therefore synthesized the literature reporting on clinical trials of pharmacological treatments for GD. *Method:* We reviewed articles from MEDLINE, Embase, PubMed Central, CINAHL, and PsycINFO that were published as of March of 2022. A total of 828 articles were retrieved for review and 12 articles were included, reporting on a total of 724 participants. *Results:* Most participants were male (98.6%), and all were currently living in South Korea. The most common drugs used to treat GD were bupropion, methylphenidate, and a range of selective-serotonin reuptake-inhibitors. The Young Internet Addiction Scale was the most frequently instrument to measure gaming-related outcomes. All studies reported reduced symptoms of GD from pre- to post-treatment. Across all clinical trials, GD symptom reductions following the administration of pharmacological treatments ranged from 15.4% to 51.4%. *Conclusion:* Preliminary results suggest that a wide array of pharmacological interventions may be efficacious in the treatment of GD. Future studies using double-blind randomized controlled trial designs, recruiting larger and more representative samples, and controlling for psychiatric comorbidities are needed to better inform understanding of pharmacological treatments for GD.

Keywords: gaming disorder; internet gaming disorder, video game addiction, pharmacological treatment

P-264

Alterations of Cognitive Function and sensory processing in Internet Gaming Disorder: A multimodal study investigating resting-state fMRI and task-related EEG

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Introduction: Resting-state brain activity may be associated with the ability to perform tasks; however, a multimodal approach involving resting-state functional magnetic resonance imaging (fMRI) and event-related potential (ERP) has not been widely used to investigate in addictive disorders. *Methods:* We explored resting-state fMRI and auditory oddball ERP values from 26 Internet gaming disorder (IGD) patients and 27 age- and intelligence quotient-matched healthy controls (HCs). To assess the characteristics of resting-state fMRI, we calculated regional homogeneity (ReHo), amplitude of low-frequency fluctuation (ALFF), and fractional amplitude of low-frequency fluctuation (fALFF); we also calculated the P3 component of the ERPs. *Results:* Compared with HCs, the IGD group exhibited significant decreases in ReHo and fALFF values in the left inferior occipital gyrus, increased ReHo and ALFF values in the right precuneus, increased ALFF in the left superior frontal gyrus, and lower P3 amplitudes in the midline centro-parietal area during the auditory ERP task. Furthermore, the regional activities of resting-state fMRI in the right inferior temporal gyrus and the occipital regions were positively correlated with the P3 amplitudes in IGD patients, whereas ReHo values of the left hippocampus and the right amygdala were negatively correlated with P3. *Conclusions:* Our results suggest that IGD patients have difficulty interacting effectively with cognitive function and sensory processing. The findings in this study will broaden the overall understanding of the neurobiological mechanisms that underlie IGD pathophysiology.

Keywords: auditory oddball event-related potentials, Internet gaming disorder, regional homogeneity, amplitude of low frequency fluctuation, fractional amplitude of low-frequency fluctuation

P-273

Analysis of latent profiles and characteristic differences in adolescent Mental Health Literacy for Internet Gaming Disorder

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Purpose: This study aims to identify the latent subtypes through Mental Health Literacy (MHL) for Internet Gaming Disorder (IGD) in adolescents and confirm the differences between the subtypes in demographics, Internet usage time, the number of prevention education for IGD or problematic smartphone usage, mental health, and addiction level.
Methods: For this study, secondary data was used from the 2019 smart digital media survey for youth, conducted in a district in Seoul, by the Nowon Community Addiction Center. Altogether, 1,936 middle and high school students (14–18 years old) were analyzed. Thirteen items of the MHL questionnaire were used as classification criteria for latent profile analysis (LPA). Thereafter, the difference in characteristics between the classified subtypes was confirmed by One-way ANOVA and Chi-square Test through variables such as mental health and addiction level. _Results:_ Three latent subtypes of MHL for IGD in adolescents were identified as: "low perception-prefer traditional resources" type (12.4%), "moderate perception-prefer family resources" type (49.3%), and "high perception-prefer professional resources" type (38.3%). In addition, it was confirmed that there were differences between subtypes in terms of gender, age, Family Affluence Scale, e-learning time in weeks, mental health problems, smartphone addiction risk scores, and IGD scores. _Conclusion:_ Based on the results, practical interventions are required including customized prevention considering the differences in characteristics among three types of adolescent MHL.

Keywords: Mental Health Literacy (MHL), Internet Gaming Disorder (IGD), Latent Profile Analysis (LPA), adolescent

P-413

Development and validation of the Japanese version of the Motives for Online Gaming Questionnaire

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Background: Internet Gaming Disorder (IGD) in the DSM-5 and Gaming Disorder (GD) in the ICD-11 are a condition associated with functional impairment as a result of problematic gaming, placing at risk especially the youth. Growing evidence from the literature suggests that motives for gaming may play a role in maintaining maladaptive gaming behavior. The Motives for Online Gaming Questionnaire (MOGQ) (Demetrovics et al., 2011) is a scale used to assess motives for gaming. This study aims to adapt the MOGQ into Japanese language. *Methods:* In Study 1, the MOGQ was translated into Japanese by rigorous back-translation procedure. Then, cognitive interviews were conducted with seven adolescents aged 12-18 recruited through purposive sampling to verify the linguistic and conceptual validity. In Study 2, 420 participants complete a web-based survey, including 210 pairs of adolescents aged 12–18 and their parents recruited through a research company, to verify the reliability and validity. To verify the test-retest reliability, a second survey was conducted with the same participants one week later. *Results:* Data are expected to be collected in March 2023 and presented at the conference. We hypothesized that the Japanese version of the MOGQ is semantically equivalent to the original version and has high reliability and validity. We also hypothesized that the factor structure will remain the same as the original version. *Conclusion:* This study demonstrates the validity and reliability of the Japanese version of the MOGQ. Future studies can use this scale to assess various online gaming factors associated with IGD and GD.

Keywords: Internet Gaming Disorder, Gaming Disorder, Motives for Online Gaming Questionnaire

P-201

Gaming motivations and gaming disorder symptoms:
A systematic review and meta-analysis

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Background and aims: The present systematic review and meta-analysis aimed to synthesize the available literature on the relationship between gaming motivations and gaming disorder symptoms. Specifically, to (1) explore what gaming motivation questionnaires and classifications are used in studies on gaming disorder symptoms and (2) investigate the relationship between motivational factors and symptoms of gaming disorder. *Method:* An electronic database search was conducted via EBSCO (MEDLINE and PsycINFO) and the Web of Science Core Collection. All studies using validated measurements on gaming disorder symptoms and gaming motivations and available correlation coefficients of the relationship between gaming disorder and gaming motivations were included. The meta-analyses were conducted using a random-effects model. *Results:* In total, 49 studies (k = 58 independent sub-samples), including 51,440 participants, out of which 46 studies (k = 55 sub-samples, n = 49,192 participants) provided data for the meta-analysis. The synthesis identified fourteen different gaming motivation instruments, seven unique motivation models, and 26 motivational factors. The meta-analysis showed statistically significant associations between gaming disorder symptoms and 23 out of 26 motivational factors, with the majority of the pooled mean effect sizes ranging from small to moderate. Moreover, large heterogeneity was observed, and the calculated prediction intervals indicated substantial variation in effects across populations and settings. Motivations related to emotional escape were robustly associated with gaming disorder symptoms. *Discussion and conclusions:* The present meta-analysis reinforces the importance of motivational factors in understanding problematic gaming behavior. The analysis showed significant heterogeneity in most outcomes, warranting further investigation.

Keywords: meta-analysis, systematic review, gaming disorder, problematic gaming, motivation

P-426

How sociopsychological, individual, and environmental factors relate to symptoms of Internet Gaming Disorder in early childhood – Results form the Kids Cohort for Understanding of Internet Addiction Risk Factors in Early Childhood (K-CURE) study in Korea

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This study aimed to identify risk factors that contribute to the prevalence and symptoms of Internet Gaming Disorder (IGD) among children aged 7-10 years. Participants were recruited from the Kids Cohort for Understanding of Internet Addiction Risk Factors in Early Childhood (K-CURE) Study in Korea. The baseline assessment, Wave 1, was conducted between December 2015 and June 2016, and follow-up assessments, Waves 2 to 8, were conducted annually for the subsequent years. Time of media use, frequency of media use, and ownership of media devices were investigated. At Wave 8, participants aged 7-10 years (mean 8.69, SD = 0.890) were assessed using a semi-structured questionnaire based on the DSM-5 criteria for IGD diagnosis. Participants who reported subthreshold symptoms or above on item 1 accounted for 13.5%, item 2 for 4.9%, item 3 for 10.3%, item 4 for 9.7%, item 5 for 5.9%, item 6 for 9%, item 7 for 9.7%, item 8 for 2.7%, item 9 for 2.7%, and item 10 for 18.4%. The prevalence of children who met the strict diagnostic criteria for IGD, namely persistent and recurrent use of the internet to engage in games, often with other players, that leads to clinically significant impairment or distress as indicated by at least five symptoms, was 5.4%. It is noteworthy that even among children aged 7–10 years, 5.4% were identified as meeting the diagnostic criteria for IGD. Identifying risk factors for IGD is crucial for early intervention and policy development to prevent the negative impact of IGD on children's health and well-being.

Keywords: IGD, early childhood, screen time

P-296

Investigating the biopsychosocial risk factors of problematic gaming in youth using a machine learning approach

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Background: Problematic gaming, or gaming disorder, is a growing concern among youth. Studies have investigated various biopsychosocial factors that contribute to gaming disorder, but findings were often inconsistent or limited by small sample sizes. Using a large dataset from the Adolescent Brain Cognitive Development (ABCD) study, we aimed to identify the biopsychosocial risk factors that predict problematic gaming in youth, using biological, psychological, and social data. *Methods:* We used data from 1,723 participants in the ABCD study and a machine learning approach (penalized regression) to predict participants' video game addiction questionnaire (VGAQ) scores using biological (i.e. fMRI measures), psychological (i.e. personality traits, cognitive abilities), and social (i.e. family/peer relationships) factors. *Results:* Our analysis revealed that we could predict VGAQ scores (r = 0.62 in the test set, r = 0.63 in the training set) using several biopsychosocial factors, including higher impulsivity, less parental monitoring, lower parental income, more family conflict, peer victimization, greater peer influence, and reduced activations in reward circuits (e.g. NAc, ACC). *Conclusion:* This study provides insights into the various biopsychosocial risk factors contributing to problematic gaming among youth. The findings suggest that interventions on personality traits such as impulsivity, and improving relationships with family and peers may address problematic gaming.

Keywords: problematic gaming, youth, ABCD, biopsychosocial factors

P-424

Is there a relationship between the purchasing experience of probability-based items (loot boxes) and adolescent gaming addiction and problematic smartphone use?

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This study aimed to investigate the relationship between the purchase of loot-boxes and smartphone and gaming usage among adolescents. This study analyses by using a sample of 1,682 adolescents from the 2022 Nowon-gu Youth Digital Media Survey include Internet-usage times (IUT), IGUESS (Internet gaming disorder) and S-Scale (Problematic smartphone use), Y-PSC-17 (Pediatric symptom checklist), CAGI-GPSS (gambling disorder). The results showed 32.0% of the respondents had made in-game purchases and 17.7% had purchased loot-boxes. Adolescents made in-game purchases had significantly higher weekday and weekend 'IUT', 'IGD', 'PSU' scores than those not purchase group. Those who had purchased loot-boxes also had higher 'IUT', 'IGD', 'PSU' scores than those had not purchased loot-boxes. Additionally, adolescents who reported tolerance to loot-boxes had significantly higher weekday 'IUT', 'IGD', 'PSU', 'PSC', 'GD' scores than those not report group. Adolescents who reported failure to control their loot-box purchasing had significantly higher 'IGD' and 'PSU' scores than those not report group. Adolescents who reported withdrawal of their loot-box purchasing had significantly higher weekday 'IUT', 'IGD', 'PSU', 'PSC', 'GD' scores than those not report group. Adolescents who reported compulsive use had significantly higher weekday and weekend 'IUT', 'IGD', 'PSU', 'PSC', 'GD' scores than those not report group. In summary, it was found that adolescents who experienced purchasing loot-boxes showed significant differences in IUT, IGD, and PSU scores. Additionally, the element of addiction to loot-box showed consistently higher scores in the 'IGD' and 'PSU' scale. Therefore, appropriate guidelines and literacy education regarding loot-box purchasing among adolescents are needed, as well as prospective research and policy-making.

Keywords: adolescent, loot-boxes, gaming addiction, problematic smartphone use

P-334

ONTOGD – An ontology-driven conceptual model for Gaming Disorder

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Background: The popularity of digital games in recent decades, especially on social networks for online games, given rise to a new concern: the excessive time people spend on games. The so-called Gaming Disorder is a recent, broad and complex category of psychiatric disorder, and it still requires many studies. *Result:* This work presents an ontology-driven conceptual model that represents the domain of Gaming Disorder, called OntoGD (Ontology of Gaming Disorder). *Method:* Activities were carried out involving Conceptual Modeling tasks, the Unified Foundational Ontology (UFO), and Ontology Engineering concepts – through the Systematic Approach for Building Ontologies (SABiO) methodology. Finally, literature studies and discussion with specialists were done on the domain of Gaming Disorder associated with the problematic use of digital games. *Conclusions:* We believe that OntoGD can be used to better comprehension and to communication of the represented domain, helping specialists in the field to carry out their activities. Also, it can be useful as well as income to Information Systems to Support Decision Making in Health Care, with emphasis on Mental Health involving Gaming Disorder. Other desirable benefit is the possibility to integrate OntoGD to other ontologies and evolve it to contemplate complementary domains of Behavioral Addictions.

Keywords: OntoGD, Ontology-Driven Conceptual Model, UFO, digital game, gaming disorder

P-430

Predictive models of video game players' profiles: Insights into the stability of the profiles

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Gaming disorder is a diagnosis from the World Health Organization's International Classification of Diseases and Health Problems. This PhD research poster aims to investigate the predictive models of video game players' profiles based on their psychological and interpersonal factors and examine their differences in attachment styles, emotional regulation, motives for play, mental health, interpersonal interactions, and socio-demographics with gaming disorder. The study identifies different video game player profiles using latent class analysis in cross-sectional research with a sample of 5020 English-speaking adolescents and adult video game players of all game genres, ranging from novice to professional e-sports. This research uses validated questionnaires and analyses the data through a structural equations model, aiming at the predictive model of the profiles and therefore contributing to the understanding of the range from healthy to addictive behavior in video game use. The psychological and interpersonal profiles propose to offer insight into the development and maintenance of addictive behavior, contributing to future research in the area.

Keywords: gaming disorder, profiles, predictive models

P-156

Prevalence, correlates, and comorbidities of Internet Gaming Disorder and Game Overuse: National Mental Health Survey of Korea 2021

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Background: This study investigated the prevalence, socio-demographic correlates, and comorbidities of Internet Gaming Disorder (IGD) and game overuse among the general population in Korea. *Method:* 2,764 people aged 18 to 49 who participated in the national mental health survey of Korea 2021 were analyzed in this study. Diagnostic assessments were based on the Structured Clinical Interview for Internet Gaming Disorder and the Composite International Diagnostic Interview. Game Overuse Screening Questionnaire was also applied to assess game overuse. Multiple logistic regression analysis was performed using IGD and game overuse as dependent variables, and complex sampling design analysis was applied. *Results:* The one-year prevalence of IGD and one-month prevalence of game overuse was 0.9% and 10.3%, respectively. IGD was the higher in men, people with low physical activity, and younger people. Alcohol use diosrder, nicotine use disorder, and attention-deficit/hyperactivity disorder (ADHD) were significantly associated with IGD. Game overuse was the higher in men, peple above standard median income, and those with lower resilience. Nicotine use disorder, anxiety disorder, and ADHD were significantly associated with game overuse *Conclusions:* Our results show that IGD and game overuse are associated with other psychiatric disorders, especially ADHD.

Keywords: Internet Gaming Disorder, Game Overuse, mental disorder, Attention-Deficit/Hyperactivity Disorder

P-344

Problematic gaming behavior and common physiological measurements: A systematic review

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Background: Several studies have emphasized the importance of integrating physiological measurements in the study of problematic behaviors. However, the use of these measurements is still small and often limited to single methods. A systematic study of physiological measurement methodologies in the context of problematic video game use could facilitate the implementation and dissemination of these measurements. Objective: The aim of this systematic review is to look for a wide range of physiological measures used in research for problematic gaming behavior. _Methods:_ Using the PRISMA method, 457 articles discovered across 6 data bases. Of those articles, 32 were determined to be appropriate for the search. The physiological measures found were, Electroencephalogram (EEG), Qualitative Electroencephalogram (QEEG), Pupil Dilation, Pupil Diameter, Absolute Pupil Size, Electrooculogram (EOG), Heart Rate (HR), Photoplethysmography (PPG), Blood Pressure, Electrocardiogram (ECG), Galvanic Skin Response (GSR), Skin Conductance, Respiration (RR), Breathing Rate, Temperature. _Results:_ The 32 articles break down as EEG – 14, QEEG – 1, HR – 8, EEG & HR – 1, PPG, EOG, GSR – 1, EEG, EOG, PPG – 1, HR, RR, EOG, GSR, PPG – 1. Results suggest that there are measurable changes in phycological activity. Additionally, expensive, and specialized equipment are not necessary for the many of them and can be combined. _Conclusion:_ The review concluded that physiological measure could be used when looking into Problematic gaming behavior.

Keywords: gaming disorder, physiological measures, systematic review

P-414

Self-perceptions and gaming flow experience of problematic gamers in Mainland China: A qualitative study

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University students are in the stage of emerging adulthood, which is a transitional period. Gaming can help them find their self-identity and serve as a coping mechanism. However, gaming can also have negative consequences for problematic gamers. Internet gaming disorder (IGD) is recognized as a mental health issue, but the prevention of this disorder among university students is receiving less attention and action compared to adolescents. This study focuses on secondary and tertiary prevention, targeting at-risk or disordered individuals among Chinese university students. The aim is to investigate the differences between high-risk gamers for IGD and lower-risk gamers. This study uses a qualitative approach and interviews 12 potential problematic gamers from a public university in mainland China. The focus of the interviews is on the gamers' self-perceptions and their intensive gaming experience, specifically their gaming flow experience. According to the self-reported IGD symptoms, the study categorizes participants into three groups: high-risk, moderate-risk, and mild-risk. Two individuals from the high-risk group were identified as having IGD based on DSM-5 criteria. A content analysis of first-hand information from participants of different risk levels uncovered individual-level risk/protective factors related to their self-perceptions and gaming flow experience. These included unclear self-concept, self-conflicts, and difficulty in getting gaming flow experience. The findings illustrated that further training with updated knowledge about symptoms and the risk/protective factors can be further provided to university teachers (e.g., "Daxuefudaoyuan") in order to improve the identification and intervention of their at-risk and disordered students.

Keywords: Chinese university students, gaming flow experience, Internet gaming disorder, qualitative study, self-perceptions

P-249

The effects of peer influence on actual self and virtual self to Internet gaming disorder in TRC: A cross-sectional study

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Background: This study aims to investigate the relationship between actual and virtual self, online game peer influence and internet gaming disorder using the Triadic Reciprocal Causation (TRC). By analyzing the variables, we want to provide a potential mechanism for internet gaming disorder(IGD). TRC is often applied to explain addictive behaviors in past. According to the theory, both environmental and cognitive factors are important determinants of behaviors. Literature indicated massively multiplayer online role playing games (MMORPGs) players appear to be more vulnerable to potentially problematic gaming compared to other types of online gamers. Players gain social needs and self-esteem by interacting with the peers online and manipulating the game avatar. *Methods:* The online survey will be released on social media platforms for gamers and game guilds. 350 of participants between 18 to 22 years old will be recruited. After informed consent, they will be assessed by the participants' personal information, IGD scale, self-esteem scale, avatar identification and online game peer influence scale. Then the information will be analyzed by statistical analysis system. *Expected results:* The present research hypothesizes that online game peer influence is a mediating factor of the relationship between cognitive factors, including actual and virtual self and IGD. *Conclusions:* Should the hypothesis be proven as true, the result of this study can expand on the topic of IGD and serve as a reference point for future research. With the added layer of insight that this study could bring, IGD should be more easily approached, predicted, and with mitigating mechanisms devised.

Keywords: triadic reciprocal causation, internet gaming disorder, MMOG, peer influence, cognitive self

P-283

The relationships between online gaming behaviors and psychosocial problems among Japanese adolescents: A large-scale cross-sectional web-based survey

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Background: In Japan, large-scale data on healthy online gaming is lacking, and it is not clear what healthy gaming should be aimed at in awareness and prevention education. Therefore, we will conduct a large-scale survey not only of problem gamers but also of adolescents in general to examine the association between game-related variables and psychosocial variables. *Method*: We conducted a web-based survey of Japanese adolescents (aged 12–18 years). The survey included time spent on online gaming on weekdays and weekends, The Patient Health Questionnaire for Adolescents (PHQ-A; Johnson et al., 2002), Game Addiction Scale (GAS7; Lemmens et al., 2009), and other game-related psychosocial problems. *Results:* We obtained responses from 9,679 Japanese adolescents (mean age 15.37 years). The average time of gaming was 86.99 minutes on weekdays and 124.18 minutes on weekends. Correlation analysis showed that time of gaming was moderately correlated with GAS7, but not with PHQ-A. In contrast, GAS7 was moderately correlated with PHQ-A. *Discussion:* The results of this study on a large scale yielded normative data on the general time of gaming of Japanese adolescents. In recent years, personalized normative feedback (PNF) has been attracting attention as a preventive intervention for addiction. The data obtained in this study will be useful for PNF and other preventive education. However, this study has not been able to control the effects of timing and other factors.

Keywords: gaming disorder, adolescents, Japanese

P-387

A validation study of problematic stock and cryptocurrency investment scale on ICD-11

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This study aimed to develop and validate the problematic stock and cryptocurrency investment scales based on the ICD-11 criteria for gambling disorder. To compose the items of this scale, a total of 12 preliminary items were constructed, including the three diagnostic criteria of ICD-11 gambling disorder (Impaired control over gambling behaviour, Increasing priority given to gambling behaviour, Continued use despite negative results) and functional disability criteria. Survey data were collected from 152 people in the preliminary survey and 2,857 people in the main survey, targeting teenagers and adults who had experience in investing in stocks or cryptocurrency last year, and analyzed the validity and reliability of 12 questions. As a result of the preliminary survey and the main survey, 12 items showed a stable single-factor structure and reliability was high, and there were few cases in which the reliability improved when items were removed. Finally, according to the results of this survey, it was found that both the final total score of the screening scale and last year's investment cost and level of gambling problems (CPGI) showed a significant positive correlation.

Keywords: problematic stock/cryptocurrency investment, scale validation, reliability, validity

P-358

Betting onset, sex and gambling trajectories: Exploring subgroups of Gambling Disorder

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Background: Gambling Disorder (GD) can occur in both sexes and at any stage of life. In this study we explored the interactions between sex and age of gambling onset in search for subgroups of gambling generation, considering hallmarks of gambling progress such as time elapsed between gambling onset and treatment-seeking, gambling severity, types of gambling treatment, types of gambling related problems, preferred gambling games, maximum period of voluntary betting abstinence, average amount of betting hours in a typical gambling day. *Methods:* 697 GD treatment-seeking individuals were stratified into eight categories: teen (gambling-onset < 19 years old), young adult (20–30), adult (31–40) and mature (> 40) male and female gamblers. The groups were compared using multinomial logistic regression. *Results:* compared to the reference category (mature female gamblers) all categories, except mature male gamblers, had longer gambling progress; the younger gambling generations had greater gambling severity, particularly male and female teen gamblers and the female young adult gamblers; compared to mature female gamblers, teen gamblers of both sexes had a greater preference for skill-based traditional games and particularly male teen gamblers spent more hours/day betting. Gambling treatment, related problems and betting abstinence did not remain in the final regression, which was largely significant [$\chi2(28) = 325,949$, $p < 0.001$; Nagelkerke $R2 = 0.396$]. *Conclusion:* sex and age of gambling onset combined present significant differences in gambling progression and behavior, establishing subgroups of gambling that should be considered when devising specific therapeutic approach.

Keywords: gambling disorder, sex, onset, type of gambling game, gambling progression

P-363

Causal links between gambling products and gambling disorder

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Certain types of gambling product (e.g. slot machines, online gambling) have been linked with a greater risk of gambling harm and addictive gambling. However, the mechanisms behind these observed associations are unclear. It might be that this is because these products are inherently more harmful than other forms of gambling. Alternatively, it has been proposed that this relationship might be better explained by higher levels of gambling involvement i.e. that people experiencing greater levels of problem severity seek out as many means as possible to gamble, which explains these product specific links. We use four different approaches (propensity score matching, coarsened exact matching, sample selection modelling, double hurdle modelling) to assess whether specific gambling products are associated with a greater risk of harm in large integrated sample of British gamblers between 2007 and 2018 (n = 96176). The findings from this have the potential to inform policymakers regarding the varying levels of risk with differing gambling products, and the extent to which they are driven by the product itself.

Keywords: causal inference, propensity score matching, gambling disorder, sample selection model

P-421

Exploring social fulfillment as a moderator between social motives and gambling

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Socialization or social motives are among several reasons why people gamble. Yet, past research shows such motives have different effects associated with problem gambling. Some works show social motives may lead to problem gambling, while other works show social motives are less likely to lead to problem gambling (relative to other motives). Such differing findings suggest there may be moderators influencing the relationship between social motives and problem gambling. One such moderator would be the quality of one's existing social relationships. That is, it is plausible that for people with fulfilling social relationships, social motives for gambling would be less linked to problem outcomes, whereas, for people lacking or experiencing unfulfilling social relationships, social motives may be more linked to problem gambling. The present work sought to test this possibility. This work will be based on a nationally representative sample of adults in the U.S. (N = 2,806), as well as a sample of adults in the U.S. who have recently bet on sports (N = 1,500), collected in March/April of 2022. In this data, we measured problem gambling via the Problem Gambling Severity Index, gambling motives (including social motives) via the Gambling Motives Questionnaire – social fulfillment via the Three-Item Loneliness Scale and the Basic Psychological Needs Satisfaction and Frustration, Relational Needs Frustration Subscale. We plan to conduct two, distinct moderation analyses where the relationship between social motives for gambling and problem gambling outcomes (i.e., PGSI scores) are moderated by each measure of relational fulfillment.

Keywords: problem gambling, gambling disorder, social motives, social fulfillment, gambling

P-270

Gambling-related cognitions and prognosis of outpatients with gambling disorders: Data from a multicenter collaborative one-year follow-up study in Japan

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Background: The clinical characteristics and prognosis of gambling disorder (GD) seeking treatment at Japanese addiction medical institutions are unknown. Therefore, we conducted a multicenter 1-year follow-up study of GD outpatients. In the current study, we focused on gambling-related cognition (GRC) and aimed to clarify the relationship between the distortions of GRC and treatment prognosis. _Methods:_ A total of 202 patients who were diagnosed with GD by DSM-5 (male = 96. 5%; mean age = 36.3 ± 8.7) were enrolled from February to September 2021. The facility's medical staff conducted baseline interviews and distributed questionnaires. During the follow-up period, self-administered questionnaires were e-mailed or mailed to the registered address at 1, 3, 6, 9, and 12 months after enrollment. The 12-month follow-up rate was 72.7%. The gambling-related cognition scale (GRCS) was used to measure cognitive distortions. The GRCS consists of five subscales: Illusion of Control (IC), Predictive Control (PC), Interpretative Bias (IB), Gambling Expectancy (GE), and Perceived Inability to Stop Gambling (IS). The evaluation of the treatment prognosis included gambling behavior and social functioning. _Results:_ Mean scores for all GRCS except IC decreased when compared at baseline and at the 6-month follow-up. IC=6.70→7.15, PC=18.8→13.9, IB=15.99→11.0, GE=13.42→9.94, IS=19.9→14.8. Moreover, at the 6-month follow-up, higher mean GRCS scores were associated with more frequent gambling behavior. The one-year prognosis will be explained on the day of the presentation. _Conclusions:_ Delayed GRC recovery in GD may be associated with a negative prognosis.

Keywords: gambling disorder, follow-up study, gambling-related cognition

P-365

Help on demand: User engagement with technology-mediated self-guided interventions for addictions

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Technology-mediated self-guided interventions (TMSGIs) for addictions represent promising adjuncts and alternatives to traditional treatment approaches, such as face-to-face psychotherapy. However, meaningful evaluation of such interventions remains elusive given the lack of consistent terminology. Preliminary findings suggest that TMSGIs are useful, but engagement remains modest for various reasons reported by users, including lack of personalisation. The aim of this review was to explore how TMSGIs have been defined and applied in addictions populations with an emphasis on technical and logistical features (e.g., frequency of push notifications) associated with greater user engagement (UE). UE was defined to encompass both objective and subjective components (e.g., number of activities completed and ratings of intervention quality, respectively). Special attention is paid to interventions for gambling disorder, although TMSGIs for all substance-related and behavioural addictions were included in this review. Articles from electronic databases were included if they targeted adolescents or adults using a privately accessible technology-mediated intervention; three independent reviewers were recruited to screen abstracts and full texts. This project is currently in the full text review stage, and data synthesis will commence in early February. The results will be used to generate recommendations for the development of addiction TMSGIs that maximize UE.

Keywords: self-guided, engagement, mobile, internet, intervention

P-121

Internet gambling disorder – A case series

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Background: Internet gambling disorder (IGbD) combines features of Internet addiction (IA) and offline pathological gambling (PG), leading to complex and severe consequences in daily functioning, quality of life, and risk for psychological and psychiatric complications (including severe depression and suicidal behaviors). *Methods:* Two patients diagnosed with IGbD were evaluated using Gambling Symptom Assessment Scale (G-SAS) adapted for online PG and received individual, weekly cognitive-behavioral therapy (CBT) and naltrexone 50 mg QD for four months. *Results:* The first patient (male, 35-year-old) presented severe IGbD (G-SAS initial score=32), with monthly financial losses almost double compared to his income and more than 10 hours spent online daily for gambling activities. The patient was also diagnosed with major depressive disorder and borderline personality disorder. The second patient was also male, 27 years old, and had moderate severity of IGbD (G-SAS initial score 15), with over 4 hours daily spent online gambling. The patient also presented criteria for cannabis and nicotine use disorder. The initiation of CBT and naltrexone 50 mg/day led to improvement in the G-SAS scores at week 16 (-25.5%), but both patients were still gambling at the end-point. The daily functioning also improved, and the negative financial and time spent on gambling decreased by more than 50% during the treatment. *Conclusions:* CBT combined with oral naltrexone can be a useful therapeutic approach for patients with IGbD, but the duration of the treatment should be tailored to their specific needs (e.g., comorbidities, preferences, the severity of the gambling and its functional consequences, etc.).

Keywords: Internet addiction, gambling disorder, naltrexone, cognitive-behavioral therapy, major depressive disorder

P-198

Online game speculative experiences and problem gambling among youth in South Korea: Dual mediation effects of irrational beliefs and gambling attitude

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Background and aims: The purpose of this study was to test the effect of online gaming speculative experiences on problem gambling via irrational beliefs in and attitudes toward gambling. *Methods:* To address this objective, data of a total of 386 adolescents who currently played online games and had experience with betting games or gambling provided by the Korea Center on Gambling Problems were used, and mediation effects were tested with the PROCESS macro. *Results:* The results suggested that adolescents had speculative experience in online gaming, and that speculative experience influenced problem gambling; additionally, the relationship between speculative experience with online gaming and problem gambling was mediated by both gambling attitude and irrational beliefs. *Discussion:* Based on the study findings, policy and practical measures to assess the impact of gaming facilitating speculative experience, and for intervening in the case of gambling problems in youth, are discussed. *Conclusions:* This study investigated the impact of online game speculative experience in diverse forms and contents on problem gambling, and the mediation effects of primary predictors of gambling behavior, i.e., gambling attitude and irrational beliefs. Based on the results, it is necessary to screen, educate, and provide short-term interventions to adolescents with online game speculative experience. Additionally, strict assessments, regulation, and surveillance of speculative elements are necessary to preserve online gaming as a healthy play culture for the youth.

Keywords: youth, betting game, online game speculative experience, gambling attitude, irrational belief

P-349

Prospective effects of trait rumination and trait impulsivity on problematic gambling

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Background: Previous results showed emotional regulation difficulties in individuals with gambling disorder. Specific factors such as impulsivity and rumination especially contributed to problem gambling, potentially by the impulsive desire to alleviate negative mood states. Our recent findings also indicated that individuals with high impulsivity could ruminate about the consequences of their (re)actions. However, the longitudinal associations have not been investigated in detail. For this reason, we aimed to test whether the interaction of impulsivity and rumination measured at baseline (T1) could explain problematic gambling one year later (T2). _Method:_ The present study surveyed a nationally representative adult sample. In the two waves of data collection, 2777 participants were involved. However, in the current analyses, we have used the data of 1274 (688 males; mean age=28.11±4.28) participants who reported gambling in the previous year. Gambling severity was assessed by the Problem Gambling Severity Index; impulsivity was measured by Barratt Impulsiveness Scale, while rumination was assessed by the Ruminative Response Scale. _Results:_ Our results showed that the interplay of rumination and impulsivity at baseline significantly explained problematic gambling at T2 (β=0.302; $p<.001$), even after controlling for the effects of gender, age and problem gambling at baseline. _Conclusion:_ Our findings potentially indicate that impulsivity could have a long-term negative impact on problem gambling, even in a non-clinical sample, and highlight that a higher level of trait rumination might be an important factor in the relationship between impulsivity and problem gambling.

Keywords: problematic gambling, impulsivity, rumination, prospective, interaction

P-235

Radixin contributes to risk choice preference by regulating dendritic spines in the nucleus accumbens

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Maladaptive decision-making underlies many psychiatric disorders including gambling disorder. During rat gambling task (rGT), a rat version of Iowa gambling task, rats choose one of the four windows with different probabilities of reward/punishment contingencies. Dendritic spines comprise most of excitatory synapses in the nucleus accumbens (NAcc), and their morphology is closely related to synaptic strength. Ezrin-radixin-moesin (ERM) proteins play a role in cell shape determination by crosslinking F-actin with the plasma membrane, and the active ERM protein has been reported to facilitate spine immaturity. However, the role of ERM proteins in the brain has yet to be elucidated. This study examined the role of radixin, one of the ERM proteins mostly expressed in the NAcc, in the regulation of dendritic spine morphology and risky choice behavior in rGT. It was revealed that 'risk-seeking' rats have spine morphology with general reduction in the head diameters and spine lengths in the NAcc when compared to 'risk-averse' rats. The expression of phospho-mimetic pseudo-active mutant of radixin (Rdx-T564D) in the NAcc changed the spines' appearance to resemble that of the risk-seeking group. These structural changes induced by Rdx-T564D were associated with an increase in risky choice and a decrease in optimal choice in rGT. This study first time demonstrated that radixin contributes to change rats' decision-making in rGT by regulating dendritic spine morphology in the NAcc.

Keywords: rat gambling task, nucleus accumbnes, dendritic spine, radixin, risky choice

P-377

Struggling against Gambling Problem: Different gambling types, problem patterns, and coping of adolescent men and women based on network analysis

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The purpose of this study is to examine different gambling types and gambling problems of domestic youth men and women, and to explore how they cope through natural recovery behavior. To this end, network analysis was performed to 4,049 adolescents using longitudinal data, measured six times over three years. The analysis performed descriptive statistics, average, ratio comparisons, and R was used to analyze network estimation, visualization, centrality analysis, accuracy, stability and network difference comparison. As a result of the analysis, first, men showed a strong connection to the "online illegal gambling-sport Toto game," while women had a strong connection to the "Sports Toto game-Online Sports Toto game." Among them, "online illegal gambling" and "Internet casino games" was notable for male teenagers and "Online Sports Toto game" for female teenagers. Second, in the gambling problem, men's 'Loss of control' and 'Financial consequences', and women's 'Social consequences' were prominent. Third, in the case of natural recovery behavior, women showed a more active tendency to stop gambling than men. In actions to maintain recovery capabilities, men were more likely to block or break contact with the cause of the problem, and women were more likely to cope by focusing on relationships. Fourth, as a result of comparing network differences, structural differences according to gambling use between men and women and differences in connection strength according to gambling problems were confirmed over several points. Finally, the significance and implications of this study and suggestions for future research were discussed.

Keywords: adolescent problem gambling, gambling types, natural recovery behavior, network analysis

P-375

The effects of online gambling accessibility on gambling problems: Moderated mediating effects of gambling intention and exposure to COVID-19 risk

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Objective: The coronavirus pandemic has changed people's lifestyles mainly online and digital media, causing psychosocial problems. Therefore, this study aimed to confirm whether gambling intention mediates the path between online gambling accessibility and gambling problem, and whether COVID-19 risk exposure moderates the relationship between online gambling accessibility and gambling intention. _Methods:_ The survey was conducted twice at 6-month intervals through an online survey company. Data from 1,111 Korean adults (587 males, 524 females) who answered 'sometimes yes' or more to the gambling problem items. We used The COVID-19 risk exposure, online gambling accessibility, gambling intention, and Shortened Problem Gambling Severity Index. _Results:_ Online gambling accessibility was found to affect gambling problems through gambling intention, and it was confirmed that the exposure of COVID-19 risk moderated the relationship between online gambling accessibility and gambling intention. In other words, online gambling accessibility affects gambling problems through increased gambling intentions, and the more exposed to the coronavirus risk, the more gambling intentions increase. The results of this study suggest that the prolonged COVID-19 pandemic will act as an important risk factor for the occurrence of gambling problems, and that it is necessary to explore risk exposure to coronavirus in the treatment of gambling problems.

Keywords: gambling problem, online gambling accessibility, gambling intention, COVID-19 risk exposure

P-376

The effects of speculative experience in internet games on gambling problems: Moderated mediating effects of gambling beliefs and investment experience

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Objective: The purpose of this study was to confirm whether gambling belief mediated between the experience of triggering speculation in internet games and gambling problems, and whether investment experience moderated the speculative experience in games and gambling belief in this model. *Methods:* The survey was conducted twice at six-month intervals through an online survey company. The data of 1,017 Korean adults (542 males, 475 females, age range of 19~69 years) who answered gambling problem items with more than 1 point(sometimes yes) and both the 1st and 2nd surveys were finally analyzed. speculative experience in internet games, gambling beliefs, investment experience, and Shortened Problem Gambling Severity Index were used as tools for measurement. *Results:* It was found that the speculative experience in Internet games affects gambling problems through gambling beliefs, and the investment experience moderated the relationship between speculative experience in games and gambling beliefs. In other words, the speculative experience in Internet games affects the gambling problem through the increase of gambling belief, and the investment experience strengthens the path between the speculative experience and the gambling belief. The results of this study suggest that an experience similar to gambling in Internet games can serve as a gateway to gambling problems, and the emergence of cryptocurrency and the increase in investment experience due to stock market volatility can be a risk factor.

Keywords: gambling problem, speculative experience in Internet games, gambling belief, investment experience

P-154

The effects of the presence of others on risky betting in a laboratory gambling task among high-risk gamblers: A cross-over randomized controlled trial

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Introduction: We explored the effects of the presence of and cooperation with others on risky betting in a laboratory-based gambling task among high-risk gamblers. Specifically, we compared risky betting under solo, parallel, and cooperation conditions using a stratified randomized, cross-over design. Stratification was conducted according to participant age and gender. *Methods:* The participants were 40 Japanese adults (20 women, 20 men; mean age=46, SD=12.80). In the experiment, each participant conducted the Game of Dice Task (GDT) individually (solo condition), in parallel with another participant (parallel condition), and working together with another participant (cooperation condition). *Results & Conclusion:* Linear mixed modeling results showed that when we controlled for previously specified covariates, there were no significant differences among the solo, parallel, and cooperation conditions regarding risky betting (parallel: estimates=0.10, SE=0.79, p=.900; cooperation: estimates=0.95, SE=0.79, p=.232). However, post-hoc analysis showed a significant difference between the solo and cooperation conditions regarding the number of times participants chose the riskiest bet (parallel: estimates=0.18, SE=0.52, p=.739; cooperation: estimates=1.13, SE=0.53, p=.035). Thus, we found that neither the presence of nor cooperation with others decreased risky betting in the GDT among high-risk gamblers. However, we did observe that participants displayed the riskiest betting behavior (i.e., selecting the single choice) in the GDT during the cooperation condition, compared with the solo condition.

Keywords: problem gambling, harm reduction, other presence, cooperation with others

P-187

The use of causal inference methods in gambling research: A review

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Gambling prevalence surveys and other survey data are frequently used to identify risk factors for gambling related harms. While it is not usually possible to draw causal findings from cross-sectional data, there are a number of statistical tools that can be used to draw stronger causal conclusions by either controlling for sample selection bias, or matching cases to make conditions as close as possible to a randomized experiment. We conducted a structured review of the existing literature that has used causal inference methods on cross-sectional (e.g. propensity score matching, sample selection models, structural equation modelling) to look at how these have been used in gambling research to present. The findings highlight how these methods have been used in a range of different contexts, such as the effects of gambling products on problem gambling, to the effect of legislative changes on subsequent gambling behaviour, to the relationship between gambling and religiosity. We also highlight approaches such as coarsened exact matching and directed acyclic graphs that have been used in other disciplines but have not been commonly applied to gambling data.

Keywords: gambling, causal inference, propensity score matching, structural equation modelling

P-237

Validation of the Attitudes Towards Gambling Scale (ATGS) among Chinese gamblers

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Based on psychological theories, attitudes towards gambling is a major determinant of gambling behaviors, and negative attitudes towards gambling are postulated to protect gamblers from gambling disorder (GD). Understanding Chinese people's general attitudes towards gambling may facilitate mental health practitioners in early identification and prevention of GD. Thus, this study aimed to validate a measurement tool for such attitudes, which is a translated Chinese version of the Attitudes Towards Gambling Scale (ATGS) among Chinese gamblers. Convenience sampling was used to recruit Chinese adult gamblers to participate in an anonymous questionnaire survey which would provide data for evaluating the psychometric properties of this language version of ATGS. A total of 580 Chinese past-year gamblers (M_{age} = 34.07, SD = 13.36; 50.4% female) were included in the formal data analysis. This Chinese version of ATGS consisted of 10 items and displayed the expected two-factor structure (i.e., positive and negative effects of gambling) with satisfactory model fit (χ^2 (34) = 74.04, χ^2/df = 2.18; CFI = .92, TLI= .90, RMSEA = .06, SRMR = .06). Both factors had satisfactory internal consistencies (α = .76 and .81) and concurrent validity (e.g., significant positive correlations with attitude of negative gambling consequence [r = .18 and .39] and negative correlations with GD tendency [r = –.21 and –.11]). In addition, significant differences on these two factors of ATGS were found between probable GD group and non-GD group (p < .01). To conclude, the Chinese 10-item ATGS can provide a reliable and valid assessment for Chinese gamblers' general negative attitudes toward gambling.

Keywords: gambling attitudes, gambling disorder, psychometric properties, assessment, Chinese

P-369

Validation of the Korean version of the Multi-Dimensional Gambling Accessibility Sale

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Background: While gambling accessibility has been identified as one of the significant risk factors to increased gambling behavior, the accessibility has been limited to the physical environments. Gambling accessibility is a multi-dimensional construct composed of social, physical, and cognitive dimensions. The purpose of the present study was to validate the Korean version of the Multi-Dimensional Gambling Accessibility Scale (MDGAS) measuring three dimensions of gambling accessibility. This is the first study to deal with the social, physical, and cognitive aspects of gambling accessibility with a large community-based sample in South Korea. *Method:* In 2021 on July 1st thru 9th, this South Korea nation-wide community-based online survey was conducted. A total of 2,044 adults aged 19 and 69 participated in this study. A proportional quota (based on gender, age, and region) sampling method was utilized to represent the Korean community-based population. *Results:* The findings of confirmatory factor analysis indicated that the Korean version of the MDGAS like its English version has 13 items measuring the same three factors, including social, physical, and cognitive dimensions of gambling accessibility. The Korean version of the MDGAS also showed satisfactory internal consistency reliability and validity. *Conclusion:* This study has provided a valuable gambling accessibility scale in Korean language and is the first one that has tested and used one 13-item scale without differentiating specific types of gambling. The development of the Korean version of the MDGAS would facilitate research on the gambling accessibility and gambling behavior.

Keywords: gambling accessibility, the Korean version of the MDGAS, gambling behavior

P-164

Association between Compulsive Sexual Behavior and disapproval of sexual behavior in Japan

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Background: Cognitions associated with Compulsive Sexual Behavior Disorder (CSBD) need to be clarified. ICD-11 diagnostic criteria state that distress related to moral disapproval of sexual urges is not sufficient to meet diagnostic requirements. However, disapproval of pornography and sexual behavior may influence CSB. Previous studies have focused on disapproval related to religiosity. In Japan, religious beliefs are low. This study aims to clarify the relationship between moral disapproval and cognition about sexual behaviors and CSB in Japan. *Method:* An online survey was conducted with a sample representing Japan (N = 1,094, 49%women, Mage = 39.9, SD = 11.6). Participants were completed CSBD-19, Problematic Pornography Use Scale (PPUS), Negative Sexual Attitude Inventory (NSAI), and Questions about cognition about sexual behaviors. *Results:* Regression analyses were conducted. Sexual avoidance of the NSAI subscale and one item (I should only have sexual relations with people I really love) was negatively associated with CSBD-19 and PPUS (ps < .001). Sexual anxiety as subfactor of NSAI and one item (Sexual desires must be released) was positively associated with the CSBD-19 and PPUS (ps < .001). One item (It is morally bad to use pornography) was not significantly associated. For men and women, respectively, the results showed different. *Conclusions:* These results suggested that individuals with higher CSB scores may have an open mind about sexual behavior, be more sexually anxious, and believe that they must release their sexual desires. It was suggested that cognition should be considered in the treatment and assessment of CSB.

Keywords: compulsive sexual behavior, moral disapproval, cognition

P-300

Associative learning in Compulsive Sexual Behavior Disorder: The role of ventral striatum and orbitofrontal cortex in conditioning and extinction

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Background and aims: Compulsive Sexual Behavior Disorder (CSBD) was recently recognized in International Classification of Diseases (ICD-11; WHO), unfortunately its mechanisms are still unclear. Previous studies showed that associative learning might play a crucial role regarding the development of CSBD, so in our study, we aimed to verify appetitive conditioning and extinction processes in CSBD using brain functional magnetic resonance imaging (fMRI). *Methods:* Age-matched CSBD patients and healthy control subjects (n=32 in each group) participated in the instrumental conditioning and extinction tasks with erotic and monetary rewards. We analyzed fMRI regions of interest (ROIs), reaction times (RT), and participants' subjective ratings of arousal and valence toward abstract cues paired with rewards before and during conditioning as well as after extinction. *Results:* During conditioning, CSBD subjects showed increased value attribution (subjective) and motivation (RT) for both rewarding cues types suggesting general alteration of action-reward learning. Conditioning phase was related to hypoactivity of the ventral striatum and hyperactivity of the orbitofrontal cortex in CSBD for both rewarding cues compared to healthy control. The extinction process in CSBD differentiated cue types only in ventral striatum, which exhibited stronger deactivation from the early to the late phase of the task specifically for erotic cues compared to healthy control. *Conclusions:* Our results suggest that appetitive associative learning in CSBD is altered, reflected in behavioral reactions and neuronal activation in regions previously indicated in chemical and behavioral addictions. *Funding:* Supported by NCN-Grant-2016/21/N/HS6/02635

Keywords: CSBD, conditioning, extinction, fMRI, neuroimaging

P-356

Differences in pornography use and associated factors between religious and non-religious adolescents: A network analysis

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Background: Nearly half of children and adolescents aged 9–16 years have access to and may be viewing pornography. An estimated 37.7% of boys and 19.3% of girls may be at risk for developing Problematic Pornography Use (PPU). Religiosity may influence PPU. Regardless of religiosity, PPU in adolescents has been associated with loneliness, sexual risk behaviors, victimization, and gender stereotypes. The main objective of this study was to explore a network structure of pornography-use-related features in religious and non-religious adolescents. _Method:_ In network analyses, two separate networks were defined and tested for self-reported non-religious and religious participants. The set of nodes analyzed included variables measuring reasons for the pornography use, risky sexual behaviors, perceived familial relationships, PPU, sexual double standards, loneliness, and online sexual victimization. _Results:_ Statistically significant sociodemographic differences were observed between religious and non-religious groups of adolescents. The activation of the node "frequency of pornography use" impacted many variables modeled in the network (this node was also impacted by the activation of multiple other nodes). The node with the lowest relevance and linkage capacity in both groups was familial relationships. _Conclusions:_ This study used network analysis to identify differences between religious and non-religious adolescents. The findings suggest possible consequences of adolescent pornography use that should be examined in longitudinal studies.

Keywords: pornography, adolescents, religion

P-370

Hypersexual behavior in sexual assault survivors with PTSD: 3 cases of Written exposure therapy

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Introduction: The definition or diagnostic criteria for hypersexual behavior are still not constructed. Impulsive or risky sexual behaviors are often presented in survivors of sexual trauma. In this case study, the treatment experiences of the three patients with PTSD who have hypersexual behavior are presented, and clinical implication are discussed. *Methods*: Among patients diagnosed with PTSD due to sexual trauma through SCID and CAPS-5, patients with hypersexual behavior were included in the study. If patient had comorbid psychiatric disorders other than depression, they were excluded. Hypersexual behavior was assessed by clinician interview and CAPS-5 E2 criteria. 5-session Written exposure therapy was performed, and PTSD symptoms were re-evaluated at week 6 and 12. *Results:* Three patients completed five therapy session, as well as follow up assessment. CAPS-5 scores of all three patients were significantly decreased after the treatment. The score of E2 criteria was decreased to zero. In clinical interview, three patients reported that they didn't have hypersexual behavior at week 6 and 12. *Conclusion:* Although the manifested symptom is the hypersexual behavior, attention to trauma and PTSD is important in evaluating the hypersexual behavior. Additionally, in these cases, trauma-focused therapies can provide useful treatment approach for hypersexual beahvior as well as PTSD symptoms.

Keywords: hypersexuality, PTSD, sexual trauma, trauma-focused therapy

P-119

Internet pornography addiction – Therapeutic approaches and case management challenges

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Background and objective: While Internet gaming has been recognized by DSM-5 as a pathology that warrants further study, other Internet-related addictions involving shopping, pornography, social networking, etc., are still waiting for recognition of their nosological status. *Methods:* A narrative review focused on the available treatments for Internet pornography addiction (IPA) was performed through a search in three electronic databases (PubMed, Cochrane, Clarivate/Web of Science) using the paradigm "Internet pornography addiction" or "Problematic pornography use" and "treatment". Papers published between January 2000 and November 2022 were reviewed. *Results:* Self-help groups based on the 12-step framework have been adapted for IPA, and they are focused on achieving abstinence from pornography use. Another type of self-help group is represented by the forums within the "rebooting movement", which are also targeting abstinence. However, the reduction or limited use of pornography can also represent an objective for therapeutic interventions. Positive effects of abstinence have been reported in the short term in multiple domains, e.g., relationship engagement or increased insight into problematic behaviors. Studies exploring the efficacy of cognitive-behavior therapy (CBT) in IPA did not report a reduction of the IPA severity but improved quality of life and comorbid depression. Acceptance and commitment therapy led to improvements in IPA symptoms, but the sample was small (N=6 patients). *Conclusions:* No definitive conclusions can be made about the efficacy of certain therapeutic interventions, but there is a distinct possibility that self-help groups (either face-to-face or virtual reality-based) and third-wave CBTs may improve functional outcomes in patients with IPA.

Keywords: Internet addiction, Internet pornography addiction, 12-step intervention, cognitive-behavioral therapy, rebooting movement

P-420

Pornography as a coping mechanism: how does it start?

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Background: Along with technological advances, it is easy to access sexually charged content, namely pornography. Based on a survey conducted by the Indonesian Ministry of Health in 2017, as many as 94% of students had accessed pornographic content. This study wishes to impart the students' reasons for choosing pornography as a coping mechanism. _Method:_ A descriptive qualitative design with an in-depth interview with five medical students from Universitas Sriwijaya, Palembang, Indonesia. _Results:_ Coping mechanisms used by the informants are varies and does not depend on gender, age, or socioeconomic status. Three informants stated that they had tried other coping mechanisms, acknowledging that pornography was maladaptive, but it was the easiest, most satisfying, and most effective coping for them. Their first encounter with porn was experimental, and the intensity increased along with the stress increment. _Conclusion:_ Pornography is one of the coping mechanism chosen by the informants even though they know the coping is maladaptive.

Keywords: pornography, medical students, coping mechanism

P-425

Treatment of multiple paraphilias: The role of religiosity

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Background: Paraphilia disorder causing distress or impairment to the individual or paraphilia whose satisfaction has entailed personal harm or risk of harm to others. This case report details the challenge of managing multiple paraphilias. *Case presentation:* A religious man, Sumatran, 34 years old, married, presented with symptoms of compulsive sexual behavior like voyeuristic behavior and fetishism that lasted for about four years. The man showed prominent symptoms of major depression after others discovered his behavior and further reported him to the authorities. He was then diagnosed with multiple paraphilias along with major depression before being treated with biopsychosocial therapy with a religious approach. *Discussion:* Paraphilic disorders cause distress and suffering for the victim, the victim's family, and the patient himself and his family. There is not much literature that discusses the management of paraphilic disorders. The treatment for the patient has been going on for four months, and the patient is improving with the biopsychosocial therapy with a religious approach. The treatment choice is based on the very well development of the patient's superego, even though it is punitive. The patient received support from his wife and family, with well-educated background and a decent understanding of mental health. *Conclusion:* Research on comprehensive therapy for the management of paraphilic disorders is needed to overcome stigma and ensure the continuity of treatment to prevent legal problems that will arise.

Keywords: paraphilia, treatment, religiosity

P-281

A study on the types of changes in the development trajectory of smartphone addiction in Korean middle school students: Focusing on longitudinal change types and multidimensional harms

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This study aims to examine the changes in longitudinal smartphone addiction among middle school students and to investigate differences in multidimensional harms such as psychological status, physical development, learning attitude, and mental health according to the derived heterogeneous changes. For this purpose, it analyzed a three-year period (2018–2020) of cohort data from the Korean Children and Youth Panel Survey of 2018. After confirming the change in smartphone addiction of middle school students by performing latent class trajectory analysis, ANOVA and post-hoc test were used to examine how the difference in harmful effects appeared at the last point according to each type. In consideration of the model suitability (log likehood, AIC, BIC, SABIC), a model that classified the changes in smartphone addiction of middle school students into five latent classes was determined as the final model. In addition, there were significant differences in multidimensional categories such as physical development, psychological status, and mental health according to the latent class. These results suggest the need to prepare an intervention plan that considers the heterogeneous types of smartphone addiction and the resulting harmful aspects, rather than responding to smartphone addiction of middle school students through fragmentary policies.

Keywords: middle school student, smart phone addiction, latent class growth analysis, multidimensional harms

P-384

Effects of screen time on problematic behavior in children during the COVID-19 pandemic in South Korea: The mediation of parental stress

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Background: The prolonged Coronavirus disease 2019 (COVID-19) has decreased face-to-face classes worldwide, which has caused changes in the mental health of children and their parents. The global pandemic caused by COVID-19 has increased overall electronic screen-based media use and decreased physical activities in children. The aim is to analyze the effect of children's screen time on problematic behavior during the covid-19 period. *Methods:* A total of 186 parents from Suwon, South Korea, were recruited and they conducted online survey. The questionnaire included children's screen time, problematic behavior, and parental stress. Children's behavioral problems were evaluated using Behavior Problem Index (BPI). Parental stress was estimated by the Parental Stress Scale (PSS-10). *Results:* The smartphone screen time ($Z = 4.49$, $p < 0.01$), and the frequency of smartphone use ($Z = 2.75$, $p < 0.001$) were significantly correlated with children's behavioral problem score. As Children's smartphone screen time increased, children's problematic behavior increased. Parents' stress affected smartphone screen time and children's problematic behavior. *Conclusion:* This study suggests that children's smartphone screen time affects problematic behavior during the COVID-19 pandemic. Also, parental stress is related to the relationship between children's screen time and problematic behavior.

Keywords: COVID-19, child, screen time, problematic behavior, parental stress

P-207

Goal-directed versus stimulus-driven control in problematic smartphone users

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The excessive use of smartphones is associated with various medical complications and mental health problems. However, existing research findings on neurobiological mechanisms behind problematic smartphone use are limited. We hypothesized that problematic smartphone users would have alterations in functional connectivity between the DMN and attentional networks and that such alterations would correlate with the severity of problematic smartphone use. We investigated the functional connectivity in 30 problematic smartphone users and 35 non-problematic smartphone users, focusing on the default mode network (DMN) and attentional networks. We carried out group independent component analysis (group ICA) to decompose resting-state functional magnetic resonance imaging (fMRI) data into distinct networks. We examined functional connectivity using seed-to-seed analysis and identified the nodes of networks in group ICA, which we used as region of interest. We identified greater functional connectivity of the dorsal anterior cingulate cortex (dACC) with the ventral attention network (VAN) and with the DMN in problematic smartphone users. In seed-to-seed analysis, problematic smartphone users showed atypical dACC-VAN functional connectivity, which correlated with the smartphone addiction proneness scale total scores.
Our findings suggest that increased bottom-up attentional processing might play an important role in problematic smartphone use.

Keywords: smartphone use, functional MRI, Ventral Attention Network

P-286

Smartphone use has a different risk on suicide rates:
Findings from a cluster analysis of Korean adolescents

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Despite having no clear empirical basis, problems related to smartphone and substance use are often conceptualized into the same cluster of addiction. Thus, in this study, we attempted to identify whether smartphone and substance use belong to the same disorder category by exploring smartphone and substance usage patterns in adolescents. Additionally, we tried to evaluate the suicide risk according to the patterns of use. Data from 62,276 teenagers, aged 12–18 years, were obtained from the 13th Korea Youth Risk Behavior Web-based Survey. Cluster analysis was conducted on alcohol consumption, smoking, and smartphone usage patterns in early and late adolescents. Logistic regression analysis was performed to evaluate the suicide risk among these clusters. Three clusters were identified in both early and late adolescents: Healthy Control, where both substances and smartphones were used at normal levels; problematic smartphone use (PSU), where only smartphone use was excessive; and Substance Use, where only substance use was excessive. In addition, adolescents in the PSU cluster were noted to be at a significantly higher risk of suicide. Smartphone and substance use patterns in adolescents are clearly distinct from each other and have different effects on suicide rates. It can be concluded that problematic smartphone usage and substance abuse exhibit different clinical characteristics, at least in adolescents. Therefore, it was impossible to grasp the causality of data. Future studies are needed to further shed light on their causal relationship through longitudinal observation of various clinical symptoms.

Keywords: suicidal behavior, smartphone addiction, drinking, smoking, adoleescents

P-178

Social consequences of the behavior of a dependent person in modern Kazakhstan (on the example of the problematic use of a cell phone)

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In modern Kazakhstan, where changes are taking place too rapidly, addiction can be seen as an unconstructive protective mechanism for a person to adapt to rapidly changing living conditions. Our study focuses on problematic mobile phone use, which is a form of behavioral addiction. In a number of parameters, this subculture is comparable to the real society, which, as we assume, has a significant impact on the development of the personal and social identity of student youth, on their interpersonal communication skills, and on life values.

To test our hypothesis, we conducted a pilot study in which 70 first-year students of the Kazakh National University took part. The following methods were used as research methods: Mobile Phone Problem Use Scale A. Bianchi, J. Phillips methodology, "Six columns" of identity H. Petzold, S. Schwartz's value questionnaire, L. Michelson's "Communication skills test". The initial interpretation of the study data allowed us to confirm our hypothesis. Interrelations of various indicators of dependence on a mobile phone with various indicators of personal identity, values, and communication skills were identified. In further work within the framework of the study, we will develop recommendations for the prevention of addictive behavior from a cell phone for students. Thus, the problem of the social consequences of the behavior of an addicted person in Kazakhstan, associated with the problematic use of a cell phone, is certainly relevant today and deserves further close attention of the psychological community, which should be implemented both at the individual, interpersonal and social levels.

Keywords: problematic mobile phone use, personal and social identity of student, behavioral addiction

P-217

Strengthening inhibitory control modulates behavioral and neural correlates of craving for smartphone apps

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With growing awareness of the problematic use of smartphone apps, the need for prevention and intervention strategies for maladaptive use of smartphone is rapidly increasing. Based on the dual-process theory, increasing inhibitory control can strengthen control over the problematic use of smartphones. This study aimed to examine the effect of inhibitory control training on the implicit attitudes toward smartphone apps and the neural correlates underlying explicit evaluations of smartphone apps. Healthy adults scored higher than 24 pts on the Smartphone Addiction Questionnaire participated and randomly allocated to the nogo, go, or control group. The training task was devised modifying the conventional go-nogo task. The nogo group was manipulated to withhold responses to smartphone apps for entertainment and release responses to apps for productivity; this S-R assignment was reversed in the go group. Before and after the training, participants completed the implicit association task with various app words and the craving rating task with pictures of apps. The stop signal task was also performed to assess changes in inhibitory control. EEG was recorded using a 64-channel Compumedics Neuroscan system while participants were performing the rating task. Current data analysis indicated that the nogo group tended to report lower craving and increased negativity of the frontal N2 ERP component to smartphone apps for fun as compared with the other two groups. There were no differences in implicit attitudes towards apps across the groups. This study helps to elucidate a neurocognitive mechanism underlying the effect of inhibitory control training on craving regulation.

Keywords: smartphone addiction, inhibitory control, ERP

P-415

Stress, metacognitions, and short-form video addiction among Chinese: A multiple mediation model

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Recent years witnessed a drastic increase in the popularity of short-form video applications. While these videos are generally entertaining and serve recreation purposes, they also brought about other problems. Emerging short-form video addiction, which threatens individuals' physical, social and psychological health, is one such problem. Accumulating evidence suggests that stress is closely related to short-form video addiction, potential psychological mechanisms underlying such relation, however, remain unclear. This study examined the impact of stress on short-form video addiction through maladaptive metacognitions (i.e., positive beliefs about worry, negative beliefs about worry, and need for control). A convenient sample of 423 Chinese participants (61.5% female; Mage = 26.52, SD = 11.38, age ranged from 14 to 66 years) was recruited to complete an anonymous online survey voluntarily. Results of mediation analysis showed that both positive and negative beliefs about worry mediated the association between stress and short-form video addiction. Such mediating effect was not observed for need for control. Stress was positively associated with the three types of metacognitions ($\beta = 0.39$–0.66, $p < 0.001$), while positive and negative beliefs about worries were positively associated with short-form video addiction ($\beta = 0.12$-0.19, $p < 0.05$), but association between need for control and short-form video addiction was not significant ($\beta = 0.05$, $p = 0.32$). Our findings enhanced the understanding of risk-enhancing mediating effects of maladaptive metacognitions for short-form video addiction triggered by stress. They also point to the potential applicability of metacognitive-focused therapy for short-form video addiction.

Keywords: short-form video addiction, stress, metacognitions

P-253

The Effects of smartphone addiction on wellbeing in youth: Mediating effect of social isolation

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Wellbeing is the emotional status of feeling healthy and happy, and this is one of critical elements of reinforcing an individual's life ability and increasing the public health. On the other hand, the youth's wellbeing is reported to get affected by the use of digital media such as Internet, SNS and among them, the smartphone addiction is one of the severe social problems and it negatively affect the wellbeing. On top of that, the negative use of smartphone is said to be one of the dangerous elements causing the social isolation for youth. As this social isolation was found out to be a factor inhibiting people's wellbeing, it can be predicted that the negative use of smartphone would act as an element affecting the wellbeing. For this reason, this study would try to find out the smartphone addiction which affect the youth's wellbeing and the effect of social isolation caused in that process. This study used Hayes' PROCESS macro model 4 to test mediation effects of social isolation in the relationship between smartphone addiction and wellbeing in 196 youths (10~19 aged) in Jeonju, South Korea. The results of this study were as follows: first, smartphone addiction had a negative effect on wellbeing. Second, smartphone addiction had a positive effect on social isolation. Third, social isolation mediated the relationship between smartphone addiction and wellbeing. These results suggest differentiated interventions to promote youth's wellbeing based on preventing the smartphone addiction and social isolation.

Keywords: smartphone addiction, wellbeing, social isolation, mediating effect

P-284

The relationship between smartphone addiction, mindfulness and impulsivity

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To comparatively analyze mindfulness between young adults with smartphone addiction and healthy smartphone users and to explore whether mindfulness could affect smartphone addiction and whether impulsivity could mediate their association. Fifty-one young adults with smartphone addiction (24 male, 27 female; mean age: 27.5±6.8 years) and 53 healthy smartphone users (27 male, 26 female; mean age: 29.9±5.6 years) were included in this study. Mindfulness was evaluated through the Mindful Attention Awareness Scale and the Five Facet Mindfulness Questionnaire-Short Form (FFMQ-SF). Subjects were also evaluated for impulsivity via the self-reported Barratt Impulsiveness Scale (BIS). Relationships of smartphone addiction with mindfulness and impulsivity were analyzed using linear regression through mediation. Subjects with smartphone addiction had a lower level of mindfulness and but higher impulsivity than healthy users. Subjects with smartphone addiction showed more omission error rates in the continuous performance task compared with healthy users. The awareness subscale of FFMQ-SF had a significant effect on smartphone addiction scale. The attentional impulsiveness subscale of BIS showed a significant mediating effect. Smartphone addicts showed a low level of mindfulness. In particular, low awareness had a significant effect on smartphone addiction through mediation of high attentional impulsiveness. This finding suggests that mindfulness-based interventions might enhance executive control over their excessive smartphone use.

Keywords: mindfulness, smartphone addiction, impulsiveness

P-428

A study on the correlation of obesity with food addiction in schizophrenia

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Background: Many schizophrenic patients are obese. It is thought that schizophrenic patients become addicted to substances in order to self-regulate their depression or anxiety. With the progress in research on food addiction, it is necessary to examine the relationship between psychological factors, food intake, obesity, and food addiction for patients with schizophrenia; however, no studies have been conducted in Korea. Therefore, we investigated the prevalence of food addiction among schizophrenic patients attending day hospitals and outpatient clinics at a single mental hospital. Furthermore, we evaluated the correlation of food addiction with depression and stress perceptions among patients with schizophrenia. _Methods:_ The participants were schizophrenic patients who attended day hospitals and outpatient clinics. Their symptom severity was mild with a CGI-S score of 3 or less. We applied the Yale Food Addiction Scale 2.0, Perceived Stress Scale, and Zung Self Depression Scale. Statistical analysis was performed using the SPSS program. _Results:_ The rate of food addiction was 25.8%. A significant positive correlation was found between depression and food addiction. Moreover, the difference in food addiction between the moderately depressed group and the normal group was significant. _Conclusion:_ Greater clinical attention to food addiction among schizophrenic patients may be required considering its high prevalence. And depression could play a major role in food addiction in schizophrenia.

Keywords: schizophrenia, food addiction, depression, stress, obesity

P-373

Changes in food cravings, eating behavior, and quantitative electroencephalography (QEEG) following transcranial direct current stimulation (tDCS) in individuals with overweight and obesity: A pilot study

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The objectives of study were to evaluate the effect of tDCS on food cravings, eating, and variables that may affect food cravings and their control. We also examined the neurophysiological changes using QEEG after tDCS. Fifteen individuals with overweight and obesity were recruited. Participants received 14 daily tDCS for 2 weeks with a current of 2 mA for 30 minutes. The anode and cathode were placed over the right and left dorsolateral prefrontal cortex, respectively. Food cravings (Visual analog scale; General-Food Craving Questionnaire) and eating behavior (Yale Food Addiction Scale; Dutch Eating Behavior Questionnaire to assess emotional, external, and restrained eating) were measured before and after tDCS. Additionally, we investigated the changes in depression, anxiety, stress, impulsivity, and inhibitory control (Stop signal task, SST). The QEEG was also conducted twice before and after tDCS. Prefrontal tDCS was associated with significantly decreased food cravings and eating behavior especially in emotional and external eating. The scores of depression, anxiety, and stress decreased while scores of impulsivity and SST outcome measures showed no significant changes after tDCS. In addition, there were significantly decreased relative powers of QEEG in high beta band – that is widely thought to be related with stress and anxiety – after tDCS and the changes of them showed a significantly positive correlation with the changes of score of stress. Current findings provide preliminary evidence that prefrontal tDCS reduces food cravings and eating. In addition, our results suggest that tDCS could affect the emotional eating by reducing stress and food cravings.

Keywords: transcranial direct current stimulation; obesity; craving; eating; electroencephalography

P-236

Chronic food restriction produces locomotor sensitization to amphetamine

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Ghrelin, a hormone derived from the stomach, mainly functions to increase appetite. Interestingly, it also affects reward-seeking and addictive behaviors. We have previously demonstrated that microinjection of ghrelin into the nucleus accumbens (NAcc) core produces locomotor sensitization in amphetamine (AMPH) pre-exposed rat, when dopamine D1 receptor is co-activated. Here, we further investigated whether actual food restriction by itself may produce similar effects. Rats were housed with food pellets, either normal or restricted (acute or chronic). With this procedure, plasma ghrelin concentration was found to be significantly increased only in chronic food-restricted rats. After 2 weeks, when their locomotor activities were measured following challenge with AMPH (1 mg/kg, IP), only chronic food-restricted rats produced sensitized-locomotor activity. These results indicate that food restriction by itself is sufficient to produce locomotor sensitization to AMPH. We further examined whether there are any differential molecular changes in the NAcc under the chronic food-restriction conditions following an AMPH challenge, which will be discussed in the present presentation.

Keywords: ghrelin, food restriction, amphetamine, sensitization, nucleus accumbens

P-160

The effects of virtual reality-based approach-avoidance training (VR-AAT) on implicit and explicit chocolate preference

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Automatically activated impulse towards tempting foods is one of the major risk factors for unhealthy eating and overweight. Experimental interventions aimed at reducing automatic approach responses towards unhealthy foods have been developed and demonstrated mixed effects on food craving and consumption. An important factor in improving the effectiveness of experimental cognitive manipulation is the engagement of the participants. In this study, we designed virtual reality-based approach-avoidance training (VR-AAT) and tested its effect on implicit and explicit food preferences. Participants who liked chocolate were recruited and randomly assigned to either a training group or a control group. During the VR-AAT, participants were situated in a grocery environment where each food item appeared on each tray at the mart counter. Participants either pushed the food item towards the restock cart or pulled it toward their own shopping cart, depending on the color of the tray. The experimental group was manipulated to push chocolate items always, and the control group was to push and pull chocolate items with equal frequency. Before and after VR-AAT training, implicit association test (IAT) was performed to measure the implicit preference for chocolate. Participants were also asked to pick two of 8 different snacks after training. Preliminary data analysis of IAT showed that the training group showed reduced preference for chocolate. Yet there was no group difference in explicit food choice. These results may indicate a promising potential of VR that offers a more engaged environment during cognitive training to develop more adaptive automatic association with food items.

Keywords: virtual reality, approach-avoidance training, chocolate

P-412

A glance into the genetics of Body Dysmorphic Disorder (BDD)

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Background: Body Dysmorphic Disorder (BDD) is a complex, multifactorial disorder with various contributing risk factors like genetics. Despite limited studies on the heritability of BDD, there is evidence of the role of genetic risk factors in the disorder. This mini-review offers insight into the genetic aspects of BDD. *Method:* Literature studies search relevant articles using PubMed and Google Scholar published in the last ten years using the terms 'Body Dysmorphic Disorder' and 'Genetics'. *Results:* Genetic studies on BDD were mostly twin studies which showed that genetics accounted for 42%–44% of the disorder's prevalence. To this day, there is not yet a genome-wide association study on BDD. However, a small preliminary study showed a promising association between serotonin and GABAA-γ2 gene with BDD. *Conclusion:* Like the other related disorders in the Obsessive Compulsive Related Disorders (OCRD) in DSM-5, BDD has genetic factors contributing to its incidence. Although genetic studies on BDD are not prominent, the existing studies bring forth evidence of genetic involvement in BDD.

Keywords: Genetics, Body Dysmorphic Disorder, BDD

P-282

Biofeedback EEG in the prevention of compulsive work-related behaviors and reduction of their negative consequences: Preliminary results and barriers to providing support

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Background: The study aimed to examine the effectiveness of alpha wave relaxation training using Biofeedback EEG for reducing compulsive work-related behaviors, associated with difficulties in relaxing, and their negative consequences and investigate the potential barriers to providing support. Biofeedback EEG is effective in developing the ability to relax and reduce stress. Similar studies among people addicted to substances showed an anxiety reduction and decreased consumption. _Methods:_ The invitations to the screening surveys were sent to employees via employers and students via universities in Tricity in Poland. Individuals that scored above the established cut-off score on Bergen Work Addiction Scale or Bergen Study Addiction Scale received feedback with information about the possibility of participating in a free EEG-Biofeedback relaxation training. _Results:_ The preliminary results showed that 189 of 705 (27%) of the administration staff at one of the employers who all received invitation emails completed the survey. Of them, 53 (28%) had results above the cut-off score for work addiction, with 23 (43%) having the highest possible score on burnout and 47 (89%) having a very high score on burnout. However, only one person (> 2%) applied for the free training sessions. Results of the EEG-Biofeedback sessions will be available in the mid-2023. _Conclusions:_ Individuals at risk or addicted to work rarely seek help even when it is easily available and free. Compulsive overworking and its negative consequences need wider recognition to enable support-seeking among those affected. Early prevention programs constitute feasible cost/effective solutions, overcoming barriers typical for adult working populations.

Keywords: biofeedback EEG, prevention, study addiction, work addiction, workaholism

P-166

Prevalence, correlates, and comorbidities of Adult ADHD in a general population of South Korean Adults

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While there has been some research on adult attention deficit hyperactivity disorder (adult ADHD), studies examining nationwide prevalence of adult ADHD is still lacking. In this study, the prevalence, correlates, and psychiatric comorbidities of adult ADHD were examined using a nationally representative data. Out of the 5,511 subjects who participated in the National Mental Health Survey of Korea 2021, a total of 2,764 subjects aged from 18 to 49 years old were selected. The Korean version of the Adult ADHD Self-Report Scale, the Korean version of Composite International Diagnostic Interview (K-CIDI), and structured clinical interview for internet gaming disorder were used as diagnostic assessments. Chi-square test and regression analysis of complex samples were conducted using SPSS 28. The 6-month prevalence rate of ADHD in adults was 3.1%. The younger, unmarried group had the higher risk of having adult ADHD. Adult ADHD was also associated with several mental disorders within 12 months, including alcohol use disorder, alcohol dependence, depressive disorder, and Internet gaming disorder. In addition, as compared to non-ADHD group, ADHD group reported significantly lower levels of life satisfaction and resilience, and experienced higher levels of loneliness after adjusting for age and marital status. Adult ADHD is significantly comorbid with various mental disorders including alcohol use disorder and Internet gaming disorder. Moreover, adult ADHD is closely related to young adults' well-being. Therefore, an appropriate treatment and prevention system for young adults with adult ADHD is needed, especially for single individuals aged from 18 to 29 years old.

Keywords: Adult ADHD, comorbidity, Korea, NMHSK 2021

P-352

Tai Chi Chuan evidence related to impulsivity and impulse related disorders: A review

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Background: The purpose of this study was to review the evidence for the potential of Tai Chi Chuan or Tai Ji Quan (TCC) as a model of meditative movement in benefiting people with impulse disorders and provide guidance for future research. *Methods:* Eligibility criteria were original articles reporting TCC based interventions or including TCC techniques that provided any assessment on impulsivity or related measures, impulse control disorders or other psychiatric disorders related to impulsivity, e.g., addictive disorders, ADHD and other conduct disorders. Twenty-eight out of 304 studies initially retrieved studies were reviewed. The reports concentrated mostly on neurodegenerative conditions, cognitive decline and substance use disorders (SUD). *Results:* TCC had several positive effects over the cognitive domain resulting in improvements in memory, executive function, inhibitory control, attention and verbal fluency. *Conclusion:* These improvements were associated with changes in the brain plasticity, resting activity and other neurobiological markers. Albeit no study was found on the use of TCC in impulse control disorders or impulse related conditions, other than SUD, the findings suggest that TCC could be integrated in the toolbox of multidisciplinary approach to all such disorders.

Keywords: Tai Chi Chuan, impulsivity, addictive disorder, impulsive control, executive function

P-176

A handy tool to measure impulsivity:
The Brief Barratt Impulsiveness Scale Revised (BIS-R-10)

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Background: In large sample surveys, it is necessary to measure constructs efficiently and accurately. Impulsivity and deficits in self-regulation are regarded as key etiological factors in addictions. To measure impulsivity effectively, we developed a 10-item version of the Barratt Impulsiveness Scale Revised (BIS-R-10) based on our previous psychometric work on the factor structure of the original version of BIS-R-21. The main goal of this poster is to present the psychometric characteristics and concurrent validity of BIS-R-10. *Method:* We administered the BIS-R-10 in the National Survey on Addiction Problems in Hungary (N = 1385). We performed a series of confirmatory factor analyses (CFAs), tested the measurement invariance across sex, ran CFA with covariates, and finally tested concurrent criterion validity. *Results:* The original three-factor model (cognitive impulsivity/low self-regulation, behavioural impulsivity and Impatience/restlessness) fitted adequately. Because two factors correlated strongly (behavioural impulsivity and Impatience/restlessness; r=.98), we merged them into the extended behavioural impulsivity factor. The two-factor model yielded excellent model fit to data and showed measurement invariance across sex. The low cognitive impulsivity/high self-control was explained significantly by age and high school education; The extended behavioural impulsivity was explained by age, high school education and sensation seeking. The low cognitive impulsivity/high self-control was associated with work addiction only. In contrast, extended behavioural impulsivity was significantly associated with problematic exercise, work addiction, problematic use of the internet, and problematic gaming. *Conclusions:* BIS-R-10 is not only a promising brief measure, but it also helps disentangle the roles of self-regulation and behavioural impulsivity in behavioural addictions.

Keywords: impulsivity, psychometric study, Barratt Impulsiveness Scale

P-317

A transdiagnostic model of impulsive dimensions based on clinical reality – The ACEDA model

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Background: impulsivity is a characteristic of behaviors experienced as rapid and unplanned. More recently, impulsivity has been described as a multifaceted phenomenon striking through psychiatric diagnosis, including behavioral addictions. The aim of the current study was to test an empirical model based on the assumption that Impulsivity results from an imbalance between behavioral inhibitions forces (Affect, Cognition and Empathy) and behavioral activation drives (Desire and Aggression), the so-called ACEDA model from a transdiagnostic perspective. *Methods:* data from 2,884 individuals seeking treatment for behavioral addictions and impulse control disorders were included in a confirmatory factor analysis. *Results:* the global ACEDA model showed a ratio $\chi2/g.l.$ below 3, indicating an excellent global fit, negative (RMSEA and SRMR) and positive (CFI and TLI) indexes were respectively below 0.08, indicating that the empirical model does not deviate from an ideal theoretical model, and above 0.8, which is considered acceptable. Besides, the combined scores derived from the ACEDA model dimensions (negative affectivity, cognition instability, lack of empathy, desire and aggression) were able to significantly discriminate the between several behavioral addictions impulse control disorders. *Conclusion:* the ACEDA model is conceptually robust and has useful properties for identifying clinically relevant impulsive characteristics in a clinical context. It can be particularly useful for the management of behavioral addictions, impulse control disorder and other impulsivity related disorders from a transdiagnostic perspective.

Keywords: impulsivity, confirmatory factor analysis, behavioral addiction, impulse control disorder

P-329

An exploratory factor analysis of multiple addictive behaviors in a large sample of individuals seeking treatment for behavioral addictions and impulse control disorders

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Background: addictive behaviors tend to associate between themselves and the occurrence of one addictive disorder usually increases the odds of occurrence of another addictive disorder. However, the trends of association between them are not clear, particularly when considering a broader approach, including different behavioral addictions. *Methods:* data from 2,884 individuals seeking treatment for behavioral addictions and impulse control disorders were included in an exploratory factor analysis using varimax rotation. *Results:* the exploratory analysis found four factors: 1) need for affect and interpersonal interaction, comprising items assessing submission and/or dominance in romantic relationships akin to obsessional love and jealousy; 2) excitement seeking, comprising items related to alcohol abuse, drug abuse, compulsive sex and compulsive exercise; 3) soothing seeking, comprising items related to food addiction, compulsive buying and abuse of prescription drugs; 4) activation seeking, comprising items related to gambling, coffee and tobacco. The final model was largely significant ($p < 0.001$), with an overall percentage of variance explained above 60%, few item crossloadings between factors were observed, with all secondary factor loadings below 0.4. Finally, the scores derived from the exploratory factor analysis were able to significantly discriminate different behavioral addictions. *Conclusion:* addictive disorders can be arranged in different groups helping to predict potential associations and eventual substitution in the course of addiction treatment. Moreover, future confirmation of such grouping may shine some light into shared causalities and therapeutic approaches.

Keywords: behavioral addiction, substance use disorder, impulse control disorder, exploratory factor analysis

P-177

The relationship between the profile of education at the university and the propensity to Internet addiction among students

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Taking into account forecasts of growth of the prevalence of the Internet in Kazakhstan and worldwide, the increase in the share of youth among Internet users, the formation of Internet addiction and a quarter of users in the first six months after the beginning of the Internet, we can conclude that the study of the relationship of addiction to Internet addiction and basic characteristics of perception of the Internet, modern youth is an actual problem of modern psychology. *Purpose:* to identify the impact of the education profile at the university on the propensity to Internet addiction among students. Therefore, according to some indicators of the questionnaire "perception of the Internet" by E. A. Shchepilina, students of the Humanities profile are more likely to be Internet-dependent compared to students of technical profile. As shown by a detailed analysis of the responses according to the four integral scales: students of the Humanities are characterized by less purposeful behavior on the Internet, more motivated to use the Internet not only as a means of obtaining information, but also as a means of communication, especially with people of the opposite sex, more likely to animate the Internet and perceive it as better than real life, more often cease to notice the surrounding reality in comparison with technical students. According to the results of diagnosis by questionnaire K. Yang among Humanities students more often compared to students of technical profile training there are students prone to Internet addiction.

Keywords: Internet addiction, formation of Internet addiction, impact of the education profile

P-229

Do hoarding symptoms belong to the obsessive-compulsive spectrum? Evidence from a psychometric network approach

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Background and aims: Research over the past decade has suggested that hoarding symptoms (i.e., persistent difficulty in disposing of or separating from possessions) are not necessarily part of the obsessive-compulsive disorders (OCD) spectrum. This has led to the conceptualization of OCD and hoarding disorder as separate entities in more recent mental disorders classification systems (e.g., DSM-5). In the present study, we used a psychometric network approach to test whether hoarding symptoms and OCD-related symptoms (e.g., washing, checking) are distinct constructs. *Methods:* Four independent samples totaling 1,780 participants from the general population completed the revised version of the Obsessive-Compulsive Inventory (OCI-R). The OCI-R is an eighteen-item psychometric instrument that assesses six symptom domains of OCD, namely washing, checking, obsessing, neutralizing, tidying, and hoarding. Data were analyzed by performing network analyses. *Results:* We showed that five of the six symptoms assessed by the OCI-R had comparable between-symptom associations, whereas only hoarding symptoms had significantly weaker associations within the symptom network. *Discussion and conclusions:* Overall, our results reinforce and support the conceptualization of hoarding symptoms as a separate entity from OCD.

Keywords: hoarding disorder, network analysis, obsessive-compulsive disorder

P-357

Impulse control disorder and addictive behaviors in compulsive buying disorder patients within and without the bipolar spectrum

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Background: compulsive buying disorder (CBD) is characterized by unrestrained chronic buying behavior leading to accruing debts, personal and interpersonal damage. CBD is usually regarded as a behavioral addiction within the broader realm of impulse control disorders (ICD). However, unrestrained buying is also a hallmark of manic episodes from the bipolar disorder (BD) with a suggestion that individuals with such behavior may fall within the bipolar spectrum. The goal of the present study was to investigate the association between CBD with other behavioral addictions and ICD in a sample of individuals seeking treatment for CBD with and without criteria for inclusion in the bipolar spectrum (BS). *Method:* 414 CBD individuals were included, 296 (71.5%) did not fulfill any criteria for bipolar disorder (non-BS-CBD) and 118 (28.5%) reported occasional symptoms, but without reaching the diagnostic threshold for BD (BS-CBD). *Results:* the impulsive behaviors/ICD identified (N=414) were anger issues/intermittent explosive disorder (17.6%/8.2%), Internet abuse/ Internet addiction (15.2%/4.1%), skin-picking /excoriation disorder (11.4%/3.1%), gambling/gambling disorder (11.1%/2.7%), excessive sex/hypersexuality disorder (10.1%/1.9%), stealing/kleptomania (7%/3.1%), hair-pulling/trichotillomania (5.6%/2.4%), arson/pyromania (1.0%/0.5%) and videogame abuse/videogame disorder (0.5%/0.2%). Compared to non-BS-CBD, BS-CBD group reported greater difficulty in dealing with anger issues (OR=3.86), stealing (OR=2.99), excessive sex (OR=2.09) and skin-picking (OR=2.03), they also reported greater frequency of intermittent explosive disorder (OR=2.17) and kleptomania (OR=6.16), all ps<0.05. *Conclusion:* CBD may be a heterogenous category, treatment-seeking CBD individuals overlapping with the bipolar spectrum represent a subgroup of patients with a wider array of impulsive behaviors and specific therapeutic needs.

Keywords: compulsive buying disorder, behavioral addiction, impulse control disorder, bipolar spectrum

P-427

Is non-sucidal self-injury behavior an addictive disorder?

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The purpose of this study is to understand the meaning and context of adolescents' experiences of repetitive self-injurious behavior and to suggest addictive properties of behavior. In-depth interviews were conducted by using a semi-structured questionnaire for six adolescents who showed repetitive behavior of self-injury. and the data were analyzed using Colaizzi's phenomenological method, and classified attributes in the aspect of the diagnostic criteria of DSM-5 addictive disorder. Among 390 statements of participants, 268 semantic units were identified and 26 sub-themes and 9 categories were derived by gathering common meanings from 268 semantic units. The nine categories are 'approaching the raging pain', 'self-consolation for not being satisfied', 'breathing pores being pierced', 'resolving on one's own and hiding it', 'extreme struggle that gets worse', 'violence towards myself that is getting bigger', 'action and reaction', 'continuous longing for self-harm', and 'process of moving forward with pain'. And in the aspect of the diagnostic criteria of DSM-5 addictive disorder, at least 6 symptoms were supported by the 9 categories. Our results suggest that Adolescents chose self-injury as the best way to get out of unbearable pain and had the meaning of signals asking for help and noticing their pain and that Self-injury behavior seems to have lots of addictive disorder properties. Therefore, we need to develop various systematic intervention programs to help them break away from addiction tendencies and explore effective coping methods. Further evaluation and research are needed.

Keywords: self-injury, addiction, phenomenology

P-179

Level of anxiety in patients with synthetic dependence in departments of dependence therapies

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In our modern society, more and more new types of drugs have begun to appear, synthesized by ordinary people. Due to their relative cheapness and ease of purchase, they are extremely popular among young people. And as we know, the use of synthetic drugs destroys health, both physiological and psychological. Paranoid and anxiety disorders can often be observed at all stages of the course of drug dependence or combined with them. The relationship of addiction to depression and anxiety is a frequent subject of discussion in the psychological community. Especially at the initial stages of treatment in various compulsory hospitals or rehabilitation centers. The purpose of the study is to study the level and characteristics of anxiety in groups of people dependent on synthetic drugs in a narcological hospital.

Methods: Ch.D. Spielberger to identify personal and situational anxiety; Hospital Anxiety and Depression Scale. The study involved people aged 25 to 40 who use synthetic drugs. The sample consisted of 40 subjects. As a result of the study, it was possible to draw the following conclusions: many study participants were found to have high levels of situational anxiety; in comparison with situational anxiety, the level of personal anxiety varied within the normal range. And as a result of the "Hospital Anxiety and Depression Scale", the majority of 57% of the subjects showed signs of a high probability of anxiety and depression levels. Such factors pose an important task of conducting psycho-correctional programs.

Keywords: synthetic drugs, anxiety, narcological hospital

P-180

Relationships of emotional support and emotional intelligence in alcohol dependent people

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The ability to realize one's emotions, its shades, the degree of influence of emotions on behavior, in the families of alcohol-addicted people, unfortunately, is minimally developed. In addition, the ability to arbitrarily regulate one's emotional state in the process of interaction with other family members is practically absent in such dysfunctional families. The addiction to alcoholic beverages of one of the family members has a negative impact on the well-being, harmony and mutual understanding of the whole family and the lack of emotional support for the family. The purpose of the study is to study the level of emotional intelligence in groups of people dependent on alcohol in relation to the lack of family emotional support.

Methods: Lucin's Emotional Intelligence Test; Psychological climate in the family. The study involved patients of the narcological hospital aged 30 to 50 years. The sample consisted of 70 respondents. As a result, the study made it possible to draw the following conclusions that many participants in the study have a low level of control and understanding of their own and others' emotions. The intra-personal emotional intelligence scale turned out to be slightly higher compared to the interpersonal emotional intelligence scale, which tells us that in comparison they better understand and manage their emotions. The indicator of the psychological climate in the family also gave low results. The correlation analysis revealed a weak direct relationship between emotional intelligence and emotional support in a dysfunctional family environment.

Keywords: addicted to alcohol, emotional support from the family, emotional intelligence

P-210

Evaluation of DigiWellPro educational intervention to professionals' digital well-being competence

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Background: Digitalization has affected to people's life permanently. Digital gaming and social media use has become an integral part of life especially among adolescents. For some people the use of digital devices or platforms can be so abundant that it affects to well-being negatively. Professionals who work among adolescents (e.g., teachers, school nurses) are in special position considering health promotion among youths. That is why it is important to develop their digital well-being competence. *Method:* The study aimed to assess the feasibility and effects of DigiWellPro educational intervention. This study was performed as a pre-post study design with a control group. Participants (n = 100) were professional who worked among adolescents. Participants completed 3 ETC online course which aimed to improve professionals' competence to support adolescents' digital well-being, recognize the problematic digital gaming and social media use. Professionals' digital well-being competence was measured before and after the intervention with a scale, which was developed for this study. *Results:* The results will be presented in the conference. *Conclusions:* Conclusions will be announced in the conference. This research will provide new information how digital well-being intervention affects to professionals' digital well-being competences. The results can be used in the health care and developing education for professionals.

Keywords: digital well-being, health promotion, education, intervention, competence

P-277

AR/VR treatment for behavioural addictions

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Background: The use of augmented reality (AR) and virtual reality (VR) to address mental health issues such as anxiety, substance use disorders and gambling disorders has been growing. However, research exploring the use of AR/VR in the treatment of behavioural addictions has not been consolidated. This scoping review aims to provide an overview of existing literature on AR/VR interventions for behavioural addictions. *Methods:* This scoping review will be conducted based on the framework first proposed by Arksey and O'Malley, later refined by Levac et al., and further outlined in the JBI Manual for Evidence. The literature will be searched in six peer-reviewed databases: CINAHL, PsychInfo, PsycArticles, Ovid Medline, PubMed and Web of Science. Google Scholar will be used to complement the search. Studies will be screened by two reviewers, independently, based on inclusion criteria; discrepancies will be resolved by a third reviewer. *Results:* Data will be presented in a table and by a narrative summary. *Conclusions:* The findings of this scoping review will benefit researchers and practitioners interested in using VR/AR to treat behavioural addictions.

Keywords: behavioural addictions, virtual reality, augmented reality, scoping review

P-340

Evaluation of clinical and occupational factors, psychosocial support and access to the primary network for planning the outpatient discharge of patients from an impulse control disorders psychiatric service

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Background: Behavioral addictions (BA)are specific conditions usually treated on specialized psychiatric services. The discharge from specialized services is often difficult. The present research analyzes factors associated with difficulties for outpatient discharge from a specialized BA service. *Method:* A preliminar questionnaire with qualitative and quantitative questions was applied to patients under treatment on a specialized BA outpatient clinic. The quantitative data is descriptive of the sample, the qualitative analysis was performed according to the discourse of the collective subject method. *Results:* All patients were diagnosed with BA disorders, under treatment for 5 years or more and stabilized or remitted for more than 1 year. The group consisted of 14 participants, 8 women (57.1%) and 6 men (42.9%), aged approximately 37 to 77 years. 5 regularly attend the Basic Health Unit and 9 don't. Regarding feeling safe to be discharged to continue their follow-up on a general psychiatric outpatient unit at the Basic Health Unit, 6 patients said they did not feel secure at all, 1 somewhat secure, 3 reasonably secure and 2 completely secure. The social network support and occupational support were also analyzed. The qualitative analysis describes the distrust on the quality of general psychiatric support quality and lack of social network support as the main reasons related to the resistance to discharge from the specialized service. *Conclusions:* Stimulating the development of a healthy social network and cooperation with general psychiatric services are important factors for a safe discharge from specialized behavioral addictions services.

Keywords: behavioral addictions, discharge, occupational therapy, psychosocial support, social network

AUTHOR INDEX