

Problematic Technology Use in Youth and Young Adults

Technical Report Prepared for Rideauwood

By:

Christina Mutschler, Ph.D. & Tim Aubry, Ph.D.

Centre for Research on Educational and Community Services
University of Ottawa



136 Jean Jacques Lussier (VNR 5002)
Ottawa ON
K1N 6N5
Canada



uOttawa

L'Université canadienne
Canada's university

Centre de recherche sur les services
éducatifs et communautaires



Centre for Research on Educational
and Community Services

www.crecs.uottawa.ca

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Executive Summary

Purpose

The increase in technology and internet use in youth and young adults over the past decade has brought concern regarding “problematic use” and “addiction” resulting from these behaviours. Rideauwood offers services to youth and young adults who are experiencing various addictive disorders, including alcohol and substance use, as well as problematic technology use.

Due to the novelty of problematic technology use in the clinical and research spheres, a two-part study was undertaken, 1) to synthesize the existing literature on problematic technology use and 2) to qualitatively understand the experience of stakeholders working within the problematic technology use area. This report has been written for Rideauwood staff and other relevant stakeholders to provide an overview of the state of the organization in providing services for problematic technology use.

Method

Phase 1 involved a rapid review of the literature using a systematic search strategy within PsycINFO to identify relevant articles for the study. Relevant articles were selected, and data extracted. Phase 2 involved a case study on Rideauwood, which involved focus groups with 11 key stakeholders on their experiences with problematic technology use.

Results

The results of the systematic review indicated the prevalence of problematic tech use (including internet, gaming, gambling, social media etc.); diagnostic criteria, assessment, and measurement concerns; as well as prevention and treatment strategies and their effectiveness. The results of the focus groups uncovered the following themes: definition of problematic tech use, treatment approaches, role of parents, pandemic and tech use, and clinician training. Key findings and recommendations include:

1. Problematic use must be assessed by information obtained primarily from the adolescent, supported by other stakeholders (e.g., parent, teacher), and with a focus on the *function of the use*, rather than time spent using. Further research is needed on validated problematic technology use measures for youth.
2. CBT interventions such as psychoeducation, problem identification, teaching healthy communication, increasing internet awareness, and teaching cessation techniques, appear to be effective for treating problematic use.
3. Harm reduction approaches, motivational interviewing, and parental involvement are key tools in successful treatment.
4. To have successful parental involvement, psychoeducation on harm reduction and effective modeling of health technology use is necessary.

5. More research is needed on best practices for treating problematic technology use in younger adolescents (<12) and for those with co-occurring mental health conditions.
6. Prevention programs appear to have a moderate evidence base, with education on impacts and risks, promoting protective factors, enhancing skills and competencies, and using peer-to-peer training being particularly useful.
7. Due to the purposefully addictive nature of various technology, prevention efforts at the policy level are needed reduce the negative impact of problematic use.

Conclusion

The present project identified numerous recommendations for problematic technology use, while also highlighting significant gaps in current research and practice. Potential recommendations have been provided regarding assessment, treatment, and prevention for problematic technology use in youth. More research is needed to inform best practices of assessment, treatment, and prevention of problematic technology use.

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Introduction

The increase in technology and internet use in youth and young adults over the past decade has brought concern regarding “problematic use” and “addiction” resulting from these behaviours. Currently, The World Health Organization (WHO) and the American Psychiatric Association (APA) do not recognize “internet” addiction as a disorder, except for a disorder for future study (i.e., Internet gaming disorder; IGD) in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5, American Psychiatric Association, 2013) and Gaming Disorder in the ICD-11. Nonetheless, a phenomenon of tech (e.g., smartphone, tablet, video games) and problematic internet use exists and has become a global concern for clinicians, researchers, individuals afflicted, and their families (Saunders et al., 2017).

Rideauwood offers counselling to youth and young adults who are experiencing various addictive disorders, including alcohol and substance use, as well as problematic tech use. However, due to the novelty of problematic technology use in the clinical and research spheres, a two-part study was undertaken, 1) to synthesize the existing literature on problematic technology use and 2) to qualitatively understand the experience of stakeholders working within the problematic technology use.

Phase 1: Scoping Review of the Literature

The purpose of the present review was to assess the current evidence base on problematic technology use amongst youth and young adults. This review focuses on the prevalence, as well as gold standard assessment and treatment of problematic use to inform recommendations.

Method

A systematic search strategy was undertaken within PsycINFO. The following search terms were used: 1) “internet” or “online” or “gaming” or “social network” or “social media” AND 2) “excessive” or “problem*” or “compuls*” or “addict*” or “disorder” or “pathological” AND 3) “adolescen*” or “teen*” or “youth” or “young adult”. Inclusion criteria were that the articles were published from 2010-present, focused on problematic tech or internet use with youth, published in English, and discussed prevalence, assessment, or intervention.

The systematic search strategy identified 682 abstracts, of which, 32 met inclusion criteria for the project. The articles selected were reviews on the prevalence of problematic tech use (including internet, gaming, gambling, social media etc.); diagnostic criteria, assessment, and measurement concerns; as well as prevention and treatment strategies and their effectiveness.

Results

Lack of Consensus with Professionals

Several articles in the review discussed the current lack of consensus from scholars and professionals on whether tech use can lead to an addiction. Ferguson & Colwell (2020) examined the opinions of 214 scholars on the behavioural addiction of gaming. Their results indicated a variance of opinions. In particular, 60.8% of scholars agreed pathological gaming could be a mental health problem, whereas 30.4% were skeptical. As well, 49.7% believed the DSM-5 criteria for IGD were valid and 56.5% supported the World Health Organization (WHO) “gaming disorder” diagnosis. Some scholars worried about both criteria over-pathologizing normal youth. This stance was further supported by an open debate paper by Aarseth and colleagues (2017) that discussed a “moral panic” that has been caused by the newly created diagnostic criteria. They note the inclusion of the diagnostic criteria causes “significant stigma to the millions of children and adolescents who play video games as part of a normal, healthy life”.

Other authors define their clinical descriptions of problematic use as 10 or more hours per day gaming leading to sleep deprivation, day–night reversal, dehydration, malnutrition, seizures, and pressure sores, as well as irritability, physical aggression, depression, and a range of social, academic, and vocational problems (Saunders et al., 2017). They also discuss cases of

death caused by gaming for consecutive days that led to obstruction of the pulmonary arteries. Therefore, it is apparent that the consequences of problematic tech use are vast and reflect a significant public health concern.

Assessment

It is important to discuss the results of the assessment papers as they highlight important gaps in the current understanding of problematic technology use that impact diagnosis and treatment. First, the articles discussed the lack of diagnostic criteria resulting in many different assessment tools being developed that measure the construct of problematic technology use differently. Another issue within the field is a lack of consensus on what constitutes “problematic” use and how it is being operationalized. Interestingly, it is not uncommon for “addiction” measures to be used, but authors do not specify what the cut-offs are to determine “pathological” or “problematic” use.

Connolly and colleagues (2021) reviewed the literature of various assessments of problematic technology use. The results indicated that for social media use, the rates of “problematic” use across studies ranged from 2% to 64%, suggesting considerable problems in measurement. The authors note that this is likely due to the lack of clinical diagnostic criteria that exist for problematic social media and smartphone use. This was echoed by numerous authors who called for clearer definitions of internet addiction, symptoms, diagnostic criteria, and treatment recommendations (Lozano-Blasco et al., 2022). They also note that the lack of definitions has generated multiple measurement instruments leading to inconsistent findings.

An original study by Liu and colleagues (2022) examined the core systems of problematic internet use across early, middle, and late adolescence. Their results indicated that “failure to stop” was one of the central symptoms of the disorder, followed by “feeling depressed” and “increasing use for satisfaction”. Central symptoms across age groups were as followed: Among early adolescents (aged 10-12) “empty life without internet”; for middle adolescents (aged 13-15), “failure to stop” and “less sleep”; and for late adolescents (aged 16-18), “feeling depressed” were central to the disorder. The authors note that targeting symptoms that are central to the disorder is most effective and efficient because once these symptoms are lessened, the symptom network can be largely loosened, thus decreasing the cycle of symptoms.

Interestingly, an original research article by Yazdi et al (2021) assessed youth-reported and parental-reported symptoms of IGD and how they corresponded with DSM-5 criteria (rated by an expert). The study found that youth and parent ratings significantly differed and that the youth and expert ratings were more highly correlated than the parent and expert. The results suggest that adolescents who are at risk of IGD can evaluate their behaviour accurately, whereas parents may over pathologize internet gaming problems.

Prevalence

Due to the variability in measurement and lack of clear diagnostic criteria, the prevalence rates of problematic tech and internet use remain unclear. Rates of various online/tech behaviours that have been documented in the literature are outlined below, including the most researched, internet gaming disorder.

Internet Gaming Disorder

Due to the proposed diagnostic criteria in the DSM-5 and the criteria in the ICD-11, IGD is well-researched in terms of prevalence rates. Fam (2018) conducted a meta-analysis across three decades of research examining the prevalence rates of IGD in adolescents. The 16 studies reviewed indicated an average prevalence rate of 4.6%, with male rates higher (6.8%) than females (1.2%). The authors note the finding is slightly higher than the prevalence rate in child samples (4.2%) but lower than adult samples (8.9%) reported in previous meta-analyses.

A systematic review of 252 studies echoed these rates and noted rates are highest in Eastern Asian countries (Paulus et al., 2018). However, other meta-analyses did not find differences in prevalence between cultures. Feng et al (2017) reviewed the prevalence rates from 1998-2016 with 27 published studies and found no differences in prevalence across countries. This review also found an average prevalence of 4.7%, with the most striking finding being how little the prevalence changed over the years studied. The authors suggest that despite increases in internet access, disordered gaming does not appear to have increased as exponentially as has exposure.

Problematic Internet Use

PIU is defined as the inability to control internet use that causes marked distress and functional impairment. Although it is not a confirmed diagnosis in the DSM-5 or ICD-11, it has been characterized by compulsive use, withdrawal and tolerance symptoms, interpersonal and health problems, and time management problems. Other terms for PIU include internet addiction, pathological internet use, or internet-use disorders. Research findings show that the prevalence rate is 16.3% although this is higher among females, those in their late teens, intensive users, and those without parental control (Gomez et al., 2017).

A recent meta-analysis of 20 studies representing 21,878 adolescents found that the factors most related to internet addiction include age, with younger adolescents being most vulnerable, as well as geographic region. Early adolescence appears to represent a critical point for the onset of PIU (Gomez et al., 2017). The prevalence of PIU appears to increase with age, with the highest prevalence in late adolescence (Xin et al., 2018). In addition, a study of 40,955 Spanish adolescents indicated a significantly higher risk of engaging in PIU in late adolescence (Gomez et al., 2017).

Smartphone Addiction

Problematic smartphone use typically involves the use of various applications including social media. Like internet use, smartphone addiction has not been diagnostically defined by experts. However, a number of studies have been conducted to estimate its prevalence and implications. Sahu and colleagues (2019) conducted a systematic review of mobile phone

addiction amongst children and adolescents. Their review of 12 studies indicated a prevalence of problematic mobile phone use that ranged from 6.3% to 16%. The review finds that problematic use was associated with feeling insecure; impaired school relationships; psychological problems such as low mood and anxiety; and behavioral problems. A recent study by Marengo and colleagues (2022) examined social media addiction in adolescents during COVID-19. The results of their study indicated that TikTok was the most addictive application during the COVID-19 pandemic. Instagram, Snapchat, and WhatsApp use showed no effect when examined together with the other platforms.

Online Gambling

Gambling Disorder is one of the behavioural addictions that has well researched DSM-5 criteria. However, less research has been conducted on online gambling with youth. A recent study by Gomez et al., 2020 estimated the prevalence of online gambling in a sample of 3772 students aged 12-17 in Spain. The results indicated that 6.5% of the sample were online gamblers, which they note has tripled over the past seven years. Despite the increase in online gambling with youth, prevalence rates of online gambling disorder among youth appear to be lower than other online use problems. Montiel and colleagues (2021) conducted a systematic review of the last 20 years on problematic online gambling among adolescents (11–21 years old). Sixteen studies were included and indicated a prevalence rate between 0.77% and 57.5% of adolescents presenting with some degree of problematic online gambling, depending on the methods used. Between 0.89% and 1% of adolescents exhibited an online gambling disorder.

Treatment

Screen Time Interventions

Berchtold et al., 2018 analyzed the impact of daily screen time on various problems amongst 8th graders. Their study found that differences began to appear on sleeping problems, tobacco use, alcohol misuse, cannabis use and sport inactivity for youth spending between 3.5 hrs and 4.5 hrs per day on internet. The study demonstrates the absence of justification for setting a limit to only 2 hrs of screen time per day, as significant effects on health seem to appear only beyond 4 hrs per day.

Parental Mediation

Nielsen et al (2019) conducted a systematic review of parental mediation for problematic screen use. Their review indicated that active mediation (parents talking with their child about screen use without intervening by setting rules) correlated with lower rates of problematic internet use. For problematic online gaming, no link between active mediation was found.

Prevention Programs

Throuvala and colleagues (2019) reviewed 20 studies on school-based prevention strategies for adolescent internet addiction. Their review found that the main strategies used were increasing knowledge about impacts and risks, promoting protective factors, enhancing skills and competencies, and using peer-to-peer training. They note that future studies should

remove internet time reduction as an outcome as this creates an assumption that internet use is negative.

Finkelhor et al. (2020) reviewed youth internet safety education, including both programs and policy. Psychoeducational programs lasting 3–6 weeks for school-age children provided information about the dangers of overuse, self-control techniques, limit-setting, time management skills, and alternative activities. A review of 13 quantitative outcome studies found mixed results for psychoeducational programs (King et al., 2018). More successful programs appear to have a broad mental health approach and are directed at high-risk youth (Deng et al., 2013; Joo & Park, 2010).

Psychological Interventions

Malinauskas et al. (2019) conducted a meta-analysis of psychological interventions for internet and smartphone addiction. Six selected papers published from 2000 to 2019 found significant heterogeneity in the interventions offered; however, psychoeducation and CBT appear to be effective. Lampropoulou and colleagues (2022) conducted a systematic review of treatments for gaming disorders in youth and found 16 relevant studies. Their review suggested that CBT, based on several of the reviewed studies, reduces both symptoms and time spent online. The CBT sessions included psychoeducation, problem identification, teaching healthy communication, increasing internet awareness, and teaching cessation techniques. Sessions were carried out individually or as a group therapy.

Phase 2: Focus Groups

Based on the results of phase 1, the purpose of phase 2 was to understand the current practices of frontline stakeholders regarding the definition, assessment, and treatment of problematic tech uses with youth. The results provided Rideauwood with a snapshot of problematic technology use within their program, as well as providing important areas for program development.

Method

Stakeholders

11 key stakeholders participated in the focus groups. They consisted of:

- School-based counsellors from Rideauwood
- Child and youth counsellors from Rideauwood
- Parent and adult counsellors from Rideauwood
- Youth and young adult clinical manager from Rideauwood
- Youth peers

Interview Guide

The semi-structured interview guide consisted of the following questions, in addition to follow-up questions by the interviewer for participants to expand on their responses. Focus groups were approximately 1-hour and consisted of 3-4 participants per group.

1. How do you define problematic tech/internet use?
2. How do you assess for normal use versus problematic?
3. Once problematic use has been identified, how do clinicians approach treatment?
4. What are the successes/ challenges of treatment?
5. What do clinicians need in order to feel more competent in working with problematic tech/internet use?

Results

The results of the focus groups uncovered the following themes: definition of problematic tech use, treatment approaches, role of parents, pandemic and tech use, and clinician training.

Defining “Problematic” Technology Use

The definition from stakeholders of what constitutes problematic technology use was described unanimously as: Technology use that impedes the person’s ability to function in other areas of their life including: relationships with family and peers, school, other recreational

activities, and basic daily living (e.g., sleep, eating, hygiene). Further, stakeholders noted that problematic use involves being unable to stop use despite negative consequences. Clinicians noted a lack of standard measure to assess what constitutes problematic but cited the screener they provide clients will allow them to “check off” whether technology use is a problem for them. This can flag problematic technology use for the treating clinician to discuss further with the client. Stakeholders discussed that problematic technology use is more about the youth’s relationship with tech, rather than the amount of time they are using. Therefore, problematic use can occur at any point in the spectrum of “time spent”. Understanding *why* they are using is paramount to knowing whether it is problematic. It was discussed that technology use is inevitable; youth need it to do homework, be social, and for entertainment purposes. One stakeholder described how they assess the *why* of using:

“Am I using because I'm uncomfortable right now? I'm sad and I wanted to distract myself from other areas of my life that are bothering me. Is it being used as a coping mechanism to avoid other areas of life or other situations? Am I continuously going to that one thing to cope with everything?”

Treatment Approaches

Stakeholders described that their treatment approach is dependent on the youth wanting to change their use. Similar to substance use, if youth do not think it is a problem, it is not possible to change. Motivational interviewing approaches were discussed as being particularly valuable. Clinicians stated that treatment approaches need to begin with identifying how much technology use takes up in the person’s life (e.g., with a pie chart) and how much the youth wants that piece of the pie to change.

Clinicians also discussed using a cost/benefit analysis to assess the benefits of changing use. These methods were deemed to be effective for older youth, however, clinicians noted that younger youth have a hard time understanding the consequences of technology use. Stakeholders discussed the importance of using harm reduction approaches, because due to the necessity of technology, it is not possible to abstain altogether.

Stakeholders also discussed the importance of prevention efforts, such as school-based psychoeducation on healthy tech use. Staff noted the anecdotal success of this program, but formal evaluations are needed. Further, a critical prevention effort that was discussed was policy level interventions to reduce the negative impact of problematic use. One stakeholder stated:

“I think something I would love to touch on is that how a lot of these applications, games and social media algorithms work is to make it addictive on purpose- I think policy around what algorithms are allowed to do would be an important mitigating factor.”

Role of Parents

Stakeholders discussed the importance of having parents involved in the treatment of problematic technology use if youth are open to them having a role. Parents can assist with tracking technology use at home but must *follow the youth's goals of use*. This may look different than what parents expect use reduction to look like, however, as clinicians take a harm reduction approach, they may assist youth in reducing their use overtime.

This was discussed as an important area to provide psychoeducation for parents, particularly if parents expect youth to eliminate use altogether (e.g., information on harm reduction, balance of tech use & that treatment will take time). Parents need to have communication with youth about why they are using, rather than just how much. Further, when youth feel overwhelmed, they can use parents to talk to instead of technology. Stakeholders also discussed that parents need to model appropriate technology use to their children.

Pandemic and Technology Use

Stakeholders discussed that due to the pandemic, the amount of time youth spent using technology rose dramatically. This was due to a variety of factors, including school occurring online and youth needing to connect with friends virtually, rather than in person. However, as the transition back to in-person occurs, difficulties reducing use back to previous amounts became a problem. For example, youth may now prefer to use technology to socialize rather than seeing friends in person.

Stakeholders noted that problematic use appears to be impacting younger youth more than before the pandemic, highlighting how the change in the environment may have led to increased use of technology and subsequent problematic use. Clinicians discussed that social skills training might be an important treatment avenue for youth, who may have a skills deficit from social distancing during the pandemic. Social anxiety may also be impacting youth who have had less exposure to in-person social situations. One stakeholder noted that youth may need to “learn or relearn how to interact in person”.

Clinician Training

Clinicians described wanting training on how to work with younger adolescents with problematic technology use, due to their difficulties with understanding risks of overuse. Clinicians also noted that they have difficulty disentangling problematic use from other mental health problems (e.g., diagnoses such as ADHD or autism). Further, it was discussed that effective interventions have not been developed for youth with co-occurring neurodevelopmental disorders, which can make treatment planning difficult for clinicians.

Recommendations and Conclusions

The purpose of the present review and focus groups was to synthesize the current state of the literature and practice within problematic technology use. The report has discussed best practices across the definition, assessment, and treatment of problematic technology use with youth. It is apparent that additional research is needed to best support clinicians, parents, and youth. Limitations of the present study are that the clinician stakeholders came from one addiction treatment agency and therefore may have a particular view of problematic use and its treatment. More research is needed to understand how problematic use is being assessed and treated in other settings. A summary of recommendations is described below.

Key Findings and Recommendations

1. Problematic use must be assessed by information obtained primarily from the adolescent, supported by other stakeholders (e.g., parent, teacher), and with a focus on the *function of the use*, rather than time spent using. Further research is needed on validated problematic technology use measures for youth.
2. CBT interventions such as psychoeducation, problem identification, teaching healthy communication, increasing internet awareness, and teaching cessation techniques, appear to be effective for treating problematic use.
3. Harm reduction approaches, motivational interviewing, and parental involvement are key tools in successful treatment.
4. To have successful parental involvement, psychoeducation on harm reduction and effective modeling of health technology use is necessary.
5. More research is needed on best practices for treating problematic technology use in younger adolescents (<12) and for those with co-occurring mental health conditions.
6. Prevention programs appear to have a moderate evidence base, with education on impacts and risks, promoting protective factors, enhancing skills and competencies, and using peer-to-peer training being particularly useful.
7. Due to the purposefully addictive nature of various technology, prevention efforts at the policy level are needed reduce the negative impact of problematic use.

Definition of Problematic Technology Use

The review of the literature noted a lack of consensus for what constitutes problematic use. Researchers discussed both a “moral panic” regarding problematic technology use while others noted clinically relevant symptoms that constitute a disorder. Despite the conflict in the literature, it appears that across stakeholder groups at Rideauwood, problematic use is similarly defined. This definition relied on the assessment of interference in one’s life across numerous domains, as well as distress, rather than the number of hours using or the type of tech use.

Assessment

In the research literature, assessment measures of problematic technology use varied widely. The articles reviewed discussed the lack of diagnostic criteria has led to many different assessment tools being developed; moreover, these tools measure the construct of problematic technology use differently. This has led to a wide range of prevalence rates in the literature.

During the focus groups, stakeholders noted a lack of standard measure, but cited the screener they provide clients will allow them to “check off” whether technology use is a problem for them. This can flag problematic technology use for the treating clinician to discuss further with the client. Importantly, “problematic use” must be assessed by information from youth themselves, as the research suggests parents may over pathologize their youth’s tech use. Further research is needed to validate problematic technology use measures for youth in order to reliably assess these difficulties for treatment purposes.

Treatment

The results of the literature review suggest that CBT interventions such as psychoeducation, problem identification, teaching healthy communication, increasing internet awareness, and teaching cessation techniques, are effective treatment approaches. Rideauwood staff discussed harm reduction approaches, motivational interviewing, and parental involvement, as being important tools in treatment. In order to have successful parental involvement, psychoeducation on harm reduction and effective modeling of healthy tech use is necessary. It appears there is a gap in the current literature and practice on how to best treat younger adolescents (<12). As well, more research and training is needed on assessing co-occurring conditions and subsequent treatment.

Prevention programs appear to have a moderate evidence base, with education on impacts and risks, promoting protective factors, enhancing skills and competencies, and using peer-to-peer training being particularly useful. Researchers have noted the importance of evaluating outcomes of these programs that focus on distress and interference, rather than time on tech use. Centres such as Rideauwood may benefit from evaluating their school-based problematic technology prevention programs to assess their effectiveness.

Conclusion

The present project identified numerous recommendations for problematic technology use, while also highlighting significant gaps in current research and practice. Potential recommendations have been provided regarding assessment, treatment, and prevention for problematic technology use in youth. Key areas of focus are defining problematic use by distress and impairment, using a harm reduction approach to treatment, involving parents in the treatment process, and providing evidence-based prevention programs. More research is needed to inform best practices of assessment, treatment, and prevention of problematic technology use.

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