


Review Article

Integrating gaming disorder into early intervention in first-episode psychosis – current knowledge and future directions

Maxime Huot-Lavoie^{1,2,3} , Olivier Cobeil^{2,3,4}, Olivier Roy^{1,2,3}, Sophie L'Heureux^{1,3}, Magali Dufour⁵, Josiane Lavallée³, Laurent Béchard^{2,3,4,6}, Sébastien Brodeur^{1,2,3}, Marie-France Demers^{2,3,4}, Marc-André Roy^{1,2,3} and Yasser Khazaal^{7,8}

¹Faculty of Medicine, Université Laval, Quebec city, QC, Canada, ²CERVO Brain Research Centre, Université Laval, Quebec city, QC, Canada, ³Clinique Notre-Dame des Victoires, Centre intégré universitaire en santé et services sociaux de la Capitale Nationale, Québec city, QC, Canada, ⁴Faculty of Pharmacy, Université Laval, Québec city, QC, Canada, ⁵Department of psychologie, Université du Québec à Montréal, Montreal, QC, Canada, ⁶Faculty of Nursing, Université Laval, Québec city, QC, Canada, ⁷Department of Psychiatry, Lausanne University, Lausanne, Switzerland and ⁸Lausanne University Hospital Research Center, Lausanne, Switzerland

Abstract

Gaming disorder (GD) is increasingly recognized as a clinically significant condition, yet its implications in first-episode psychosis (FEP) remain largely unexplored. This perspective article focuses on the intersection of GD and FEP, highlighting key diagnostic and treatment challenges, including symptom overlap that complicates differential diagnosis, the absence of validated screening tools, and difficulties in sustained patient engagement. Drawing insights from substance use disorder management in FEP, we propose a preliminary clinical framework for integrating GD assessment and intervention into early intervention in psychosis programs. This approach prioritizes comprehensive evaluation, patient-centered care, and a harm-reduction model that supports digital well-being. Addressing GD in FEP populations is crucial for optimizing functional recovery and promoting a holistic, recovery-oriented approach to psychiatric care. Further research is needed to refine screening tools and validate tailored interventions in this population.

Keywords: digital well-being; early intervention; first-episode psychosis; gaming; gaming disorder; psychotic disorders

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Introduction

Gaming disorder (GD) was recognized by the World Health Organization in the ICD-11 as a behavioral addiction, characterized by impaired control over gaming, prioritization of gaming over other activities, and continued gaming despite negative consequences (WHO, 2019). A meta-analysis estimates its prevalence at 3.3% in the general population (Kim *et al.* 2022). While gaming can enhance cognitive functions and foster social connections (Granic *et al.* 2014, Quiles & Verdoux, 2023), GD is associated with anxiety, depression, functional impairments, interpersonal conflict, social withdrawal, and academic or occupational difficulties (Ji *et al.* 2022, Richard *et al.* 2020).

GD frequently co-occurs with psychiatric conditions, including attention-deficit/hyperactivity disorder, mood disorders, and anxiety disorders, though causal relationships remain unclear (Ahmed *et al.* 2022, VAN *et al.* 2014, Hygen *et al.* 2020, Lee *et al.* 2021, Gonzalez-Bueso *et al.* 2018, Huot-Lavoie *et al.* 2023). However, its prevalence, clinical impact, and mechanisms of

co-occurrence with more severe psychiatric conditions, particularly psychotic disorders, remain poorly understood (Huot-Lavoie *et al.* 2022, González-Bueso *et al.* 2018).

Psychotic disorders and the importance of early intervention

Psychotic disorders encompass multiple symptom domains, including positive symptoms (delusions, hallucinations), cognitive and disorganized symptoms, mood-related symptoms (anxiety, depression), agitation and hostility, negative symptoms (diminished affect and reduced motivation), and manic symptoms, which are more common in bipolar spectrum or schizoaffective disorders (Lehoux *et al.* 2009, American Psychiatric Association, 2013).

Reducing the duration of untreated psychosis is critical for improving long-term clinical outcomes (Marshall *et al.* 2005, Perkins *et al.* 2005, Correll *et al.* 2018). Early intensive, age-appropriate intervention programs have demonstrated superior outcomes compared to standard treatment, particularly for first-episode psychosis (FEP) (Correll *et al.* 2018).

The need for a comprehensive approach to recovery

Pharmacological treatments play a critical role in FEP management, achieving remission of positive symptoms in approximately

Corresponding author: Maxime Huot-Lavoie; Email: maxime.huot-lavoie.1@ulaval.ca
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80% of patients within the first year (Robinson *et al.* 2004, Malhi *et al.* 2010). However, symptom remission does not equate to full recovery, as many individuals experience persistent functional impairments, social withdrawal, and difficulties in personal and occupational domains. When broader recovery measures – such as social reintegration, autonomy, and life satisfaction – are considered, only 21% with FEP achieve full recovery (Hansen *et al.* 2023). This underscores the need for holistic approaches that extend beyond symptom management to encompass functional, social, psychological, and personal health dimension (Roy MA *et al.* 2024).

In addition to many issues associated with psychotic disorders, comorbidities significantly influence recovery engagement and outcomes (Wade *et al.* 2007, Wisdom *et al.* 2011, Blanchard *et al.* 2000, Volkow, 2009, Thoma & Daum, 2013). Substance use disorders (SUD), which are highly prevalent in psychotic disorders (Baker *et al.* 2012, Hunt *et al.* 2019, Rygaard Hjorthøj *et al.* 2014, Sara *et al.* 2014), are associated with earlier psychosis onset (Donoghue *et al.* 2014, Di Forti *et al.* 2014, Addington & Addington, 2007), greater symptoms severity (Wade *et al.* 2006, Sorbara *et al.* 2003, Abdel-Baki *et al.* 2017, Addington & Addington, 2007, Harrison *et al.* 2008, Wade *et al.* 2007, Linszen & van Amelsvoort, 2007), higher relapse rates (Malla *et al.* 2008, Alvarez-Jimenez *et al.* 2012, Foti *et al.* 2010, González-Pinto *et al.* 2011, Lambert *et al.* 2005), poorer social and occupational functioning (Abdel-Baki *et al.* 2017, Hunt *et al.* 2019, Barrowclough *et al.* 2009, Wade *et al.* 2007), and an increased risk of treatment disengagement (Conus *et al.* 2010, Miller *et al.* 2009, Alvarez-Jimenez *et al.* 2012, Wade *et al.* 2007). Consequently, SUD is a critical focus of early psychosis intervention (Stavely, 2013, sociaux, 2017, Hughes *et al.* 2015).

Expanding the focus to gaming disorder and care model

Given the impact of SUD on FEP outcomes, attention is shifting toward other addictions that may similarly impede recovery. Emerging evidence suggests that individuals with psychotic disorders may be at increased risk for GD, as both conditions frequently emerge during adolescence or early adulthood, disproportionately affect males and are linked to social withdrawal and social anxiety disorders (Hartz *et al.* 2014, Roy *et al.* 2015, Fusar-Poli *et al.* 2017b).

Preliminary findings from a longitudinal study in an FEP clinic in Quebec, indicate high gaming engagement in this population, with 37.12% playing video games several times a week, and GD prevalence (7.04%) more than doubling that of the general population (3.03%) (Huot-Lavoie M *et al.* 2024). GD may complicate FEP presentation, as its core features – social withdrawal and reduced motivation for other activities – mimic negative symptoms of psychosis, potentially leading to under-recognition in clinical settings.

In order to help these patients this paper aims to 1) summarize current knowledge on the co-occurrence of GD and FEP, 2) identify barriers to GDs recognition and management in early psychosis care, and 3) propose strategies for integrating GD assessment and treatment into early psychosis intervention. To achieve this, both GD and SUD literature will be used. Applying lessons from SUD interventions, targeted GD interventions within early psychosis care frameworks may enhance functional outcomes and recovery.

Gaming disorder and psychosis: current evidence

Despite increasing recognition of GD's clinical implications, research on its co-occurrence with psychotic disorders remains limited. A recent scoping review shows that the available literature only consists of case reports and cross-sectional studies, precluding a definitive establishment of temporality between GD and psychotic disorders, let alone elucidating potential causal mechanisms (Huot-Lavoie *et al.* 2023). Preliminary evidence suggests a bidirectional relationship, with dynamic fluctuations in both psychotic symptoms and gaming behaviors over time.

Some cases document psychotic episodes coinciding with increased gaming behavior in young adults (Angane *et al.* 2021, Rizzo *et al.* 2015), while others report psychosis onset following abrupt cessation of excessive gaming in the same population (Ghosh & Sarkhel, 2018, Paik *et al.* 2014), mirroring patterns in SUDs, where both excessive consumption and withdrawal can trigger psychotic episodes (Donoghue *et al.* 2014, Di Forti *et al.* 2014, Addington & Addington, 2007, Fruensgaard, 1976).

A recent case series by Ricci *et al.* (2023) described two individuals presenting with both psychotic symptoms and GD, in whom antipsychotic treatment led to symptomatic improvement in both conditions (Ricci *et al.* 2023). However, larger prospective studies are needed to clarify the nature, directionality, and clinical significance of this interaction.

Potential benefits of video game use

Generational biases, such as “juvénioia,” may contribute to the negative framing of gaming, as emerging technologies and cultural trends are often met with skepticism by older generations (Finkelhor, 2011). Discourse surrounding video games frequently emphasizes their addictive potential, yet cultural attitudes toward gaming vary widely. In some societies, particularly those that celebrate e-sports, gaming is regarded as a prestigious and skill-based activity. Acknowledging these diverse perspectives is essential for a balanced consideration of gaming's potential benefits.

A systematic review reported that therapeutic video game can improve cognitive and social functioning to a degree comparable to established cognitive remediation therapies for psychotic disorders (Quiles & Verdoux, 2023). While promising, the evidence remains methodologically heterogeneous, necessitating further research (Quiles & Verdoux, 2023). Beyond structured interventions, gaming may serve as an adaptive coping strategy for individuals with psychotic disorders. Self-stigma – the internalization of negative societal perceptions of mental illness – is linked to increased social withdrawal, depressive symptoms, and anxiety. One study suggests that video game engagement may mitigate these symptoms in individuals with psychotic disorders experiencing self-stigma (Chang *et al.* 2021).

Preliminary qualitative data suggest that some patients engage in gaming to manage anxiety associated with positive psychotic symptoms (Huot-Lavoie *et al.* 2025). As one participant described, “During my psychotic episodes, gaming helped me stay focused on a single task, allowing me to ignore what I was hearing or seeing. As soon as I sensed the first signs, like dizziness or voices, I would start playing as a preventive measure.” (Qualitative data from an ongoing study funded by the Canadian Institutes of Health Research (Grant # 509922) and the Fonds de Recherche du Québec – Société et Culture (Grant# 2024-0UER-339171)).

While excessive gaming may precipitate psychotic episodes in some cases, GD may also emerge as an adaptive strategy for coping

with self-stigma or symptom regulation. Addressing GD in FEP requires a harm-reduction approach, prioritizing digital well-being over strict abstinence (Vanden Abeele, 2020).

Challenges in addressing gaming disorder in first-episode psychosis

Early psychosis management prioritize stabilizing psychotic symptoms through pharmacological and psychosocial interventions, often leading to under-recognition of co-occurring conditions like GD. Once acute stabilization is achieved, it is essential to assess and manage comorbidities that may mimic or exacerbate residual symptoms, as this is critical for optimizing recovery (Corbeil *et al.* 2021a).

Barriers to engagement in mental health care

Sustained engagement in mental health care remains a significant challenge in addressing GD in FEP. A core feature of psychotic disorders is impaired awareness of illness (Mcevoy *et al.* 2006, Parellada *et al.* 2011, Abdel-Baki *et al.* 2012, Doyle *et al.* 2014), a difficulty also observed in GD (Jeong *et al.* 2018). Whether these awareness deficits are linked or coincidental in patients with both conditions remain unclear, but they complicate structured follow-up and long-term recovery.

Social and environmental factors, including unstable housing and financial insecurity, often take priority, leading to GD being overlooked (Conus *et al.* 2010, González-Blanch *et al.* 2015). These barriers are particularly pronounced in early psychosis, when functional impairments are most severe (Abdel-Baki *et al.* 2012).

Additionally, substance use is a well-established predictor of treatment disengagement in FEP, further complicating the establishment of stable therapeutic relationship (Stowkowy *et al.* 2012, Doyle *et al.* 2014). The absence of family involvement has also been linked to higher dropout rates and poorer engagement with mental health services (Doyle *et al.* 2014, Abdel-Baki *et al.* 2012, Mascayano *et al.* 2021). Family beliefs about mental illness and its treatment play a critical role in shaping patients' perception of their disorder and motivation to engage in care (Franz *et al.* 2010, Lester *et al.* 2011).

A strong therapeutic alliance is pivotal for treatment adherence (O'Brien *et al.* 2009, Day *et al.* 2005, Lacro *et al.* 2002). However, establishing this alliance in early psychosis is challenging. Only 14.2% of patients develop a good therapeutic alliance within the first month of treatment, increasing to just 29.8% at six months (Frank & Gunderson, 1990). Therefore, prioritizing therapeutic relationship building is essential for mitigating disengagement and supporting long-term recovery (Frank & Gunderson, 1990).

Pharmacological treatment challenges in FEP patients

While pharmacological treatments are essential in FEP, they may contribute to the development of behavioral addictions such as GD. Aripiprazole, a third-generation antipsychotic, has been associated with problem gambling, possibly due to its partial agonism at dopamine D3 receptors (Corbeil *et al.* 2021b, Williams *et al.* 2024, Gatto & Aldinio, 2019, Seeman, 2015). Antidepressants and psychostimulants (e.g., amphetamines, methylphenidate), when used in individuals with bipolar or schizoaffective disorder, can precipitate manic episodes, which may potentially present as increased engagement in gaming and gambling (Gitlin, 2018, Perugi *et al.* 2017).

Additionally, the striatal dopaminergic blockade induced by antipsychotics may contribute to dysphoria, which is associated with reduced treatment adherence and an increased propensity for substance use – and potentially behavioral addictions – as a form of self-medication (Awad *et al.* 1995, Chue, 2006, Trifilieff & Martinez, 2014, Thompson *et al.* 2013, Yakovenko *et al.* 2016).

The use of performance-enhancing substances, primarily stimulant-based, to sustain prolonged gaming sessions is widespread, further exacerbating GD and amplifying associated physical and mental health risks (Burleigh *et al.* 2019, Ip *et al.* 2021, Slyk *et al.* 2023, Ream *et al.* 2011, Lakhan & Kirchgessner, 2012).

Given these complexities, a comprehensive approach to GD management in FEP patients must integrate pharmacological considerations, substance misuse, and behavioral addictions to ensure effective and holistic care.

Challenges related to GD diagnosis

A major challenge in diagnosing GD is the low rate of help-seeking within this population. Unlike SUD, where physical signs of intoxication or withdrawal are externally observable, GD lacks overt symptoms, making it less apparent to clinicians and families.

Many individuals experiencing psychological distress may also perceive gaming as more beneficial than professional intervention (van der Schyff *et al.* 2023, von der Heiden *et al.* 2019), while others may conceal problematic gaming behaviors to avoid losing a primary coping strategy (Chang & Lin, 2019, Schneider *et al.* 2018). Additionally, increased gaming hours have been linked to lower help-seeking efficacy, suggesting that gaming can serve as an avoidant behavior that further deters healthcare engagement (van der Schyff *et al.* 2023). GD itself reinforces gaming as a dominant activity, leading individuals to prioritize it over other aspects of daily life, including seeking professional support.

In the context of FEP, these challenges are compounded by existing barriers to care engagement, further complicating GD recognition and treatment. Moreover, negative symptoms such as avolition, anhedonia, and social withdrawal may be attributed solely to psychosis, despite potentially arising from problematic gaming behaviors. This overlap increases the risk of both misdiagnosis and underdiagnosis in early psychosis settings, further delaying appropriate intervention.

Availability and scope of gaming disorder screening tools

Accurately diagnosing GD remains challenging due to its evolving conceptualization. The use of multiple definitions over the years have hindered the establishment of a gold-standard measurement approach, contributing to limited clinician awareness of formal diagnostic guidelines (Castro-Calvo *et al.* 2021, King *et al.* 2020a, King *et al.* 2020b).

While various screening tools exist for assessing gaming behavior (e.g. Internet Gaming Disorder Scale -9 (IGDS9-SF), their applicability for longitudinal follow-up in clinical settings remains underexplored (King *et al.* 2020b). Most GD-specific tools are designed for general populations and do not account for the cognitive and symptomatic features unique to individuals with psychotic disorders (King *et al.* 2020b). Although some instruments align with ICD-11 criteria (Paschke *et al.* 2020, Zhang *et al.* 2022, Müller *et al.* 2022), they have limited clinical applicability and remain understudied. Critically, no GD measurement scales have been validated for individuals with psychotic disorders, raising concerns about their accuracy and reliability in FEP (Huot-Lavoie *et al.* 2023).

Cognitive and symptomatic barriers to accurate measurement

Patients with psychotic disorders often experience cognitive impairments, including deficits in working memory, processing speed, executive functioning, and attentional control. These challenges can hinder engagement with standard screening tools, leading to inconsistent or unreliable responses (Barch & Sheffield, 2014).

Screening tools like the IGDS9-SF, which require abstract thinking, may be particularly problematic for individuals with psychosis-related cognitive impairments (Zhang *et al.* 2015, Müller *et al.* 2022, Zanelli *et al.* 2019). Simplifying language, providing clear examples, and integrating visual aids could improve comprehension and response accuracy.

An optimal screening tool should also account for impaired awareness of illness and the risk of symptom misattribution between GD and psychotic disorders (e.g., avolition, social withdrawal). Differentiating these overlapping symptoms by assessing them within their specific clinical context would enhance diagnostic precision.

These challenges highlight the urgent need for validated GD screening tools tailored for individual with FEP. Incorporating adaptations that address cognitive deficits, insight-related impairments, and symptoms overlap is essential to improving diagnostic accuracy and ensuring appropriate clinical interventions.

Challenges related to treatment of patient living with both GD and FEP

Systematic reviews on GD treatment consistently identify cognitive-behavioral therapy (CBT) as the most widely implemented approach (Costa and Kuss 2019, King *et al.*, 2017, Lampropoulou *et al.*, 2022, Stevens *et al.*, 2019, Xu *et al.* 2021, Zajac *et al.*, 2017, Zajac *et al.*, 2020, Khazaal *et al.*, 2024). Core components often include psychoeducation, increased awareness of internet use, gradual reduction of gaming time, development of cessation strategies, cognitive restructuring to address maladaptive thoughts, and relapse prevention (Torres-Rodríguez *et al.* 2018, Lampropoulou *et al.*, 2022).

A structured treatment model for problematic internet use, including GD, has been developed and evaluated by Dufour *et al.* (2023) in outpatient addiction services (Dufour *et al.* 2023). This intervention consists of eight key stages: 1) behavioral activation; 2) understanding technology use motivations; 3) enhancing motivation for change; 4) improving control over technology use; 5) emotion regulation; 6) problem-solving; 7) strengthening social relationships; and 8) skill consolidation. The approach adapts CBT principles to GD by addressing in-game cognitive, emotional, and behavioral experiences, reinforcing self-regulation strategies, and identifying relapse-risk situations (Taquet & Hautekeete, 2013).

Despite these promising treatment models, no intervention has been specifically designed for individuals with psychotic disorders. Adapting existing approaches is crucial to address engagement difficulties, psychotic symptoms – including negative symptoms that limit motivation – and cognitive impairments that may affect adherence and therapeutic outcomes.

What we learned from substance use disorders

Managing co-occurring addictions in individuals with FEP requires nuanced, patient-centered approaches, and empathy. Clinical guidelines for SUD management in FEP provide valuable insights that can inform GD care (Hughes *et al.* 2015, Laboratory, 2019).

Assessment challenge

Substance use assessments are recommended upon admission to early psychosis services (Hughes *et al.* 2015, Laboratory, 2019). However, the acute phase of psychosis is often marked by significant distress and instability, leading patients to underreport or withhold information regarding substance use. Ongoing monitoring beyond initial stabilization is essential to identify emerging addiction patterns and evaluate intervention effectiveness.

Cognitive impairments commonly observed in psychotic disorders pose significant obstacles to accurate assessment. A gradual, paced approach can help mitigate these challenges, allowing patients to process information incrementally. Normalizing hesitation, fostering a safe, trusting environment encourage honest disclosure (Hughes *et al.* 2015).

A multimodal strategy – incorporating standardized screening tools, diagnostic interviews, self-report measures, and collateral information from family members – provides a comprehensive understanding of substance use behaviors. Structured self-monitoring further empowers patients to track usage patterns, recognize triggers, and actively engage in treatment (Hughes *et al.* 2015, Orygen, 2016, Staveland, 2013).

Engagement challenge

While patients may accept antipsychotic treatment, they often remain ambivalent about addressing addictions. The Stage of Change models provide a framework for tailoring interventions based on an individual's motivational stage and its principles apply equally to behavioral addictions like GD (Hughes *et al.* 2015, Barrowclough *et al.* 2010).

Telemedicine, brief digital contacts (e.g., text messaging, email), and flexible outreach (e.g., community follow-ups and reminders) can sustain engagement and interdisciplinary coordination (Alameda *et al.* 2016, D'Arcey *et al.* 2020, Vignapiano *et al.* 2025).

A non-judgmental and empathic approach that normalizes struggles, alongside family involvement when possible, also contribute in reducing stigma and improves treatment adherence and outcomes (Tait *et al.* 2003, Doyle *et al.* 2014, Van Dorn *et al.* 2005, Gaebel *et al.* 2006, Galanis *et al.* 2023, Hughes *et al.* 2015, Orygen, 2016).

Integrating addiction treatment into an early intervention in psychosis program

Managing co-occurring SUD and FEP within fragmented clinical settings is largely ineffective (Mueser & Gingerich, 2013, Ridgely *et al.* 1990, Laboratory, 2019). Disconnected psychiatric and addiction treatments contribute to poor follow-through on referrals to external services, inadequate communication between care teams, and high dropout rates (Mueser & Gingerich, 2013, Ridgely *et al.* 1990, Laboratory, 2019). To overcome these barriers, integrated treatment frameworks are essential.

The role of early intervention in psychosis programs

Early intervention in psychosis (EIP) programs are specialized, evidence-based services designed to detect and treat FEP at its earliest stages. EIP teams – comprising psychiatrists, nurses, social workers, occupational therapists, psychologists, and pharmacists – deliver individualized care that integrates both clinical and psychosocial dimensions (Orygen, 2016, Staveland, 2013). By addressing barriers like prolonged duration of untreated psychosis

and fragmented service delivery, EIP significantly improves patient trajectories through coordinated multidisciplinary care (Malla *et al.* 2016). Extensive evidence supports the effectiveness of EIP, demonstrating that timely, holistic interventions lead to substantial improvements in clinical outcomes, functional recovery, and overall quality of life (Correll *et al.* 2018).

Incorporating SUD treatment within EIP

Given the high prevalence of SUD in FEP, integrating addiction expertise within EIP programs is becoming standard practice, ensuring the integrated management of both conditions (Laboratory, 2019, Orygen, 2016, sociaux, 2017, Dixon *et al.* 2010). Integrated treatment models demonstrate superior outcomes compared to non-integrated approaches. For instance, in integrated care groups, work or school participation increased by 21%, compared to 7% in community-treated groups (McFarlane *et al.* 2015). Integrated care also improves symptom management, functional recovery, and treatment adherence (Fusar-Poli *et al.* 2017a).

Drawing from empirical evidence and clinical guidelines, EIP programs must embed addiction treatment as a core component of care, providing comprehensive support for individuals with dual diagnoses.

Integration of GD intervention in EIP programs

Building on insight from managing co-occurring SUD and FEP, there is growing recognition of the need to integrate behavioral addiction interventions, particularly GD, into EIP programs. While integrated care models for SUD have demonstrated clear benefits, the role of GD within this framework remains under-explored. Given its classification as a behavioral addiction and its potential impact on psychosocial functioning, incorporating GD assessment and treatment within EIP programs is both clinically relevant and necessary.

The following section presents a preliminary clinical model for integrating GD management into EIP programs. It outlines specific strategies to address the previously highlighted challenges, enhancing screening, follow-up, and therapeutic engagement, while identifying critical knowledge gaps that must be addressed to optimize care for individuals with both conditions. By adopting a more integrated approach, EIP programs can more effectively meet the needs of patients struggling with both psychotic and behavioral addictions.

Proposed clinical management of GD in EIP programs

This clinical framework builds on existing interventions for SUD in FEP and is informed by clinical and research experiences following the implementation of a GD screening protocol within an ongoing longitudinal study (Huot-Lavoie *et al.* 2024).

A non-judgmental, patient-centered approach is essential when taking care of individuals with GD and FEP. Early care should prioritize understanding gaming habits, including their personal significance and perceived benefits, to foster engagement and facilitate a nuanced behavioral assessment. Case managers, who maintain continuous patient contact and coordinate care within EIP programs, should play a central role in delivering interventions. Their comprehensive understanding of each patient's condition enables early detection of problematic gaming behaviors and supports tailored interventions.

Youth-friendly approaches can enhance patient engagement and adherence by aligning treatment environments with younger individuals' interests and communications styles, ultimately improving treatment participation and outcomes (Orygen, 2016).

Assessment of gaming behavior in EIP

Assessing gaming behavior in patients with FEP extends beyond simply documenting screen time; it provides valuable insight into lifestyle, sleep patterns, and social interactions. Understanding gaming motivations and emotional responses can also reveal preserved emotional engagement, even in patients perceived as anhedonic.

The proposed evaluation consists of three distinct phases. The first two phases are conducted by the case manager, who gathers general information about gaming behaviors and their impact on patient functioning. In the final phase, a psychiatrist reviews the collected data and conducts a formal diagnostic interview based on ICD-11 criteria for GD.

Evaluating gaming habits

This evaluation can unfold through informal discussions alongside routine care coordination, fostering a therapeutic alliance and encouraging honest disclosure.

Key components for a comprehensive evaluation:

- Frequency and duration of gaming sessions, including daytime and nighttime habits. Clinicians may consider inquiring about objective measures of playtime, such as screen time reports or in-game tracking features, to obtain a more accurate assessment of gaming behavior.
- Online versus offline gaming and the types of interaction they have with other players (e.g., competitive vs collaborative) providing insights into social interactions within gaming environments.
- Assessment of gaming motives and perceived benefits of gaming.
- Engagement in gaming-related activities, such as participation in video game streaming platforms, implication in gaming community and loot box purchases which have been associated with increased GD risk (Raneri *et al.* 2022, Cabeza-Ramírez *et al.* 2022).
- Impact of gaming and related activities on academic performance, employment, relationships, health, and overall daily-life functioning.

To ensure accurate responses, clinicians should use clear, straightforward language, considering potential impairments in abstract thinking and cognition in FEP. Questions should also help differentiate excessive gaming from GD.

Sample screening questions:

- Has gaming delayed your schoolwork or job tasks?
- How does gaming affect your sleep, health, or mood?
- Have you had conflicts with family or peers over gaming?
- What other activities or hobbies do you engage in outside of gaming?
- Are there activities or hobbies you used to enjoy that you no longer do because of gaming?
- How does gaming affect your daily schedule or routine?
- Have you tried to reduce or stop gaming? Why?
- How do you usually feel when you can't play video game?

Enhancing precision in gaming behavior assessment

Obtaining collateral feedback from family members and caregivers provides a more comprehensive understanding of gaming behaviors. Questions like "Have you noticed changes in the patient's behavior related to gaming?" or "Have there been conflicts at home concerning video games?" can uncover discrepancies

between the patient's self-reports and external observations. Additionally, inquiring about the perceived consequences of gaming habits on both the patient and their family and how the patient manages and responds to gaming interruptions can provide a more comprehensive understanding of the patient's gaming patterns and their overall impact. These discussions also offer an opportunity to highlight positive aspects of gaming, such as social connection or stress relief, while educating families on supporting healthy gaming habits and minimizing stigmatization.

Although screening tools are useful adjuncts, existing instruments lack validation in FEP populations. Although new tools such as the ACSID-11 capture the key components of GD assessment based on ICD-11 criteria, their items may be difficult for patients to answer and often require dedicated time to complete, which poses challenges for individuals facing multiple priorities in early intervention settings. To optimize GD screening in FEP care, the following adaptations are recommended:

- **Simplified Language and Instructions:** Clear, concise language enhances comprehension in patients with cognitive impairments.
- **Shortened, Focused Questionnaires:** Instruments should be reduced to a minimal set of items that directly reflect ICD-11 diagnostic criteria thereby improving feasibility and response reliability without sacrificing diagnostic precision.
- **Incorporation of Visual Aids:** Visual supports (e.g., pictograms, graded color scales) can facilitate understanding and engagement in patients with or attentional difficulties, increasing accuracy of self-reports.
- **Flexible Administration:** Allowing breaks or splitting assessments into multiple sessions (e.g., 2 – 3 questions at a time during routine follow-up) to minimize fatigue and maximize participation in early intervention settings.

Frequent reassessments are critical to identifying changes in gaming behaviors and differentiating transient patterns from persistent problematic behaviors. Maintaining a gaming journal can serve as a useful self-monitoring tool for patients, fostering greater insight into gaming habits and supporting behavioral self-regulation.

Conducting a diagnostic interview

Following the initial evaluation and screening, a comprehensive psychiatric diagnostic interview conducted by a psychiatrist is essential. By integrating self-reported data, collateral information, and validated screening tools from the previous assessment stages, clinicians can effectively differentiate between normative, hazardous, and pathological gaming behaviors. This structured approach enhances diagnostic precision and facilitates the development of an individualized, evidence-based treatment plan, tailored to the patient's specific needs.

Integrating gaming disorder evaluation into patient follow-up

GD evaluations should be integrated into standard care protocols and conducted at regular intervals throughout a patient's EIP journey. Similar to other addictions, systematic assessments every 3 to 6 months facilitate continuous monitoring, enabling timely identification of problematic behaviors. Gaming habits should also be reassessed during significant life transitions (e.g., loss of employment or enrollment in an academic program) to evaluate their impact on daily functioning. In addition, reassessment is warranted after medication changes, as certain psychotropic agents

have been linked to increased vulnerability to addictive behaviors. Embedding GD assessments within routine clinical practice ensures that interventions evolve alongside recovery. The development and validation of GD scales tailored to FEP populations will significantly enhance diagnostic accuracy, support progress monitoring, and guide interventions over time.

Integrating gaming disorder treatment into EIP programs

Building on our clinical experience with the structured treatment model for problematic internet use developed by Dufour *et al.* (2023), GD management in FEP requires a flexible, patient-centered approach that prioritizes engagement, motivation, and individualized care. Case managers should deliver adaptable interventions, including home-based care when necessary, while accommodating patient absences and gradually incorporating GD-specific strategies.

The treatment approach should integrate key therapeutic components, such as behavioral activation, understanding technology use motivations, enhancing motivation for change, improving control over technology use, emotion regulation, problem-solving, strengthening social relationships, and skill consolidation.

Although no medication is currently approved specifically for the treatment of GD, several agents have been explored. Systematic reviews suggest potential benefit from bupropion and selective serotonin reuptake inhibitors such as escitalopram, based on their prior use in other behavioral addictions, including compulsive buying and pathological gambling (Lampropoulou *et al.* 2022, Greenfield, 2022, Chang *et al.* 2022, Zajac *et al.* 2020). However, available studies are few, with small samples, short treatment durations, and limited randomized controlled trials and notably have not examined patients with psychotic disorders. Consequently, the level of evidence remains low, precluding regulatory approval or the establishment of practice guidelines. Theoretical models also raise the possibility that addictolytic agents such as N-acetylcysteine or naltrexone may target shared neurobiological pathways, but these remain speculative.

In clinical practice, pharmacological strategies for GD are best considered within a multimodal framework that also incorporates psychotherapeutic interventions and the management of psychiatric comorbidities. In the context of FEP, particular attention must be given to the overall medication regimen, as antipsychotics and adjunctive treatments may influence vulnerability to addictive behaviors as described in the *Pharmacological Treatment Challenges in FEP Patients* section. Regular reassessment of both therapeutic benefits and potential risks is therefore essential to ensure safe and effective integration of GD care within early intervention programs.

The unique context of FEP treatment necessitates aligning GD interventions with the patient's priorities, introducing them at clinically appropriate moments without overshadowing other urgent treatment needs. Additionally, simplified content, structured sessions, and reinforcement of key concepts over time enhance treatment accessibility and adherence. Group interventions within EIP programs can further normalize gaming discussions, reduce stigma, and provide valuable insight into gaming behaviors. Peer support workers can play a key role in this process by sharing lived experiences and fostering engagement. A harm-reduction approach that emphasizes digital well-being over abstinence may offer more sustainable long-term recovery outcomes (Huot-Lavoie *et al.* 2025). Embedding GD treatment

within EIP programs ensures that gaming behaviors are addressed holistically within psychotic disorder care, promoting viable coping mechanisms and improved psychosocial outcomes.

Conclusion

Integrating a comprehensive GD care model within EIP programs is essential for early identification and intervention, preventing complications that may obscure the clinical presentation of psychosis. A patient-centered approach, embedded within routine care, aligns with recovery-oriented practices and supports individuals in achieving balanced, fulfilling lives.

There is an urgent need for GD screening and treatment models tailored to individuals with FEP. Effective interventions must address the unique cognitive, emotional, and social challenges of this population to ensure accurate identification and optimal management of GD. Developing such models will enhance individual outcomes while expanding our understanding of how behavioral addictions intersect with psychotic disorders.

Recognizing and addressing GD is not only essential for comprehensive care but also represents a cornerstone of modern psychiatry, ensuring that clinical practice remains responsive to the evolving realities of patients' lives in an increasingly digital world.

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References

- Abdel-Baki A, Ouellet-Plamondon C and Malla A (2012). Pharmacotherapy challenges in patients with first-episode psychosis. *Journal of Affective Disorders* **138**, S3–S14.
- Abdel-Baki A, Ouellet-Plamondon C, Salvat É, Grar K and Potvin S (2017). Symptomatic and functional outcomes of substance use disorder persistence 2 years after admission to a first-episode psychosis program. *Psychiatry Research* **247**, 113–119.
- Addington J and Addington D (2007). Patterns, predictors and impact of substance use in early psychosis: A longitudinal study. *Acta Psychiatrica Scandinavica* **115**, 304–309.
- Ahmed GK, Abdalla AA, Mohamed AM, Mohamed LA and Shamaa HA (2022). Relation between internet gaming addiction and comorbid psychiatric disorders and emotion avoidance among adolescents: A cross-sectional study. *Psychiatry Research* **312**, 114584.
- AJ van Rooij PhD, Kuss DJ, Griffiths MD, Shorter GW, Schoenmakers TM and van de Mheen D (2014). The (co-)occurrence of problematic video gaming, substance use, and psychosocial problems in adolescents. *Journal of Behavioral Addictions* **3**, 157–165.
- Alameda L, Golay P, Baumann P, Morandi S, Ferrari C, Conus P and Bonsack C (2016). Assertive outreach for “difficult to engage” patients: A useful tool for a subgroup of patients in specialized early psychosis intervention programs. *Psychiatry Research* **239**, 212–219.
- Alvarez-Jimenez M, Priede A, Hetrick SE, Bendall S, Killackey E, Parker AG, McGorry PD and Gleeson JF (2012). Risk factors for relapse following treatment for first episode psychosis: A systematic review and meta-analysis of longitudinal studies. *Schizophrenia Research* **139**, 116–128.
- American Psychiatric Association (2013). *Diagnostic and Statistical Manual of Mental Disorders: DSM-5*, 5th Edn. Arlington, Va: American Psychiatric Association.
- Angane A, Keshari P, Mane A and Nayak A (2021). Psychosis unmasked by gaming: A case series. *Annals of Indian Psychiatry* **5**, 89–92.
- Awad A, Hogan T, Voruganti L and Heslegrave R (1995). Patients' subjective experiences on antipsychotic medications: Implications for outcome and quality of life. *International Clinical Psychopharmacology* **10**, 123–132.
- Baker A, Hiles S, Thornton L, Hides L and Lubman D (2012). A systematic review of psychological interventions for excessive alcohol consumption among people with psychotic disorders. *Acta Psychiatrica Scandinavica* **126**, 243–255.
- Barch DM and Sheffield JM (2014). Cognitive impairments in psychotic disorders: Common mechanisms and measurement. *World Psychiatry* **13**, 224–232.
- Barrowclough C, Haddock G, Beardmore R, Conrod P, Craig T, Davies L, Dunn G, Lewis S, Moring J, Tarrier N and Wykes T (2009). Evaluating integrated MI and CBT for people with psychosis and substance misuse: Recruitment, retention and sample characteristics of the MIDAS trial. *Addictive behaviors* **34**, 859–866.
- Barrowclough C, Haddock G, Wykes T, Beardmore R, Conrod P, Craig T, Davies L, Dunn G, Eisner E, Lewis S, Moring J, Steel C and Tarrier N (2010). Integrated motivational interviewing and cognitive behavioural therapy for people with psychosis and comorbid substance misuse: Randomised controlled trial. *British Medical Journal* **341**, c6325.
- Blanchard JJ, Brown SA, Horan WP and Sherwood AR (2000). Substance use disorders in schizophrenia: Review, integration, and a proposed model. *Clinical Psychology Review* **20**, 207–234.
- Burleigh TL, Griffiths MD, Sumich A, Stavropoulos V and Kuss DJ (2019). A systematic review of the co-occurrence of gaming disorder and other potentially addictive behaviors. *Current Addiction Reports* **6**, 383–401.
- Cabeza-Ramírez LJ, Rey-Carmona FJ, del Carmen Cano-Vicente M and Solano-Sánchez MÁ. (2022). Analysis of the coexistence of gaming and viewing activities in twitch users and their relationship with pathological gaming: A multilayer perceptron approach. *Scientific Reports* **12**, 7904.
- Castro-Calvo J, King DL, Stein DJ, Brand M, Carmi L, Chamberlain SR, Demetrovics Z, Fineberg NA, Rumpf HJ, Yücel M, Achab S, Ambekar A, Bahar N, Blaszczynski A, Bowden-Jones H, Carbonell X, Chan EML, Ko CH, de Timary P, Dufour M, Grall-Bronnec M, Lee HK, Higuchi S, Jimenez-Murcia S, Király O, Kuss DJ, Long J, Müller A, Pallanti S, Potenza MN, Rahimi-Movaghar A, Saunders JB, Schimmenti A, Lee SY, Siste K, Spritzer DT, Starcevic V, Weinstein AM, Wölfling K and Billieux J (2021). Expert appraisal of criteria for assessing gaming disorder: An international Delphi study. *Addiction* **116**, 2463–2475.
- Chang SM and Lin SJ (2019). Online gaming motive profiles in late adolescence and the related longitudinal development of stress, depression, and problematic internet use. *Computers & Education* **135**, 123–137.
- Chang YH, Chang KC, Hou WL, Lin CY and Griffiths MD (2021). Internet gaming as a coping method among schizophrenic patients facing psychological distress. *Journal of Behavioral Addictions* **9**, 1022–1031.
- Chang CH, Chang YC, Yang L and Tzang RF (2022). The comparative efficacy of treatments for children and young adults with internet addiction/Internet gaming disorder: An updated meta-analysis. *International Journal of Environmental Research and Public Health* **19**, 2612. <https://doi.org/10.3390/ijerph19052612>.
- Chue P (2006). The relationship between patient satisfaction and treatment outcomes in schizophrenia. *Journal of Psychopharmacology* **20**, 38–56.
- Conus P, Lambert M, Cotton S, Bonsack C, McGorry PD and Schimmelmann BG (2010). Rate and predictors of service disengagement in an epidemiological first-episode psychosis cohort. *Schizophrenia Research* **118**, 256–263.
- Corbeil O, Bérubé FA, Artaud L and Roy MA (2021a). Detecting and treating comorbid disorders in first-episode psychosis: A lever for recovery. *Santé mentale au Québec* **46**, 307–330.
- Corbeil O, Corbeil S, Dorval M, Carmichael PH, Giroux I, Jacques C, Demers MF and Roy MA (2021b). Problem gambling associated with aripiprazole: A nested case-control study in a first-episode psychosis program. *CNS Drugs* **35**, 461–468.
- Correll CU, Galling B, Pawar A, Krivko A, Bonetto C, Ruggeri M, Craig TJ, Nordentoft M, Srihari VH, Guloksuz S, Hui CLM, Chen EYH, Valencia

- M, Juarez F, Robinson DG, Schooler NR, Brunette MF, Mueser KT, Rosenheck RA, Marcy P, Addington J, Estroff SE, Robinson J, Penn D, Severe JB and Kane JM (2018). Comparison of early intervention services vs treatment as usual for early-phase psychosis: A systematic review, meta-analysis, and meta-regression. *JAMA Psychiatry* 75, 555–565.
- Costa S and Kuss DJ (2019). Current diagnostic procedures and interventions for gaming disorders: A systematic review. *Frontiers in Psychology* 10, 578.
- D'Arcey J, Collaton J, Kozloff N, Voineskos AN, Kidd SA and Fousias G (2020). The use of text messaging to improve clinical engagement for individuals with psychosis: systematic review. *JMIR Mental Health* 7, e16993.
- Day JC, Bentall RP, Roberts C, Randall F, Rogers A, Cattell D, Healy D, Rae P and Power C (2005). Attitudes toward antipsychotic medication: The impact of clinical variables and relationships with health professionals. *Archives of General Psychiatry* 62, 717–724.
- Di Forti M, Sallis H, Allegrì F, Trotta A, Ferraro L, Stilo SA, Marconi A, La Cascia C, Reis Marques T, Pariente C, Dazzan P, Mondelli V, Paparelli A, Kolliakou A, Prata D, Gaughran F, David AS, Morgan C, Stahl D, Khondoker M, MacCabe JH and Murray RM (2014). Daily use, especially of high-potency cannabis, drives the earlier onset of psychosis in cannabis users. *Schizophrenia Bulletin* 40, 1509–1517.
- Dixon LB, Dickerson F, Bellack AS, Bennett M, Dickinson D, Goldberg RW, Lehman A, Tenhula WN, Calmes C, Pasillas RM, Peer J and Kreyenbuhl J (2010). The 2009 schizophrenia PORT psychosocial treatment recommendations and summary statements. *Schizophrenia Bulletin* 36, 48–70.
- Donoghue K, Doody GA, Murray RM, Jones PB, Morgan C, Dazzan P, Hart J, Mazzoncini R and MacCabe JH (2014). Cannabis use, gender and age of onset of schizophrenia: Data from the AESOP study. *Psychiatry Research* 215, 528–532.
- Doyle R, Turner N, Fanning F, Brennan D, Renwick L, Lawlor E and Clarke M (2014). First-episode psychosis and disengagement from treatment: A systematic review. *Psychiatric Services* 65, 603–611.
- Dufour M, et al. (2023). *Virtu-A : intervention manualisée pour les jeunes de 15 à 25 ans aux prises avec une utilisation problématique d'Internet - Version 2.0*. Université du Québec à Montréal.
- Finkelhor D (2011). The internet, youth safety and the problem of “Juvenioia”. Crimes against children research center. Available at: <http://www.unh.edu/ccrc/pdf/Juvenioia%20paper.pdf>.
- Foti DJ, Kotov R, Guey LT and Bromet EJ (2010). Cannabis use and the course of schizophrenia: 10-year follow-up after first hospitalization. *American Journal of Psychiatry* 167, 987–993.
- Frank AF and Gunderson JG (1990). The role of the therapeutic alliance in the treatment of schizophrenia: Relationship to course and outcome. *Archives of General Psychiatry* 47, 228–236.
- Franz L, Carter T, Leiner AS, Bergner E, Thompson NJ and Compton MT (2010). Stigma and treatment delay in first-episode psychosis: A grounded theory study. *Early Intervention in Psychiatry* 4, 47–56.
- Fruensgaard K (1976). Withdrawal psychosis: A study of 30 consecutive cases. *Acta Psychiatrica Scandinavica* 53, 105–118.
- Fusar-Poli P, McGorry PD and Kane JM (2017a). Improving outcomes of first-episode psychosis: An overview. *World Psychiatry* 16, 251–265.
- Fusar-Poli P, Tantardini M, De Simone S, Ramella-Cravaro V, Oliver D, Kingdon J, Kotlicka-Antczak M, Valmaggia L, Lee J, Millan MJ, Galderisi S, Balottin U, Ricca V and McGuire P (2017b). Deconstructing vulnerability for psychosis: Meta-analysis of environmental risk factors for psychosis in subjects at ultra high-risk. *European Psychiatry* 40, 65–75.
- Gaebel W, Zäske H and Baumann AE (2006). The relationship between mental illness severity and stigma. *Acta Psychiatrica Scandinavica* 113, 41–45.
- Galanis C, Weber N, Delfabbro P, Billieux J and King D (2023). Gaming disorder and stigma-related judgements of gaming individuals: An online randomized controlled trial. *Addiction* 118, 1687–1698.
- Gatto EM and Aldinio V (2019). Impulse control disorders in Parkinson's disease. A brief and comprehensive review. *Frontiers in Neurology* 10, 351.
- Ghosh P and Sarkhel S (2018). Internet gaming addiction presenting as withdrawal psychosis: An unusual case report. *Indian Journal of Private Psychiatry* 12, 34–37.
- Gitlin MJ (2018). Antidepressants in bipolar depression: An enduring controversy. *International Journal of Bipolar Disorders* 6, 1–7.
- González-Blanch C, Gleeson JF, Koval P, Cotton SM, McGorry PD and Alvarez-Jimenez M (2015). Social functioning trajectories of young first-episode psychosis patients with and without cannabis misuse: A 30-month follow-up study. *PLoS One* 10, e0122404.
- González-Bueso V, Santamaría JJ, Fernández D, Merino L, Montero E and Ribas J (2018). Association between internet gaming disorder or pathological video-game use and comorbid psychopathology: A comprehensive review. *International Journal of Environmental Research and Public Health* 15, 668.
- Gonzalez-Pinto A, Alberich S, Barbeito S, Gutierrez M, Vega P, Ibanez B, Haidar MK, Vieta E and Arango C (2011). Cannabis and first-episode psychosis: Different long-term outcomes depending on continued or discontinued use. *Schizophrenia Bulletin* 37, 631–639.
- Granic I, Lobel A and Engels RC (2014). The benefits of playing video games. *American Psychologist* 69, 66.
- Greenfield DN (2022). Clinical considerations in internet and video game addiction treatment. *Child and Adolescent Psychiatric Clinics of North America* 31, 99–119.
- Hansen HG, Speyer H, Starzer M, Albert N, Hjorthøj C, Eplöv LF and Nordentoft M (2023). Clinical recovery among individuals with a first-episode schizophrenia an updated systematic review and meta-analysis. *Schizophrenia Bulletin* 49, 297–308.
- Harrison I, Joyce E, Mutsatsa S, Hutton S, Huddy V, Kapasi M and Barnes TRE (2008). Naturalistic follow-up of co-morbid substance use in schizophrenia: The West London first-episode study. *Psychological Medicine* 38, 79–88.
- Hartz SM, Pato CN, Medeiros H, Cavazos-Rehg P, Sobell JL, Knowles JA, Bierut LJ and Pato MT (2014). Comorbidity of severe psychotic disorders with measures of substance use. *JAMA Psychiatry* 71, 248–254.
- Hughes ASR, Crlenjak C, Hetrick S, Nicoll M, Elkins K, Cementon E and Leceister S (2015). A matter of substance: working with substance use in early psychosis. Orygen, The National Centre of Excellence in Youth Mental Health.
- Hunt GE, Siegfried N, Morley K, Brooke-Sumner C and Cleary M (2019). Psychosocial interventions for people with both severe mental illness and substance misuse. *Cochrane Database of Systematic Reviews*, 12(12), CD001088. <https://doi.org/10.1002/14651858.CD001088.pub4>
- Huot-Lavoie M, Corbeil O, Béchard L, Brodeur S, Desmeules C, Thériault C, et al. (2024). First-episode psychosis and gaming disorder: Improving screening and patient's recovery. In: *9th International Conference on Behavioral Addictions*, Gibraltar: Journal of Behavioral Addictions.
- Huot-Lavoie M, Gabriel-Courval M, Béchard L, Corbeil O, Brodeur S, Massé C, et al. (2023). Gaming disorder and psychotic disorders: A scoping review. *Psychopathology*, 56(4), 315–323. <https://doi.org/10.1159/000527143>
- Huot-Lavoie M, Béchard L, Corbeil O, Roy O, L'Heureux S, Salvini I, Lehoux C, Essiambre AM, Thériault C, Brodeur S, Demers MF, Khazaal Y and Roy MA (2025). Lived experience of gaming disorder among people with psychotic disorders: Implications for tailored interventions and clinical management. *Current Opinion in Psychiatry* 38, 295–301.
- Huot-Lavoie M, Desmeules C, Corbeil O, Béchard L, Brodeur S, Essiambre AM, Thériault C, Anderson E, Bachand L, Haider ZAA, Abdel-Baki A, Khazaal Y, Giroux I, Demers MF and Roy MA (2024). Impact of gaming disorder on first episode psychosis patients' evolution: Protocol for a multicentered prospective study. *Early Intervention in Psychiatry* 18, 439–445.
- Hygen BW, Skalicka V, Stenseng F, Belsky J, Steinsbekk S and Wichstrom L (2020). The co-occurrence between symptoms of internet gaming disorder and psychiatric disorders in childhood and adolescence: Prospective relations or common causes? *Journal of Child Psychology and Psychiatry* 61, 890–898.
- Ip EJ, Urbano EPT, Caballero J, Lau WB, Clauson KA, Torn RA, Palisoc AJL and Barnett MJ (2021). The video gamer 500: Performance-enhancing drug use and internet gaming disorder among adult video gamers. *Computers in Human Behavior* 123, 106890.
- Jeong H, Yim HW, Lee SY, Lee HK, Potenza MN, Kwon JH, Koo HJ, Kweon YS, Bhang SY and Choi JS (2018). Discordance between self-report and clinical diagnosis of internet gaming disorder in adolescents. *Scientific Reports* 8, 10084.

- Ji Y, Yin MXC, Zhang AY, Wong DFK (2022). Risk and protective factors of internet gaming disorder among Chinese people: A meta-analysis. *Australian & New Zealand Journal of Psychiatry* 56, 332–346.
- Khazaal Y, Billieux J, Achab S, Simon O, Dufour M and Benyamina A (2024). Trouble du Jeu Vidéo: L'essentiel. RMS éditions. Auteur: Khazaal Yasser Billieux Joël Achab Sophia Simon Olivier Dufour Magali Benyamina Amine Potenza M. Éditeur: RMS Editions ISBN 9782880495411 Collection L'essentiel Nombre de pages 200 Parution 5 déc. 2024 Thème Psychiatrie Type de livre Ouvrage collectif
- Kim HS, Son G, Roh EB, Ahn WY, Kim J, Shin SH, Chey J and Choi KH (2022). Prevalence of gaming disorder: A meta-analysis. *Addictive Behaviors* 126, 107183.
- King DL, Billieux J, Carragher N and Delfabbro PH (2020a). Face validity evaluation of screening tools for gaming disorder: Scope, language, and overpathologizing issues. *Journal of Behavioral Addictions* 9, 1–13.
- King DL, Chamberlain SR, Carragher N, Billieux J, Stein D, Mueller K, Potenza MN, Rumpf HJ, Saunders J, Starcevic V, Demetrovics Z, Brand M, Lee HK, Spada M, Lindenberg K, Wu AMS, Lemenager T, Pallesen S, Achab S, Kyrios M, Higuchi S, Fineberg NA and Delfabbro PH (2020b). Screening and assessment tools for gaming disorder: A comprehensive systematic review. *Clinical Psychology Review* 77, 101831.
- King DL, Delfabbro PH, Wu AMS, Doh YY, Kuss DJ, Pallesen S, Mentzoni R, Carragher N, Sakuma H (2017). Treatment of internet gaming disorder: An international systematic review and CONSORT evaluation. *Clinical Psychology Review* 54, 123–133.
- Laboratory NMHaSUP (2019). *First-Episode Psychosis and Co-Occurring Substance Use Disorders*. Publication. In: Administration SAaMHS (ed.). Rockville, MD.
- Lacro JP, Dunn LB, Dolder CR, Leckband SG and Jeste DV (2002). Prevalence of and risk factors for medication nonadherence in patients with schizophrenia: A comprehensive review of recent literature. *The Journal of Clinical Psychiatry* 63, 15489.
- Lakhan SE and Kirchgessner A (2012). Prescription stimulants in individuals with and without attention deficit hyperactivity disorder: Misuse, cognitive impact, and adverse effects. *Brain and Behavior* 2, 661–677.
- Lambert M, Conus P, Lubman DI, Wade D, Yuen H, Moritz S, Naber D, McGorry PD and Schimmelmann BG (2005). The impact of substance use disorders on clinical outcome in 643 patients with first-episode psychosis. *Acta Psychiatrica Scandinavica* 112, 141–148.
- Lampropoulou P, Siomos K, Floros G and Christodoulou N (2022). Effectiveness of available treatments for gaming disorders in children and adolescents: A systematic review. *Cyberpsychology, Behavior, and Social Networking* 25, 5–13.
- Lee J, Bae S, Kim BN and Han DH (2021). Impact of attention-deficit/hyperactivity disorder comorbidity on longitudinal course in internet gaming disorder: A 3-year clinical cohort study. *Journal of Child Psychology and Psychiatry* 62, 1110–1119.
- Lehoux C, Lefebvre AA, Maziade M, Roy MA and Gobeil MH (2009). The five-factor structure of the PANSS: A critical review of its consistency across studies. *Clinical Schizophrenia and Related Psychoses* 3, 103–110.
- Lester H, Marshall M, Jones P, Fowler D, Amos T, Khan N and Birchwood M (2011). Views of young people in early intervention services for first-episode psychosis in England. *Psychiatric Services* 62, 882–887.
- Linszen D and van Amelsvoort T (2007). Cannabis and psychosis: An update on course and biological plausible mechanisms. *Current Opinion in Psychiatry* 20, 116–120.
- Malhi G, Adams D, Moss B and Walter G (2010). To medicate or not to medicate, when diagnosis is in question: Decision-making in first episode psychosis. *Australasian Psychiatry* 18, 230–237.
- Malla A, Iyer S, McGorry P, Cannon M, Coughlan H, Singh S, Jones P and Joobar R (2016). From early intervention in psychosis to youth mental health reform: A review of the evolution and transformation of mental health services for young people. *Social Psychiatry and Psychiatric Epidemiology* 51, 319–326.
- Malla A, Norman R, Bechard-Evans L, Schmitz N, Manchanda R and Cassidy C (2008). Factors influencing relapse during a 2-year follow-up of first-episode psychosis in a specialized early intervention service. *Psychological Medicine* 38, 1585–1593.
- Marshall M, Lewis S, Lockwood A, Drake R, Jones P and Croudace T (2005). Association between duration of untreated psychosis and outcome in cohorts of first-episode patients: A systematic review. *Archives of General Psychiatry* 62, 975–983.
- Mascayano F, van der Ven E, Martinez-Ales G, Henao AR, Zambrano J, Jones N, Cabassa LJ, Smith TE, Yang LH, Susser E and Dixon LB (2021). Disengagement from early intervention services for psychosis: A systematic review. *Psychiatric Services* 72, 49–60.
- Mcevoy JP, Johnson J, Perkins D, Lieberman JA, Hamer RM, Keefe RS, Tohen M, Glick ID and Sharma T (2006). Insight in first-episode psychosis. *Psychological Medicine* 36, 1385–1393.
- McFarlane WR, Levin B, Travis L, Lucas FL, Lynch S, Verdi M, Williams D, Adelsheim S, Calkins R, Carter CS, Cornblatt B, Taylor SF, Auther AM, McFarland B, Melton R, Migliorati M, Niendam T, Ragland JD, Sale T, Salvador M and Spring E (2015). Clinical and functional outcomes after 2 years in the early detection and intervention for the prevention of psychosis multisite effectiveness trial. *Schizophrenia Bulletin* 41, 30–43.
- Miller R, Ream G, McCormack J, Gunduz-Bruce H, Sevy S and Robinson D (2009). A prospective study of cannabis use as a risk factor for non-adherence and treatment dropout in first-episode schizophrenia. *Schizophrenia Research* 113, 138–144.
- Mueser KT and Gingerich S (2013). Treatment of co-occurring psychotic and substance use disorders. *Social Work in Public Health* 28, 424–439.
- Müller SM, Wegmann E, Oelker A, Stark R, Müller A, Montag C, Wölfling K, Rumpf HJ, and Brand M (2022). Assessment of criteria for specific internet-use disorders (ACSID-11): Introduction of a new screening instrument capturing ICD-11 criteria for gaming disorder and other potential internet-use disorders. *Journal of Behavioral Addictions* 11, 427–450.
- O'Brien A, Fahmy R and Singh SP (2009). Disengagement from mental health services. A literature review. *Social Psychiatry and Psychiatric Epidemiology* 44, 558–568.
- Orygen TNCoeIYMH (2016). Early psychosis guidelines writing group and EPPIC national support program, Australian clinical guidelines for early psychosis.
- Paik A, Oh D and Kim D (2014). A case of withdrawal psychosis from internet addiction disorder. *Psychiatry Investigation* 11, 207–209.
- Parellada M, Boada L, Fraguas D, Reig S, Castro-Fornieles J, Moreno D, Gonzalez-Pinto A, Otero S, Rapado-Castro M, Graell M, Baeza I and Arango C (2011). Trait and state attributes of insight in first episodes of early-onset schizophrenia and other psychoses: A 2-year longitudinal study. *Schizophrenia Bulletin* 37, 38–51.
- Paschke K, Austermann MI and Thomasius R (2020). Assessing ICD-11 gaming disorder in adolescent gamers: Development and validation of the gaming disorder scale for adolescents (GADIS-A). *Journal of Clinical Medicine* 9, 993. <https://doi.org/10.3390/jcm9040993>
- Perkins DO, Gu H, Boteva K and Lieberman JA (2005). Relationship between duration of untreated psychosis and outcome in first-episode schizophrenia: A critical review and meta-analysis. *American Journal of Psychiatry* 162, 1785–1804.
- Perugi G, Vannucchi G, Bedani F and Favaretto E (2017). Use of stimulants in bipolar disorder. *Current Psychiatry Reports* 19, 1–9.
- Quiles C and Verdoux H (2023). Benefits of video games for people with schizophrenia: A literature review. *Current Opinion in Psychiatry* 36, 184–193.
- Raneri PC, Montag C, Rozgonjuk D, Satel J and Pontes HM (2022). The role of microtransactions in internet gaming disorder and gambling disorder: A preregistered systematic review. *Addictive Behaviors Reports* 15, 100415.
- Ream GL, Elliott LC and Dunlap E (2011). Playing video games while using or feeling the effects of substances: Associations with substance use problems. *International Journal of Environmental Research and Public Health* 8, 3979–3998.
- Ricci V, De Berardis D, Maina G and Martinotti G (2023). Internet gaming disorders and early onset psychosis in young people: A case study and clinical observations. *International Journal of Environmental Research and Public Health* 20, 3920.
- Richard J, Temcheff CE and Derevensky JL (2020). Gaming disorder across the lifespan: A scoping review of longitudinal studies. *Current Addiction Reports* 7, 561–587.

- Ridgely MS, Goldman HH and Willenbring M (1990). Barriers to the care of persons with dual diagnoses: Organizational and financing issues. *Schizophrenia Bulletin* 16, 123–132.
- Rizzo A, Della Villa L and Crisi A (2015). Can the problematic internet use evolve in a pre-psychotic state? A single case study with the Wartegg. *Computers in Human Behavior* 51, 532–538.
- Robinson DG, Woerner MG, McMeniman M, Mendelowitz A and Bilder RM (2004). Symptomatic and functional recovery from a first episode of schizophrenia or schizoaffective disorder. *American Journal of Psychiatry* 161, 473–479.
- Roy MA, Achim AM, Vallières C, Labbé A, Mérette C, Maziade M, Demers MF and Bouchard RH (2015). Comorbidity between anxiety disorders and recent-onset psychotic disorders. *Schizophrenia Research* 166, 353–354.
- Roy MA, Cellard C, Côté ME, Demers MF, Lehoux C, Menear M, Morin MH, Péloquin S and Vigneault L (2024). Modèle intégré d'une approche de soins axée sur le rétablissement. *Le Journal de l'AMPQ*. (Hiver)
- Rygaard Hjorthøj C, Baker A, Fohlmann A and Nordentoft M (2014). Intervention efficacy in trials targeting cannabis use disorders in patients with comorbid psychosis systematic review and meta-analysis. *Current Pharmaceutical Design* 20, 2205–2211.
- Sara GE, Burgess PM, Malhi GS, Whiteford HA and Hall WC (2014). Stimulant and other substance use disorders in schizophrenia: Prevalence, correlates and impacts in a population sample. *Australian & New Zealand Journal of Psychiatry* 48, 1036–1047.
- Schneider LA, King DL and Delfabbro PH (2018). Maladaptive coping styles in adolescents with internet gaming disorder symptoms. *International Journal of Mental Health and Addiction* 16, 905–916. <https://api.semanticscholar.org/CorpusID:34458030>
- Seeman P (2015). Parkinson's disease treatment may cause impulse-control disorder via dopamine D3 receptors. *Synapse* 69, 183–189.
- Slyk S, Zarzycki M, Grudziński K, Majewski G, Jasny M and Domitrz I (2023). The Prevalence and Outlook of Doping in Electronic Sports (Esports): An original study and review of the overlooked medical challenges. *Cureus* 15, e48490.
- sociaux MdSedS (2017). Cadre de référence : Programmes d'interventions pour premiers épisodes psychotiques (PPEP). In: Québec Gd (ed.).
- Sorbara F, Liraud F, Assens F, Abalan F and Verdoux H (2003). Substance use and the course of early psychosis: A 2-year follow-up of first-admitted subjects. *European Psychiatry* 18, 133–136.
- Staveland H (2013). Eppic model & service implementation. Orygen Youth Health Research Centre.
- Stevens MW, King DL, Dorstyn D and Delfabbro PH (2019). Cognitive-behavioral therapy for internet gaming disorder: A systematic review and meta-analysis. *Clinical Psychology & Psychotherapy* 26, 191–203.
- Stowkowy J, Addington D, Liu L, Hollowell B and Addington J (2012). Predictors of disengagement from treatment in an early psychosis program. *Schizophrenia Research* 136, 7–12.
- Tait I, Birchwood M and Trower P (2003). Predicting engagement with services for psychosis: Insight, symptoms and recovery style. *British Journal of Psychiatry* 182, 123–128.
- Taquet P and Hautekeete M (2013). Prise en charge TCC d'une addiction aux jeux vidéo: l'expérience de jeu contribue à la thérapie. *Journal de Thérapie Comportementale et Cognitive* 23, 102–112.
- Thoma P and Daum I (2013). Comorbid substance use disorder in schizophrenia: A selective overview of neurobiological and cognitive underpinnings. *Psychiatry and Clinical Neurosciences* 67, 367–383.
- Thompson JL, Urban N, Slifstein M, Xu X, Kegeles LS, Girgis RR, Beckerman Y, Harkavy-Friedman JM, Gil R and Abi-Dargham A (2013). Striatal dopamine release in schizophrenia comorbid with substance dependence. *Molecular Psychiatry* 18, 909–915.
- Torres-Rodriguez A, Griffiths MD, Carbonell X and Oberst U (2018). Treatment efficacy of a specialized psychotherapy program for internet gaming disorder. *Journal of Behavioral Addictions* 7, 939–952.
- Trifileff P and Martinez D (2014). Blunted dopamine release as a biomarker for vulnerability for substance use disorders. *Biological Psychiatry* 76, 4–5.
- van der Schyff EL, Amon KL, Ridout B, Forsyth R, Campbell AJ (2023). Mental health help-seeking behavior of male video game players: An online survey. *Cyberpsychology, Behavior, and Social Networking* 26, 717–723.
- Van Dorn RA, Swanson JW, Elbogen EB and Swartz MS (2005). A comparison of stigmatizing attitudes toward persons with schizophrenia in four stakeholder groups: Perceived likelihood of violence and desire for social distance. *Psychiatry* 68, 152–163.
- Vanden Abeele MMP (2020). Digital wellbeing as a dynamic construct. *Communication Theory* 31, 932–955.
- Vignapiano A, Monaco F, Panarello E, Landi S, Di Gruttola B, Malvone R, Martiadis V, Raffone F, Marenna A, Pontillo M, Di Stefano V, D'Angelo M, L Steardo Jr. and Corrivetti G (2025). Digital interventions for the rehabilitation of first-episode psychosis: An integrated perspective. *Brain Sciences* 15, 80. <https://doi.org/10.3390/brainsci15010080>
- Volkow ND (2009). Substance use disorders in schizophrenia—clinical implications of comorbidity. *Schizophr Bull* 35(3) 469–472. <https://doi.org/10.1093/schbul/sbp016>
- von der Heiden JM, Braun B, Müller KW and Egloff B (2019). The association between video gaming and psychological functioning. *Frontiers in Psychology* 10, 1731. <https://doi.org/10.3389/fpsyg.2019.01731>
- Wade D, Harrigan S, Edwards J, Burgess PM, Whelan G and McGorry PD (2006). Substance misuse in first-episode psychosis: 15-month prospective follow-up study. *British Journal of Psychiatry* 189, 229–234.
- Wade D, Harrigan S, McGorry PD, Burgess PM and Whelan G (2007a). Impact of severity of substance use disorder on symptomatic and functional outcome in young individuals with first-episode psychosis. *Journal of Clinical Psychiatry* 68, 767.
- World Health Organization (WHO) (2019). International Classification of Diseases, Eleventh Revision (ICD-11), World Health Organization (WHO) 2019. <https://icd.who.int/browse11>
- Williams BD, Lee K, Ewah SO and Neelam K (2024). Aripiprazole and other third-generation antipsychotics as a risk factor for impulse control disorders: A systematic review and meta-analysis. *Journal of Clinical Psychopharmacology* 44, 39–48.
- Wisdom JP, Manuel JI and Drake RE (2011). Substance use disorder among people with first-episode psychosis: A systematic review of course and treatment. *Psychiatric Services* 62, 1007–1012.
- Xu LX, Wu LL, Geng XM, Wang ZL, Guo XY, Song KR, Liu GQ, Deng LY, Zhang JT and Potenza MN (2021). A review of psychological interventions for internet addiction. *Psychiatry Research* 302, 114016.
- Yakovenko I, Clark CM, Hodgins DC and Goghari VM (2016). A qualitative analysis of the effects of a comorbid disordered gambling diagnosis with schizophrenia. *Schizophrenia Research* 171, 50–55.
- Zajac K, Ginley MK and Chang R (2020). Treatments of internet gaming disorder: A systematic review of the evidence. *Expert Review of Neurotherapeutics* 20, 85–93.
- Zajac K, Ginley MK, Chang R and Petry NM (2017). Treatments for internet gaming disorder and internet addiction: A systematic review. *Psychology of Addictive Behaviors* 31, 979.
- Zanelli J, Mollon J, Sandin S, Morgan C, Dazzan P, Pilecka I, Reis Marques T, David AS, Morgan K, Fearon P, Doody GA, Jones PB, Murray RM and Reichenberg A (2019). Cognitive change in schizophrenia and other psychoses in the decade following the first episode. *Am J Psychiatry* 176, 811–819.
- Zhang L, Luo T, Hao W, Cao Y, Yuan M and Liao Y (2022). Gaming disorder symptom questionnaire: The development and validation of a screening tool for ICD-11 gaming disorder in adolescents. *Front Psychiatry* 13, 848157.
- Zhang TH, Li HJ, Stone WS, Woodberry KA, Seidman LJ, Tang YY, Guo Q, Zhuo KM, Qian ZY, Cui HR, Zhu YK, Jiang LJ, Chow A, Tang YX, Li CB, Jiang KD, Yi ZH, Xiao ZP, Wang JJ and van Amelsvoort T (2015). Neuropsychological impairment in Prodromal, first-episode, and chronic psychosis: Assessing RBANS performance. *PLoS One* 10, e0125784.