Reducing Internet gaming: A pilot psychotherapy development study

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Protocol & Statistical Analysis Plan

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PROTOCOL: Reducing Internet gaming: A pilot psychotherapy development study
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Abstract

The fifth revision of the Diagnostic and Statistical Manual for Mental Disorders (DSM-5) includes in its research appendix a potential new diagnosis—Internet gaming disorder (IGD). This condition primarily affects adolescent boys and young adult men, who rarely seek treatment on their own. More often, parents express concerns about their child's game playing behaviors. This psychotherapy development study will evaluate feasibility and effect sizes of an intervention designed to help parents reduce their child's gaming problems; the intervention allows for child participation, but it is geared toward parents, regardless of whether or not their child is willing to participate. A total of 40 parents concerned about their child's gaming behaviors will complete self and parental report inventories and structured diagnostic interviews regarding gaming, substance use and psychosocial functioning. Children who elect to participate will complete parallel versions of the instruments. Participants will be randomized to a control condition consisting of referral for mental health issues and family support services or to a 6-week behavioral intervention designed to assist with better monitoring and regulating the child's game playing behaviors. Gaming and other problems will be assessed pre-treatment, at the end of treatment and at a 4-month follow-up. This study will be the first to evaluate the reliability and validity of a parental version of the DSM-5 criteria for IGD in a clinical sample, and it will assess associations of IGD with substance use, mental health conditions, and family functioning as well. This study will be the first randomized trial of an intervention designed to assist parents in reducing their child's gaming problems, and results will help guide future development of interventions for Internet gaming disorder.

Specific aims

Internet gaming disorder (IGD) is a condition included in the research appendix of the DSM-5. It affects about 1% of the general population, with adolescent and young adult males most often impacted. This is a group that rarely seeks mental health care. More commonly, parents express concerns about their child's behavior. Thus, this intervention study will be aimed toward parents who are worried about their minor child's or young adult child's game playing.

We adapted principles and theories applied in the context of family-based interventions for substance use disorders toward Internet gaming behaviors. In this pilot study, 40 parents who feel their child's gaming behaviors are problematic will be recruited via ads to an intervention study evaluating methods to assist parents in monitoring and reducing their child's game playing. Parents will complete instruments assessing perceptions of their child's gaming, substance use, attention and conduct problems, and psychosocial functioning as well as about their own mental health, family relationships and quality of life. Youth who agree to participate will be administered instruments assessing similar constructs. Following the baseline assessment, participants will be randomly assigned to one of two conditions: referral to community support services, or a 6-week behavioral intervention in which they will meet weekly with a therapist to learn to monitor their child's game playing behavior, restructure the environment to be less conducive toward game playing, and reward non-game playing behaviors. Sessions will also focus on improving parent-child communication skills. The content is aimed toward parents, but each session can be adapted to include children and young adults with gaming problems. Parents, along with children who agree to participate, will complete evaluations post-treatment and 2 months later assessing gaming playing behaviors, substance use and psychosocial functioning, family dynamics, and indices of quality of life. Specific aims are:

1. To evaluate the feasibility and acceptability of this intervention. The proportion of parents assigned to the intervention who complete 6 sessions will be examined, as will be the proportion of youth who attend sessions. Parent and child ratings of satisfaction with the intervention will also be assessed.
2. To examine the effect size of the intervention for reducing gaming. Parental reports of their child's frequencies and durations of game playing behaviors will be compared over time between conditions to establish effect size estimates.

Exploratory aims are to assess the effect size of the intervention on secondary outcomes, including indices of

substance use, conduct and attention problems, family communication, psychosocial functioning and quality of life. In addition, we will evaluate concordance between parental and child reports on measures of gaming and gaming problems. These data will help inform development of parent assessment tools for IGD.

Results from this pilot trial will be used to guide future grant applications. If data are promising, we will improve and modify the intervention based on parent and child feedback. If medium or larger effect sizes are detected for decreasing gaming or improving psychosocial functioning, a larger scale, longer-term study may be proposed. Even in the absence of treatment-specific effects, these results will provide valuable information about how gaming and psychosocial problems change over time. Given increasing scientific interest in this condition, this study is timely and critical for addressing concerns related to this emerging public health issue.

Background and significance

The vast majority of children, along with many young adults, play video or electronic games. A nationally representative study of US youth between the ages of 8 and 18 found that 88% played games electronically, and 68% played at least weekly and 23% daily (Gentile, 2009). Although most videogame playing is harmless, excessive play can lead to psychosocial and even medical problems, with reports of game-induced seizures and even deaths (Chuang, 2006; BBC News; Reuters). Although very few cases rise to these extremes, governments of some Asian countries have declared excessive game playing to reach near epidemic proportions, and treatment clinics have been established around the world, including the US.

Despite reported problems with gaming, there is no officially recognized diagnosis for this condition. The 5th revision of the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-5;* APA, 2013) includes Internet gaming disorder (IGD) in Section 3, "Conditions for Further Study." Classification in future versions of the DSM will require data regarding reliability and validity of diagnosis, comorbidity with other psychiatric conditions, biological mechanisms, as well as information about the natural progression and recovery from this condition, and its treatment. This pilot study proposes to address some of these issues, with the aim of gathering data to support larger scale grant applications related to this condition.

The DSM-5 lists nine criteria for IGD, adapted from substance use and addictive disorders, and an international group (Petry et al., 2014) suggests their operationalization. Studies have begun to evaluate their reliability and validity. Ko et al. (2014) administered clinical interviews based on the DSM-5 criteria to three groups of young adults in Taiwan: persons with current gaming problems; persons with past but not current problems; and persons who never had gaming problems. Meeting 5 or more DSM-5 criteria best distinguished individuals with "normal" levels of play from those who had experienced clinically significant harms, and the specific criteria had adequate to good diagnostic accuracy. Rehbein et al. (2015) developed a screening instrument, the Video Game Dependency Scale (VGDS), based on the DSM-5 criteria and administered it to 11,003 ninth-grade students in Germany. Those who endorsed 5 or more criteria evidenced significantly more impairment in school and sleep problems that those who did not. Students who responded affirmatively to "give up other activities" and "tolerance" symptoms were most likely to meet 5 IGD criteria whereas denying "give up other activities" and "withdrawal" essentially ruled out IGD, suggesting these criteria are particularly relevant. This study will be the first to evaluate the psychometric properties of a parental version of the VGDS, and it will also be the first to evaluate concordance between parent and child reports of symptoms and diagnosis.

Risk factors

Although understanding of IGD is in its early stages, male gender is clearly a risk factor. No matter how IGD is defined all studies find higher rates in males than females (Desai et al., 2010; Choo et al., 2010; Mentzoni et al., 2011). In the DSM-5 based evaluation of IGD in German adolescents (Rehbein et al., 2015), 2.0% of males were classified with the condition versus 0.3% of females. Younger age is consistently associated with gaming as well. Using less stringent classification systems, Festl et al. (2011) found that youth under 19 years had a 7.6% prevalence rate of gaming problems, and for those 20 years and older rates were 3.7%. Mentzoni et al. (2011) noted that 15.4% of males aged 16-21 years, and 9.7% of males aged 22-27, had gaming problems, while rates in all other age and gender groups were under 3%.

Depression and social isolation appear related to IGD. In cross sectional studies, persons with gaming problems have higher rates of depression than those without (Desai et al., 2010; Mentzoni et al., 2011; van Rooij et al., 2010). Low sociability and social competence also correlate with gaming problems (Festl et al., 2011; Lemmens et al., 2009; Rehbein et al., 2010). Lo et al. (2005) surveyed 174 Taiwanese college-age online game players and found that quality of interpersonal relationships decreased, and social anxiety

intensified, as game playing increased. Romer et al. (2013) found that heavy game playing was associated with an increase in depression over time, and that greater depression also predicted more game playing as well as withdrawal from sports and other organized activities in over 700 US youth.

Gaming problems are also linked to impulsivity and Attention Deficit Hyperactivity Disorder (ADHD; Choo et al., 2010; Gentile, 2009; Rehbein et al., 2010). In a prospective study, Swing et al. (2010) evaluated gaming and attention problems in over 1,300 children aged 6 to 12 years old. Game playing correlated with more attention problems at the initial interview, and this relationship persisted throughout a 13-month period.

Only limited data exist on IGD and substance use. In a survey of nearly 2000 game players, Porter et al. (2010) found no differences between those with and without gaming problems in terms of alcohol use, but persons with gaming problems were more likely to use illicit drugs. In high school students, Desai et al. (2010) also found that alcohol use did not differ based on gaming problems, but use of nicotine and illicit drugs other than marijuana was more common in problem gamers. Walther et al. (2012) evaluated substance use, and game playing in over 2500 students and found no association between alcohol and nicotine use and gaming, but a positive relationship between marijuana use and gaming. This study also evaluated personality characteristics and substance use, gambling, and game playing and found all these behavior patterns had impulsivity as a common feature. Impulsivity is a core aspect of substance use disorders and ADHD, and it may play a role in development and/or maintenance of IGD and has been linked with its neurobiology as well (e.g., Chen et al., 2014; Han et al., 2010; Kim et al., 2015; Ko et al. 2013, 2105).

In sum, psychological symptoms are likely involved in the development and maintenance of IGD. However, these studies only reported upon natural changes in IGD that occur over time. They did not address how treatment may impact changes in gaming or other problems.

Treatments

Reviews of treatment for IGD (King et al., 2011; Winkler et al., 2013) note that few randomized trials exist. Most interventions involve intensive multi-modal therapy provided in the context of residential care (Cash et al., 2012; Rumpf et al., in press; Koo et al., 2011; Shek et al., 2009). Young (2007) uses more focused cognitive-behavioral therapy (CBT) to treat individuals with Internet problems more generally in an outpatient setting. Of 114 persons who received 12 sessions of CBT, most reduced symptoms by the 8th session, and improvements were maintained throughout a 6-month follow-up.

In one of the few randomized trials, Du et al. (2010) assigned 56 youth from Shanghai to 8 sessions of a group-based CBT or a no treatment control condition. Internet use decreased similarly in both groups, but those assigned to CBT evidenced improvements in time management skills and reductions in psychosocial symptoms relative to those in the control condition. Jager et al. (2012) describe an ongoing study in Germany. It will compare CBT, involving individual and group therapy for four months, to a wait-list control condition. Up to 200 persons will be assigned to one of the two conditions and assessed through a 6-month follow-up. That study will be the first large scale randomized study of treatment for Internet addiction, but it is not limited to gaming, which may differ substantially from Internet addiction more generally (Petry et al., 2013, 2014).

As in other populations with addictive disorders, few youth or young adults seek treatment on their own (Alegria et al., 2011; Hardoon et al., 2003; SAMHSHA 2009ab). More often, parents express concerns about their child's behaviors, and many treatments for IGD include a family component. Therefore, this study will focus on parents, with family sessions involving the youth encouraged but not required. Data suggest that parents can have strong influences on children's game playing. For example, allowing videogame systems in a child's bedroom is associated with more frequent playing (Roberts & Foehr, 2008) and greater use of violent and mature-rated games (Olson et al., 2007). Parental guidelines related to playing time are also inversely associated with excessive game playing. Carlson et al. (2010) surveyed 7,415 youth and their parents and found that youth who reported their parents had specific and well-defined rules regarding playing were less likely to play excessively than those who reported their parents had no such rules; likewise, parents who indicated they had firm limits noted their children were less likely play excessively than parents without clear limits. In addition, frequent monitoring of behaviors is associated with improved outcomes along a number of dimensions (Michie et al., 2012; Steinberg et al., 2013), and this intervention teaches parents to monitor their child's game playing behavior. It will also assist parents in restructuring their home environment to be less conducive toward game playing, and it will provide communication skills training to encourage and set clear expectations about game playing behaviors. Borrowing from effective behaviorally based family based substance abuse interventions for adolescents and young adults (Stanger et al., 2009; Waldron et al., 2007), this behavioral treatment also encourages methods to provide positive contingencies for non-game playing

behaviors. The primary aim of this pilot study is to evaluate the feasibility and effect size of this behavioral intervention for reducing gaming and related problems and improving family functioning.

Innovation: This study is innovative on several levels. It will be the first to evaluate psychometric properties of a parental version of the DSM-5 IGD criteria, a critical aspect of diagnosis for youth. In addition, this study will assess comorbidities of gaming, substance use, and related conditions, and it will evaluate changes in these symptoms and conditions over time. Most importantly, this study is novel in that it is the first randomized trial specifically for IGD. Based on the premises that parents can modify the child's environment to be less conducive toward game playing and more encouraging of non-gaming behaviors and that children are unlikely to seek treatment on their own, the study is directed toward parents. This study will provide unique and valuable information on the nature, course, and treatment of this putative new addictive disorder.

Approach

Subjects will be recruited by ads directed toward parents, e.g., "Worried about how much your child plays videogames?" Parents who call will be informed that the study specifically relates to an intervention directed toward parents, with child involvement encouraged but not required.

Inclusion criteria are: (1) parent/guardian of a 10-22 year old residing in the same household >8 months/year; and (2) reports the child plays videogames >15 hours/week on average and that the playing has caused significant problems in the family or with the child's school or work.

Exclusion criteria are: (1) parent or child has a significant other mental health condition that may impact response to this treatment (suicidality, psychotic disorder); (2) parent is unavailable to attend 6 weekly sessions over the next 8 weeks; or (3) parent is currently receiving (or has received in the past 3 months) psychosocial support related to parenting or family counseling.

Child age range spans early adolescence to young adulthood. Although broad, 22-year olds still living at home over half the year (to allow for visitation for divorced parents, overnight camps, etc., but not college students living away from home) are likely financially dependent on parents, rendering the intervention relevant. The minimal gaming time is less than the average reported of persons with gaming problems (24 hours/week), but higher than the national average of about 12 hours/week in youth (Gentile, 2009). We elected not to require the child meet DSM-5 criteria for IGD as the criteria and threshold are not firmly established, but parents must report that "significant problems" have arisen to ensure some level of difficulties.

Informed consent. Parents who call in response to ads and appear eligible based upon responses to a phone screen will be invited to an in-person assessment. They will be told their child can also attend, but child attendance is not mandatory for study participation. At the in-person assessment, we will obtain written informed consent. One or two parents can participate, and if both are included, both will sign consent and complete assessments independently. Children <18 years may (or may choose not to) provide assent to participate, and those >18 years will provide written informed consent if they elect to participate. During the COVID-19 pandemic, consent may be conducted remotely via video conference. Consent documents and assessment packets will be sent to potential participants so that they may review the consent prior to the video call. A research assistant will review the consent documents with the potential participant(s) over video conference, and the consenter and participant will sign the document. The RA will witness the participant's signature through video. The participant will send back the document (through mail, email, or fax), which will be joined with the copy signed by the consenter. Assent will be collected the same way. Proof of a LAR is unlikely, but if needed proof of LAR will be shown through video and sent back with signed consent form. We are requesting to waive the need for an individual to witness the person obtaining consent during COVID in order to keep person to person contact low. We are also requesting to waive the lapse period between the consent being signed and receiving the physical copy back from the participant in order not to delay research further. We request that once the consent document is signed (and witnessed by the person obtaining consent via video), the participant may begin the assessments and randomization process. Assessment packets with self-report measures will be mailed to participants to fill out and return via mail, or completed via phone/video if requested by the participant. Assessments that are not self-report will be completed with the research assistant via phone/video.

<u>Assessments</u>. Assessments will be completed pre-treatment, end of treatment (about week 8), and follow-up (about 2 months later). A therapy satisfaction form will also be completed post treatment. Parents and children will receive $20 in gift cards at baseline and $50 in gift cards for each post-baseline assessment completed. Study visits may be completed over the phone, video, or through mail if needed.

From parents, we will collect:
- demographics: including age, gender, income, education of parents & children and items about histories of diagnosis of autism and other mental disorders and social functioning (Strauss-Carpenter, 1972)
- AUDIT (Suanders et al., 1993) a brief questionnaire about their own alcohol use
- DUDIT (Hildebrant, 2105) a brief questionnaire about their own substance use
- Brief Symptom Inventory (BSI; Derogatis, 1992) about psychological symptoms
- Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) a brief questionnaire about emotional regulation
- a modified Video Game Dependency Scale (VGDS; Rehbein et al., 2015) assesses parents' perceptions of their child's game playing
- a semi-structured clinical interview using DSM-5 criteria
- a calendar based assessment, the TimeLine Follow Back (TLFB; Sobell & Sobell, 1990) of the child's gaming and sleep patterns over the past 4 weeks
- Child Behavior Checklist (CBCL; Auchenbach, 2001), an index of child competencies and emotional and behavioral difficulties that yields internalizing, externalizing, and total problem scores
- Conners' Parent Rating Scale—Revised (CPRS-R), a measure of emotional and behavioral problems, including ADHD
- parent version of the Behavior Rating Inventory of Executive Functioning (BRIEF; Guy et al., 2004) will evaluate executive function of their child
- Brief Family Assessment Measure (BFAM; Skinner et al., 1995, 2000) assesses perceptions of recent family functioning
- a brief autism spectrum screen (Allison et al., 2012)
- Quality of Life Inventory (Frisch et al., 1992) will assess their own quality of life
- caregiver's proxy report on the Questionnaire for Measuring Health-related Quality of Life in Adolescents (KINDL-R; Ravens-Sieberer, 2000) assesses perceived QoL of their child

Children who choose to participate will complete parallel instruments from their perspective:
- the VGDS (Rehbein et al., 2015) with additional specific items about gaming (Petry et al., 2014)
- a semi-structured clinical interview using DSM-5 criteria (Petry et al., 2014)
- a modified Teen Addiction Severity index (TASI; Kaminer et al., 1999)
- Perceived Social Support Scale (Procidano & Heller, 1983),
- BFAM (Skinner et al., 1995)
- Social Phobia and Anxiety Inventory for Children (Beidel et al., 1995),
- brief autism screen (Allison et al., 2012),
- Pittsburgh Sleep Quality Index (PSQI; Buysse, et al, 1989),
- Center for Epidemiological Studies-Depressed Mood scale (CES-D; Radloff, 1977; Thomas et al., 2001)
- Youth Self-Report (YSR; Achenbach, 1991) of emotional and behavioral problems
- Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004; Weinberg & Klonsky, 2009)
- a calendar based assessment, the TimeLine Follow Back (TLFB; Sobell & Sobell, 1990) of gaming and sleep patterns over the past 4 weeks

Randomization. After completing the baseline evaluation, parents will be randomized to one of two interventions outlined below. Groups will be stratified based on age of child (<18 or over), and whether or not the child agreed to participate in the study at baseline.

A. Referral for care. Participants assigned to this condition will be referred to support groups in the local area for parents of children with addiction problems such as DMHAS, NAMI and Parents Opening Doors. Parents who express concerns about other mental health problems of their child will be referred for appropriate services as well, e.g., for depression, ADHD, autism, substance use, conduct disorder, etc. After four weeks, the research team will call parents in Group A to inquire about whether they have questions about the referral list or need additional information on treatment providers.

B. Behavioral therapy. This intervention will be administered in 6 individual and/or family sessions (depending on child's willingness to participate), the contents of which are outlined in Petry (under review). Session 1 will focus on reviewing information collected at baseline and orienting the parent (and child, when applicable) to treatment. Parents will be reminded that although they cannot prevent playing games entirely, they can learn to better understand why their child is playing. Through this process they may alter their own reactions toward playing, which in turn may decrease the extent to which their child plays and the problems arising from it. Therapists will review a tracking form with parent and instruct them how to monitor their child's game playing over the upcoming week. Children who participate in the first session will be asked to keep their own independent log of their game playing behaviors as well.

Session 2 will begin by reviewing game playing logs from the prior week. Therapists will troubleshoot difficulties encountered with assessing playing as well as any missed days. If both parent and child completed logs, concordance will be discussed. The therapist will also describe methods to re-arrange the home environment to be able to better monitor playing and at the same time be less conducive toward playing; this may include altering locations of gaming devices. Therapists will review patterns in playing to identify high-risk times and days, as well as circumstances that may have impacted playing (positively or negatively) in the past week. Therapists will also help the parent (and child, when available) set reasonable goals or limits to playing. Therapist will recommend continued recording over the next week, while discussing goals and reasonable limits with their child throughout the week.

In session 3, the therapist will review the past week recording log(s), and how actual gaming aligned or did not with the goals. The therapist will also introduce the concept of replacing high-risk game playing times with alternate activities. The parent (and child when available) will complete a list of recreational activities the child may enjoy. At least 2-3 activities will be identified to occur at high risk gaming times in the upcoming week. The parent will practice offering the alternate activity to their child. Over the upcoming week the parent will continue recording gaming times as well as instances in which s/he offered alternate activities and the child's response.

Session 4 will commence with a review of the prior week's non-gaming activities and monitoring forms. They will review goals and progress towards them, especially in light of the introduction of alternate activities. The therapist will encourage parents to continue monitoring and replacing high-risk times with alternate activities. In addition, the therapist will describe the concept of rewarding non-game playing behaviors. Different rewards will be outlined, and parents will develop a concrete plan to reward their child when not playing games during specific high-risk times in the upcoming week.

Session 5 will continue discussions of rewards for non-gaming playing. Therapists will review rewards provided the prior week, along with suggestions for encouraging and rewarding non-game playing in the future. Communication styles will be reviewed, and the parent (and child, when available) will role play assertive communication skills, especially as relates to game playing.

Session 6 will conclude with a review of progress and a discussion of long-term goals with respect to gaming. The therapist will provide additional recording logs and remind parents to continue monitoring play, offering alternatives to play, and rewarding non-gaming behaviors to prevent relapse.

The six sessions will be scheduled approximately once per week over an 8-week period, allowing for the possibility of some missed or re-scheduled sessions. The goal will be to complete all 6 sessions over 8 weeks; any sessions not completed by week 12 will not be re-scheduled. Study sessions may be completed over the phone or video if needed.

Study visits and follow-up assessments will be scheduled as described above and we have many procedures in place to schedule and complete visits as planned (e.g., collection of contact information, reminder calls and cards, etc.). However, some flexibility is required to protect participants from unnecessarily limiting study procedures to a specific calendar day. If a participant misses an appointment, research staff will attempt to contact and reschedule, but we anticipate late and missed appointments.

Training and therapists: Treatment will be conducted by 2 clinical psychologists. Training and supervision will consist of didactics, role plays and review of audiotapes of role-plays and actual sessions. We will ask all participants to sign a separate consent for audiotaping, although they may participate without allowing taping. Tapes will be reviewed by both therapists and rated for general therapy skills and intended content of the sessions by a modified Yale Adherence Competence Scale (YACS; Carroll et al., 2000). Therapists will begin treating patients once they score good or better on all YACS items on role-plays covering each session. If ratings fall below a mean of good, additional training and supervision will occur.

Data Analyses. We will evaluate potential baseline differences between groups despite random assignment, and any that exist that may relate to outcome will be used as covariates or fixed factors. Analysis will be conducted on an intent-to-treat basis, using all randomly assigned subjects. Both during treatment (baseline to post-treatment) and longer-term (month 4) efficacy will be evaluated.

Aim 1: To evaluate the feasibility and acceptability of this intervention, the proportion of parents assigned to the intervention who complete 6 sessions will be examined, as will the proportion of youth who attend the sessions. Parent and child ratings of satisfaction with the intervention will be assessed.

Aim 2: To examine the effect size of the intervention on reducing gaming, parental reports of proportion of days on which their child played games and durations of game playing will be compared between conditions, controlling for baseline indices. These are continuous measures, with missing data likely. Hierarchial linear models (HLM; Gibbons et al., 1993) will analyze differences between groups over time. These analyses have advantages over repeated measures as they estimate missing data via model parameter estimates and use real time, as opposed to scheduled time, of assessments. Analyses will be conducted for both short and long-term effects. The model will include factors representing group (using contrasts above), time, and the interaction of group by time, along with any important covariates.

Exploratory aims are to assess the effect size of the intervention on secondary outcomes including CBCL scores, family communication, psychosocial functioning and quality of life. Using similar HLM analyses as outlined above we will compare groups over time on these indices.

Power analyses. This pilot study is designed to assess feasibility and effect sizes. Twenty subjects per group are sufficient to assess effect sizes, and if medium or larger effect sizes are noted, subsequent larger scale psychotherapy development trials will be proposed to evaluate short and long-term efficacy of this intervention.

Data quality control/exploratory analyses: Instruments chosen for this study are reliable and valid for assessing psychosocial problems and gaming behavior, although the parental version of the VGDS is new. Careful training of evaluators will precede study initiation, and assessment interviews will be audiotaped and rated for reliability when participants agree to taping.
     Valid assessment requires that measures are obtained from different sources. Parent and child reports will be compared using Kappa's for diagnostic assessments, and Shrout and Fleiss intraclass correlations for continuous variables. We expect most children will participate, with $\geq$30 parent-child pair reports anticipated. In addition to comparing patient and child reports, responses to semi-structured clinical interviews will be compared with VGDS responses.

Future directions. This study will inform development of interventions for Internet gaming disorder. Very little systematic research has been conducted on this condition, and this study will be the first of its kind. It will lead to a therapy manual and specify procedures for monitoring therapy delivery and evaluating potential mechanisms of change for parents of children with the condition. Using established methods of psychotherapy development (Rounsaville et al., 2000), we will determine the initial feasibility and effect size of this behavioral intervention. This work will also guide further development of assessment instruments for IGD. This study holds potential to pave the way for future research evaluating the biological underpinnings of IGD and its association with substance use disorders, as well as its treatment.

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