



Development and Effectiveness of Humanities-Based Cognitive Behavior Therapy for Adolescents With Problematic Gaming Behavior

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Objective This study evaluated the effectiveness of a humanities-based cognitive behavioral therapy (CBT) program for adolescents aged 11–15 years exhibiting symptoms of problematic gaming, focusing on its impact on depression, anxiety, attention-deficit/hyperactivity disorder (ADHD), and Internet gaming disorder (IGD).

Methods Elementary and middle school students with IGD symptoms were recruited and divided into a humanities-based CBT group (20 students) and a control group receiving supportive therapy (21 students). Participants' IGD symptoms and levels of depression, anxiety, and ADHD before and after the intervention were compared and evaluated.

Results Verifying the effectiveness of the developed humanities treatment program showed a significant decrease in clinical scale scores indicating anxiety, ADHD, and IGD. In particular, the differences in IGD and anxiety scores between the intervention and control groups were significant, demonstrating the effectiveness of the humanities-based CBT program. Positive correlations were found between the pre–post scores for depression and IGD and between anxiety, depression, and IGD following the humanities-based intervention.

Conclusion In this study, experts in various fields developed a humanities-based CBT program for adolescents with problematic gaming behavior and verified its effectiveness, demonstrating that programs utilizing the humanities and writing can positively affect symptoms of IGD, anxiety, depression, and ADHD in adolescents. These findings indicate the need to verify the effectiveness of humanities-based therapy programs for adolescents in more diverse regions and age groups.

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Keywords Internet gaming disorder; Adolescents; Humanities; Depression; Anxiety; Attention-deficit/hyperactivity disorder.

INTRODUCTION

Background

Widespread Internet use has made video games accessible anytime and anywhere. Consequently, gaming has become a prevalent aspect of hobbies and leisure. However, excessive gaming can negatively affect daily functioning. In particular, excessive immersion in games has been associated with Internet gaming disorder (IGD), which is frequently comorbid with social isolation, poor interpersonal skills, attention-deficit/hyperactivity disorder (ADHD), and symptoms of depression and anxiety among adolescents.^{1–4}

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Various interventions have been developed to address problematic gaming, including literacy education, cognitive behavioral therapy (CBT), counseling, and pharmacological treatments.^{5–8} However, most of these approaches emphasize the pathological aspects of game use. IGD is now officially recognized in the International Classification of Diseases 11th Revision,^{9,10} which has resulted in treatment tending to focus on symptom reduction rather than addressing the broader socio-cultural context in which problematic gaming emerges. Consequently, even CBT, the most widely used method, has been criticized for its limited long-term effectiveness in treating IGD.¹¹

Another treatment option is supportive therapy, which is a non-pharmaceutical intervention based on emotional stability and trust between the therapist and client that can effectively reduce anxiety, increase self-efficacy, and strengthen social relationships.^{12,13} Thus, it focuses on the protection of self-function and restoration of a sense of reality rather than the complete treatment and recovery of the patient.¹⁴

Recently, research has shown a tendency toward developing personalized supportive therapy programs and approaches that incorporate elements of CBT or psychodynamic therapy.^{15,16} Several studies have shown that supportive therapy, CBT, and family-based therapy have been used in combination or individually to alleviate IGD symptoms in adolescents.^{7,17,18}

However, supportive therapy for adolescents has several limitations. Supportive therapy is limited in its ability to induce practical behavioral changes, and previous research has found that CBT is more effective in treating Internet addiction anxiety, impulsiveness, and social isolation.¹⁹ Furthermore, supportive therapy comprises short consultations in an outpatient clinic, limiting its ability to serve as a direct intervention for addictive behaviors. Motivation is a decisive factor in the effectiveness of treatment for adolescents with problematic gaming behavior.^{20–22} However, supportive therapy, which lacks direct experience, is limited in its ability to foster treatment motivation among adolescents. This indicates the need for more applicable and motivating treatment approaches tailored to the needs of adolescents with IGD.

In response to these limitations, recent approaches have shifted toward addressing users' everyday lives and emotional needs from a cultural rather than purely pathological perspective. Treatments involving elements of the humanities, such as music, art, and physical activities, have been explored as therapeutic.²³ Adolescents are undergoing a period of unstable identity formation and often face anxiety and developmental challenges that can be reinterpreted through the humanities, particularly literature. By engaging with stories and characters from diverse backgrounds and eras, adolescents may come to recognize their struggles as part of a broader human experience.^{24,25}

This developmental sensitivity makes adolescence an optimal period for using the humanities as a therapeutic method not only for those with IGD but also for those experiencing conflict or difficulties typical during adolescent developmental processes.^{25,26} However, humanities-based therapy may be especially beneficial for adolescents with IGD, because ongoing engagement in such programs can support better self-regulation. The humanities offer opportunities for self-exploration through verbal and non-verbal mediums, such as literature, history, philosophy, and art, which may enhance adolescents' ability to understand themselves and others.^{27,28} In particular, unlike other types of interventions, literature-based humanities therapy not only redirects adolescents with IGD away from excessive immersion in the Internet and gaming but also alleviates core characteristics such as heightened impulsivity and anxiety. For example, activities such as reading and writing offer vicarious experiences that allow adolescents to gain new perspectives and insights into their thoughts and behav-

iors.^{29,30} As previous studies have shown,^{31,32} engaging in these activities may improve adolescents' emotional regulation and intelligence and subsequently reduce symptoms of IGD and comorbidities such as depression, anxiety, and ADHD.

Therefore, this study aimed to develop and evaluate a humanities-based CBT program designed to improve treatment motivation and effectiveness among adolescents exhibiting problematic gaming behavior. This humanities program integrates literature, art, and music into the treatment process to not only reduce problematic gaming behavior but also support cognitive development and concentration during adolescence. Additionally, the program addresses the call for scientific rigor by presenting measurable outcomes that can help substantiate the therapeutic value of humanities-based interventions.

Hypothesis

Adolescents with problematic gaming behavior who participate in the humanities-based CBT program will show greater improvement in symptoms of problematic gaming, depression, anxiety, and ADHD compared to those receiving supportive therapy.

METHODS

Participants

Participants were recruited from March to August 2024 through advertisements posted around Chung-Ang University and in the surrounding community, including three elementary schools and three junior high schools. The inclusion criteria were as follows: 1) aged 11–15 years and 2) recommended by officials and guardians as students struggling with problems in their daily lives related to problematic gaming. The exclusion criteria were as follows: 1) a history of psychiatric diagnosis or current use of psychiatric medication; 2) developmental disabilities, including intellectual disabilities and autism spectrum disorder; and 3) speech or learning disabilities.

The same inclusion and exclusion criteria were used for the humanities-based CBT group and the control group who received counseling (supportive therapy) once per week at the IT and Human Research Center at Chung-Ang University.

The humanities-based CBT program was conducted in a group format, divided into two groups of ten participants: one consisting of upper-grade elementary school students and the other of middle school students. Eight sessions (2 hours/session) were held weekly over 2 months from July to August 2024. Although 30 adolescents were initially recruited, 10 students were excluded during the process of screening for problematic gaming behavior, resulting in a final sample of 20 participants. The control group comprised 21 participants who received supportive therapy conducted in-

dividually rather than in a group setting. A total of 41 individuals ultimately agreed to participate in the study. The study procedures and informed consent documents were approved by the Institutional Review Board of Chung-Ang University (IRB No. 1041078-20240514-HR-120). All participants and their legal guardians provided written informed consent before beginning the study.

Procedure

After obtaining consent from the participants and their guardians, demographic information was collected from those who met the inclusion and exclusion criteria. In total, 20 adolescents participated in the humanities-based CBT group and 21 adolescents were included in the control group, who received supportive therapy during the intervention period. Participants were not randomly assigned to groups. The intervention and control groups were recruited separately and participated in different treatment formats. Thus, this study used a non-randomized controlled design. Participants were asked to complete the IGD scale and other psychological scales before and after the intervention (humanities-based CBT vs. supportive psychotherapy) to assess the severity of their IGD symptoms and psychological state, including symptoms of depression, anxiety, and ADHD.

Measures

The measurement tools used in this study are described below. These scales have all been verified for use in Korean populations in prior studies, establishing reliability and validity.

Internet Gaming Disorder Scale-Short Form

The Internet Gaming Disorder Scale-Short Form (IGDS9-SF) is a concise self-report instrument developed to assess the severity of IGD symptoms in accordance with the nine diagnostic criteria outlined in Section III of the Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition (DSM-5). Each of the nine items directly reflects a single DSM-5 criterion for IGD, enabling both research and clinical assessments to parallel the recommended diagnostic framework.³³⁻³⁵ The validity of the Korean version of the IGDS9-SF used in this study was previously established by Kim and Ko.³⁶ They reported that the K-IGDS9-SF demonstrated high internal consistency, with a Cronbach's alpha of 0.86 across all items. The scale also showed strong concurrent, criterion, and convergent validity, indicating its efficiency and validity in assessing IGD symptoms. The IGDS9-SF comprises nine items assessed on a 5-point Likert scale ranging from never (1) to very often (5), and higher scores indicate a higher likelihood of IGD.³⁷ The cutoff score for this scale is 21.

State-Trait and Anxiety Inventory

Developed by Spielberger, the State-Trait and Anxiety Inventory (STAI) measures individual state anxiety (current feelings of anxiety) and trait anxiety (anxiety as a characteristic of one's personality) as a psychological measurement tool to evaluate anxiety disorders. The STAI has undergone clinical validation in Korea and was evaluated as a tool with satisfactory factorial validity in a study involving 200 Korean patients with anxiety disorders.³⁸ It comprises 40 total questions, with state and trait anxiety measured using 20 questions each. Answers are rated on a 4-point Likert scale, with higher scores indicating higher levels of anxiety. This scale has been widely used in various fields, and several studies have demonstrated its reliability and validity.³⁹

Children's Depression Inventory

The Children's Depression Inventory (CDI) was developed by Kovacs as a psychological tool to assess depression in children and adolescents aged 7–17 years. This scale has been widely used to assess depression in clinical and research settings. Cho and Lee⁴⁰ verified the Korean version of the CDI, and its validity has been established through studies reporting optimal cutoff scores based on depression severity in Korean adolescents.⁴¹ The CDI comprises 27 questions rated on a scale ranging from 0 to 2. The score reflects a child's feelings, behavior, and thinking, and higher total scores indicate more severe depressive symptoms. The CDI comprehensively assesses various aspects of depression, including suicidal thoughts and decreased mood, self-esteem, and academic interest.^{42,43}

ADHD Rating Scale (ARS)

The ADHD Rating Scale (ARS) measures the severity of ADHD symptoms and comprises 18 questions, with carelessness and hyperactivity assessed using nine questions each. Regarding internal consistency, So et al.⁴⁴ reported that Cronbach's alpha ranges from 0.77 to 0.89 for the Korean version of the ARS.

Statistical analysis

Demographic characteristics and baseline clinical scale scores were analyzed using chi-square and independent sample t-tests. Independent sample t-tests were used to compare clinical scale scores before and after the intervention and between-group differences at follow-up. Repeated-measures analysis of variances (ANOVAs) were performed to examine the interaction effect of group and time on clinical scale scores (Figure 1). Additionally, correlation analyses were conducted to explore the associations between clinical scale scores in both the experimental and control groups. $p < 0.05$ was con-

sidered statistically significant (Figures 2 and 3).

Humanities-based CBT program session organization

One psychiatric doctor, two clinical psychologists, one writer, and one professor who majored in the humanities developed the humanities-based CBT for IGD used in this study. The content of the CBT sessions was developed based on our previous study on brain activation in response to literature-related activities.⁴⁵ Elements of the humanities were included such as understanding and gaining insight into oneself and others; improving emotional intelligence through emotional expression and catharsis; enhancing cognitive abilities includ-

ing attention, working memory, and problem-solving ability; and clarifying the thinking process.^{46,47}

The humanities-based CBT for IGD program included eight sessions with the following themes: 1) building relationships; 2) simple attention enhancement; 3) emotional expression; 4) social skills training; 5) interpersonal relationship training; 6) complex attention enhancement; 7) acceptance, adjustment, and expression; and 8) improvement of logicity. Each session lasted for 60 minutes with four or five adolescents and two teachers.

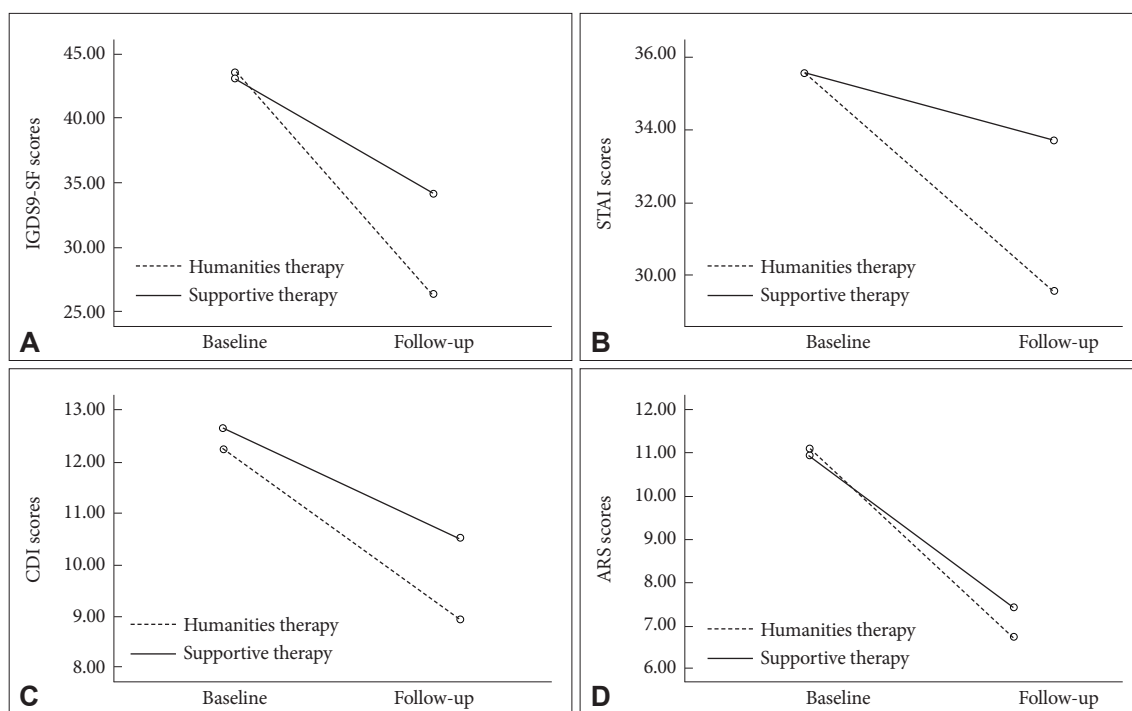


Figure 1. Changes in clinical scales scores between groups. A: Changes in IGDS9-SF scores between groups ($F=5.26$, $p=0.027$). B: Changes in STAI scores between groups ($F=6.48$, $p=0.02$). C: Changes in CDI scores between groups ($F=0.62$, $p=0.44$). D: Changes in ARS scores between groups ($F=0.59$, $p=0.45$). IGDS9-SF, Internet Gaming Disorder Scale-Short Form; STAI, State-Trait and Anxiety Inventory; CDI, Children's Depression Inventory; ARS, attention-deficit/hyperactivity disorder Rating Scale.

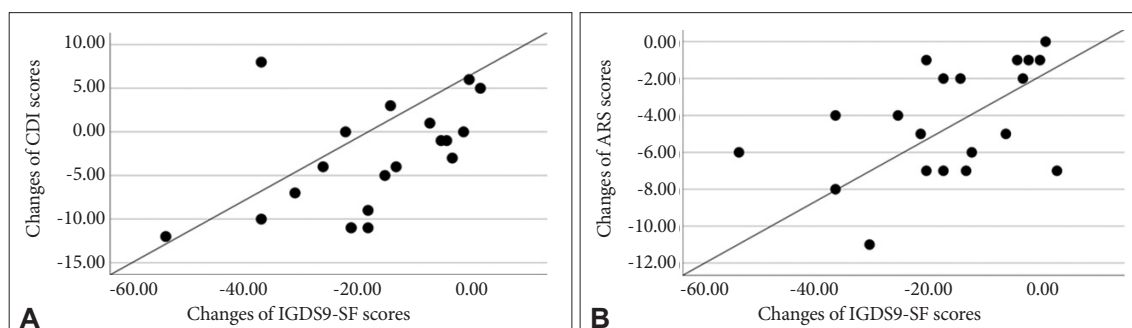


Figure 2. Correlations between clinical scales score changes in the experimental group. A: Correlation between IGDS9-SF and CDI scores in the experimental group (humanities-based CBT) ($r=0.487$, $p<0.05$). B: Correlation between IGDS9-SF and ARS scores in the experimental group (humanities-based CBT) ($r=0.474$, $p<0.05$). IGDS9-SF, Internet Gaming Disorder Scale-Short Form; STAI, State-Trait and Anxiety Inventory; CDI, Children's Depression Inventory; ARS, attention-deficit/hyperactivity disorder Rating Scale; CBT, cognitive behavioral therapy.

RESULTS

Demographic characteristics of the sample

No significant differences in demographic characteristics were found between the experimental (humanities-based CBT) and control (supportive therapy) groups, including sex ($\chi^2=0.04$, $p=0.84$), age ($t=0.30$, $p=0.77$), education period ($t=0.28$, $p=0.78$), and economic status ($t=-0.28$, $p=0.78$). Additionally, no significant between-group differences were found in the baseline clinical scores before the intervention, including the IGDS9-SF ($t=0.09$, $p=0.93$), STAI ($t=0.01$, $p=0.99$), CDI ($t=-0.21$, $p=0.84$), and ARS ($t=0.10$, $p=0.92$) scores (Table 1).

Verifying the effectiveness of the humanities-based CBT program

Changes in participants' symptoms of IGD, depression, anxiety, and ADHD were analyzed pre- and post-intervention to

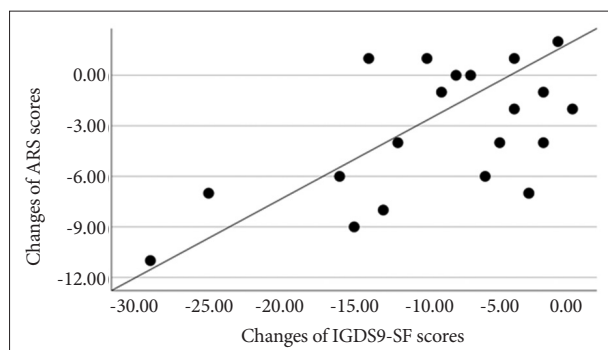


Figure 3. Correlations between IGDS9-SF and ARS scores in the control group (supportive therapy) ($r=0.528$, $p<0.05$). IGDS9-SF, Internet Gaming Disorder Scale-Short Form; ARS, attention-deficit/hyperactivity disorder Rating Scale.

assess the effectiveness of the humanities-based CBT program. As Table 2 shows, both groups demonstrated statistically significant improvements across all clinical scales post-intervention.

Specifically, IGDS9-SF scores significantly decreased in both the humanities-based CBT ($t=5.29$, $p<0.001$) and supportive therapy ($t=5.33$, $p<0.001$) groups. A repeated-measures ANOVA revealed a significant group effect at follow-up ($F=5.26$, $p=0.027$), indicating greater symptom reduction in the humanities-based CBT group.

Similarly, STAI scores decreased significantly in both the humanities-based CBT ($t=3.77$, $p<0.001$) and supportive therapy ($t=3.91$, $p<0.001$) groups. A significant group difference was observed in the follow-up analysis using a repeated-measures ANOVA ($F=6.48$, $p=0.02$), suggesting superior anxiety reduction in the humanities group.

Both groups exhibited improvements in depressive (CDI: humanities: $t=2.39$, $p=0.03$; supportive therapy: $t=3.63$, $p=0.002$) and ADHD-related symptoms (ARS: humanities: $t=6.46$, $p<0.001$; supportive therapy: $t=4.25$, $p<0.001$). However, the between-group differences for these measures were not statistically significant (CDI: $F=0.62$, $p=0.44$; ARS: $F=0.59$, $p=0.45$).

Notably, although the baseline scores were comparable between groups, post-intervention scores revealed greater overall symptom improvement in the humanities-based CBT group. These findings support the therapeutic potential of integrating aspects of the humanities into a CBT program to not only reduce problematic gaming behavior but also address comorbid symptoms, such as anxiety and attention difficulties.

Table 1. Demographic characteristics and clinic scales

	Humanities group (N=20)	Supportive therapy group (N=21)	Statistics
Demographic characteristics			
Sex			$\chi^2=0.04$, $p=0.84$
Male	13 (65.0)	13 (61.9)	
Female	7 (35.0)	8 (38.1)	
Age (yr)	13.0 $\pm$ 1.5	12.9 $\pm$ 1.6	$t=0.30$, $p=0.77$
Education period (yr)	6.2 $\pm$ 1.7	6.0 $\pm$ 1.7	$t=0.28$, $p=0.78$
Economic level (yr)*	2.1 $\pm$ 0.5	2.0 $\pm$ 0.6	$t=-0.28$, $p=0.78$
Clinic scales			
IGDS9-SF	43.6 $\pm$ 15.3	43.1 $\pm$ 16.1	$t=0.09$, $p=0.93$
STAI	35.6 $\pm$ 7.7	35.6 $\pm$ 7.2	$t=0.01$, $p=0.99$
CDI	12.3 $\pm$ 6.4	12.7 $\pm$ 6.4	$t=-0.21$, $p=0.84$
ARS	11.1 $\pm$ 4.7	11.0 $\pm$ 4.9	$t=0.10$, $p=0.92$

Data are presented as mean $\pm$ standard deviation or number (%). *Economic level: 1=less than \$30,000; 2=\$30,000–\$50,000; 3=more than \$50,000. IGDS9-SF, Internet Gaming Disorder Scale-Short Form; STAI, Spielberg's State-Trait and Anxiety Inventory; CDI, Children's Depression Inventory; ARS, attention-deficit/hyperactivity disorder Rating Scale.

Table 2. Clinical scale changes and group differences at follow-up

Scale	Group	Baseline	Follow-up	Pre-post change	Follow-up group difference
IGDS9-SF	Humanities	43.6±15.3	26.4±5.1	t=5.29, p<0.001**	F=5.26, p=0.027
	Supportive	43.1±16.1	34.2±11.0	t=5.33, p<0.001**	
STAI	Humanities	35.6±7.7	29.6±7.7	t=3.77, p<0.001**	F=6.48, p=0.02
	Supportive	35.6±7.2	33.7±6.4	t=3.91, p<0.001**	
CDI	Humanities	12.3±6.4	9.0±7.6	t=2.39, p=0.03	F=0.62, p=0.44
	Supportive	12.7±6.4	10.5±5.4	t=3.63, p=0.002**	
ARS	Humanities	11.1±4.7	6.8±4.1	t=6.46, p<0.001**	F=0.59, p=0.45
	Supportive	11.0±4.9	7.4±3.7	t=4.25, p<0.001**	

Data are presented as mean±standard deviation. **p<0.001. IGDS9-SF, Internet Gaming Disorder Scale-Short Form; STAI, Spielberg's State-Trait and Anxiety Inventory; CDI, Children's Depression Inventory; ARS, attention-deficit/hyperactivity disorder Rating Scale.

Correlation of clinical scale changes post-intervention

Table 2 shows a positive correlation between changes in ARS and IGDS9-SF scores in the supportive therapy group, indicating that improvements in attention were associated with reductions in IGD symptoms. In the humanities-based CBT group, changes in IGDS9-SF scores were positively correlated with changes in CDI and ARS scores, suggesting that reductions in problematic gaming behavior were associated with improvements in depressive and attention-related symptoms.

DISCUSSION

This study's findings indicate that a humanities-based CBT program can decrease symptoms of IGD as well as associated psychological symptoms, such as depressed mood, anxiety, and attention problems. Moreover, improvements in IGD symptoms were correlated with decreased attention problems and anxiety symptoms.

Although prior research has demonstrated the effectiveness of CBT and arts-based interventions for IGD, few studies have directly used literature therapy or humanities-based programs as core treatment modalities. Therefore, this study is among the first empirical attempts to assess the therapeutic impact of humanities-integrated CBT for adolescents with IGD.

Several studies have explored the therapeutic impact of other forms of arts-based interventions, such as music and art therapy, on reducing IGD symptoms and related psychopathologies. Humanities-based interventions can be considered a subcategory of art therapy. Prior studies have employed other forms of art therapy, such as art and music therapy, to treat problematic gaming behavior. For example, Han et al.⁴⁸ found that an art therapy program significantly reduced symptoms of IGD, depression, and anxiety in adolescents. Similarly, Bong et al.⁴⁹ demonstrated that a combined CBT and music therapy program was effective in alleviating the symptoms of not only IGD but also those of depression, anxiety, attention,

and impulsivity. Both humanities-based CBT approaches that incorporate art and music and the literature-based CBT program implemented in this study have demonstrated effectiveness in reducing not only IGD symptoms but also comorbid psychiatric symptoms in adolescents with problematic Internet use.^{48,49} This observation aligns with the therapeutic structure of PIPATIC, a multidimensional psychotherapy program that, unlike conventional CBT approaches focusing primarily on IGD symptoms, has demonstrated efficacy across broader psychotherapeutically focused areas of IGD, including educational, intrapersonal, and interpersonal functioning and lifestyle restructuring.⁵⁰

However, in contrast to PIPATIC, humanities-based CBT emphasizes engagement with symbolic content and reflective processes through literature, offering a unique pathway toward self-exploration and emotional insight. This therapeutic effect may be attributable to a shared mechanism in which the object of excessive immersion is redirected toward humanities-based activities, such as literature, especially when implemented in peer-group settings that facilitate emotional stability and enhance social functioning through interpersonal engagement.⁵¹

Specifically, compared with art and music therapies utilizing non-verbal emotional expression, which allows individuals to communicate their feelings through creative media^{48,49} rather than direct verbalization, literature-based CBT offers a different pathway. In this approach, adolescents engage with the lives and decisions of literary characters and are encouraged to reflect on how they might have acted in similar situations. This process fosters introspection and encourages participants to share personal insights with others.⁵¹⁻⁵³ Consequently, literature-based interventions provide adolescents with opportunities to explore their unstable and conflicted sense of self during this critical developmental period.^{51,54}

Furthermore, literature-based interventions offer distinct therapeutic benefits by enabling symbolic and creative expression. Such interventions allow individuals to process emo-

tional conflicts, deepen interpersonal awareness, and meaningfully engage with their inner experiences through narratives and metaphors.^{55,56} Notably, the humanities-based CBT program developed in this study led to greater improvements in anxiety and attention than in mood symptoms. These results suggest that interventions incorporating literary reading and expressive writing may be particularly beneficial for adolescents with IGD who also exhibit comorbid ADHD or anxiety symptoms.

Several studies on the humanities, especially literacy, have reported relationships between literature-based activities, attention problems, and anxiety reduction.⁵⁷ Furthermore, sustained attention has been associated with reading comprehension among adolescents with ADHD.⁵⁷ Ghelani et al.⁵⁸ found that adolescents with ADHD showed adequate single-word reading ability but no differences in text reading rate and reading comprehension, compared to adolescents with reading disability. In addition, reading more books was found to potentially reduce anxiety symptoms in college students during the COVID-19 lockdowns in China.⁵⁹

This study makes several key contributions. First, the humanities-based program was developed through multidisciplinary collaboration involving medical professionals, clinical psychologists, humanities educators, and literature therapy specialists. This approach allowed for multifaceted interventions tailored to the developmental needs of adolescents with problematic gaming behavior. Second, the use of qualitative data, such as participant reflections, creative works, and interviews, provided insights into internal changes that may not be captured through quantitative measures alone. Finally, the findings suggest that the humanities-based CBT program could effectively reduce problematic gaming behavior, even without pharmacological treatment or brief psychiatric consultation. Beyond symptom reduction, this program appeared to enhance adolescents' self-awareness and interpersonal understanding. Notably, the findings demonstrate the potential of this program to redirect adolescents' excessive gaming-related focus toward constructive activities, such as reading literature and group-based expressive writing, thereby fostering emotional and behavioral self-regulation.

This study had several limitations. First, the sample was limited to elementary and middle school students residing in Seoul, which may restrict the generalizability of the findings. Future research should implement the program in more diverse settings to evaluate its broader applicability. Second, participants were recruited based on self-report measures, which may have introduced response bias and affected data reliability. Future studies should consider collaborating with school counseling centers or Internet addiction prevention clinics to ensure more representative sampling and improve

methodological rigor.

In conclusion, this study examined the therapeutic effectiveness of integrating humanities-based elements into a CBT program for adolescents with IGD. The findings demonstrated that incorporating literary reading and expressive writing led to meaningful improvements not only in problematic gaming behavior but also in symptoms of comorbid disorders such as depression, anxiety, and ADHD. Although prior research has investigated the effects of arts-based therapies, such as music and art therapy, this study is notable for its development and direct implementation of a humanities-oriented program centered specifically on literature.

By engaging in structured reading and reflective writing activities, participants developed enhanced self-awareness and interpersonal insight, which appeared to support improvements in emotional regulation and impulse control while reducing problematic gaming behavior. These results underscore the importance of a comprehensive developmental approach that extends beyond symptom suppression. By targeting core self-regulatory capacities and emotional expression, which are key areas of vulnerability during adolescence, this study highlights the unique potential of humanities-informed interventions as a valuable complement to conventional CBT strategies.

Availability of Data and Material

The datasets generated or analyzed during the study are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors have no potential conflicts of interest to disclose.

Author Contributions

Conceptualization: Yeji Park, Doug Hyun Han. Data curation: Yeji Park, Ji-Ae Choi. Formal analysis: Yeji Park, Doug Hyun Han. Funding acquisition: Yeji Park, Doug Hyun Han. Methodology: all authors. Supervision: Yeji Park, Doug Hyun Han. Writing—original draft: Yeji Park. Writing—review & editing: Doug Hyun Han

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REFERENCES

- Coutelle R, Balzer J, Rolling J, Lalanne L. Problematic gaming, psychiatric comorbidities, and adolescence: a systematic review of the literature. *Addict Behav* 2024;157:108091.
- Erevik EK, Landrø H, Mattson ÅL, Kristensen JH, Kaur P, Pallesen S. Problem gaming and suicidality: a systematic literature review. *Addict Behav Rep* 2022;15:100419.
- Ferguson CJ, Coulson M, Barnett J. A meta-analysis of pathological gaming prevalence and comorbidity with mental health, academic and social problems. *J Psychiatr Res* 2011;45:1573-1578.
- Ko YM, Lee ES, Park S. Prevalence, correlates, and comorbidities of internet gaming disorder and problematic game use: national mental health survey of Korea 2021. *Front Psychiatry* 2024;15:1442224.
- Chung S, Kim SI, Hwang H, Han DH. The effectiveness of game coding education on problematic internet gaming. *Psychiatry Investig* 2023;20:531-540.
- Han ES, Park Y, Yurgelun-Todd D, Renshaw PF, Han DH. Comparing the effectiveness of game literacy education and game coding education in improving problematic internet gaming. *Front Psychiatry* 2024; 15:1377231.
- Lampropoulou P, Simos K, Floros G, Christodoulou N. Effectiveness of available treatments for gaming disorders in children and adolescents: a systematic review. *Cyberpsychol Behav Soc Netw* 2022;25:5-13.
- Zajac K, Ginley MK, Chang R. Treatments of internet gaming disorder: a systematic review of the evidence. *Expert Rev Neurother* 2020;20:85-93.
- Pravanthi K, Nihal NG, Raju NN, Mane S. A case report of internet gaming disorder treated with bupropion and cognitive behavioral therapy. *Cureus* 2024;16:e63013.
- World Health Organization. ICD-11 for Mortality and Morbidity Statistics: 6C51 Gaming disorder; 2019 [Internet]. Available at: <https://icd.who.int/browse11/l-m/en>. Accessed March 1, 2025.
- Stevens MWR, King DL, Dorstyn D, Delfabbro PH. Cognitive-behavioral therapy for internet gaming disorder: a systematic review and meta-analysis. *Clin Psychol Psychother* 2019;26:191-203.
- Markowitz JC. Supportive evidence: brief supportive psychotherapy as active control and clinical intervention. *Am J Psychother* 2022;75:122-128.
- Van Den Beldt HM, Ruble AE, Welton RS, Crocker EM. Contemporary supportive therapy: a review of history, theory, and evidence. *Psychodyn Psychiatry* 2021;49:562-590.
- Grover S, Avasthi A, Jagiwal M. Clinical practice guidelines for practice of supportive psychotherapy. *Indian J Psychiatry* 2020;62:S173-S182.
- Li W, Gleeson J, Fraser MI, Ciarrrochi J, Hofmann SG, Hayes SC, et al. The efficacy of personalized psychological interventions in adolescents: a scoping review and meta-analysis. *Front Psychol* 2024;15:1470817.
- Tompson MC, Sugar CA, Langer DA, Asarnow JR. A randomized clinical trial comparing family-focused treatment and individual supportive therapy for depression in childhood and early adolescence. *J Am Acad Child Adolesc Psychiatry* 2017;56:515-523.
- Lindenberg K, Kindt S, Szász-Janocha C. Effectiveness of cognitive behavioral therapy-based intervention in preventing gaming disorder and unspecified internet use disorder in adolescents: a cluster randomized clinical trial. *JAMA Netw Open* 2022;5:e2148995.
- Nielsen P, Christensen M, Henderson C, Liddle HA, Croquette-Krokar M, Favez N, et al. Multidimensional family therapy reduces problematic gaming in adolescents: a randomised controlled trial. *J Behav Addict* 2021;10:234-243.
- Han J, Seo Y, Hwang H, Kim SM, Han DH. Efficacy of cognitive behavioural therapy for internet gaming disorder. *Clin Psychol Psychother* 2020;27:203-213.
- Ellis DA, Berio H, Carcone AI, Naar-King S. Adolescent and parent motivation for change affects psychotherapy outcomes among youth with poorly controlled diabetes. *J Pediatr Psychol* 2012;37:75-84.
- Shirk SR, Karver MS, Brown R. The alliance in child and adolescent psychotherapy. *Psychotherapy (Chic)* 2011;48:17-24.
- Stige SH, Barca T, Lavik KO, Moltu C. Barriers and facilitators in adolescent psychotherapy initiated by adults-experiences that differentiate adolescents' trajectories through mental health care. *Front Psychol* 2021;12:633663.
- Jung T, Park H. Comparative effectiveness of exercise and art therapy programs in treating internet gaming disorder among adolescents: an 8-day intensive intervention study. *Exp Brain Res* 2025;243:112.
- Grandits P. Impact of identity-oriented literature education on adolescents' insight into the self and the other. *Educ New Dev* 2021;21:255-259.
- Verbiest C, Murnan R. Using literature to support adolescent identity development: a critical perspective. *Teacher Educ J* 2022;15:131-156.
- Martínez-López de Castro R, Alvariñas-Villaverde M, Pino-Juste M, Domínguez-Lloria S. Designing and evaluation of an artistic experience for the development of empathic capacity: "stepping into others' shoes". *Brain Sci* 2022;12:1565.
- Shaffer VA, Bohanek J, Focella ES, Horstman H, Saffran L. Encouraging perspective taking: using narrative writing to induce empathy for others engaging in negative health behaviors. *PLoS One* 2019;14: e0224046.
- Smit J. The role of empathy in the knowledge building of eighth grade girls as they reflect on their experiences with literature. *Sci Study Lit* 2016;6:59-86.
- Atkinson L, Slade L, Powell D, Levy JP. Theory of mind in emerging reading comprehension: a longitudinal study of early indirect and direct effects. *J Exp Child Psychol* 2017;164:225-238.
- Cho M, Kim YG, Olson CB. Does perspective taking matter for writing? Perspective taking in source-based analytical writing of secondary students. *Read Writ* 2021;34:2081-2101.
- del Pilar Jiménez E, Alarcón R, de Vicente-Yague MI. Reading intervention: correlation between emotional intelligence and reading competence in high school students. *Revista de Psicodidáctica (English ed.)* 2019;24:24-30.
- Jiménez-Pérez EDP, de Vicente-Yagüe Jara MI, León Urrutia M, García Guirao P. Emotions and reading: when reading is the best way to improve skills in adolescents. *Front Psychol* 2023;14:1085945.
- Pontes HM, Griffiths MD. Portuguese validation of the internet gaming disorder scale-short-form. *Cyberpsychol Behav Soc Netw* 2016;19: 288-293.
- Poon LYJ, Tsang HWH, Chan TYJ, Man SWT, Ng LY, Wong YLE, et al. Psychometric Properties of the Internet Gaming Disorder Scale-Short-Form (IGDS9-SF): systematic review. *J Med Internet Res* 2021; 23:e26821.
- Pramukti I, Nurmala I, Nadhiroh SR, Tung SEH, Gan WY, Siaw YL, et al. Problematic use of internet among Indonesia university students: psychometric evaluation of Bergen Social Media Addiction Scale and Internet Gaming Disorder Scale-Short Form. *Psychiatry Investig* 2023; 20:1103-1111.
- Kim BN, Ko H. Psychometric properties of the nine-item Korean Internet Gaming Disorder Scale: Short Form. *Cyberpsychol Behav Soc Netw* 2020;23:854-859.
- Pontes HM, Griffiths MD. Measuring DSM-5 internet gaming disorder: development and validation of a short psychometric scale. *Comput Human Behav* 2015;45:137-143.
- Lee KS, Bae HL, Kim, DH. [Factor analysis of the Korean version of the state-trait anxiety inventory in patients with anxiety disorders]. *Anxiety Mood* 2008;4:104-110. Korean
- Lee SA. Coronavirus Anxiety Scale: a brief mental health screener for COVID-19 related anxiety. *Death Stud* 2020;44:393-401.
- Cho SC, Lee YS. Development of the Korean form of the Kovacs' Children's Depression Inventory. *J Korean Neuropsychiatr Assoc* 1990;29: 943-956.
- Bang YR, Park JH, Kim SH. Cut-off scores of the children's depression inventory for screening and rating severity in Korean adolescents. *Psychiatry Investig* 2015;12:23-28.
- Houghton S, Marais I, Kyron M, Lawrence D, Page AC, Gunasekera S,

- et al. Screening for depressive symptoms in adolescence: a Rasch analysis of the short-form childhood depression inventory-2 (CDI 2: SR [S]). *J Affect Disord* 2022;311:189-197.
43. Kim D, Kwon HJ, Ha M, Lim MH, Kim KM. Network analysis for the symptom of depression with Children's Depression Inventory in a large sample of school-aged children. *J Affect Disord* 2021;281:256-263.
44. So YK, Noh JS, Kim YS, Ko SG, Koh YJ. The reliability and validity of the Korean parent and teacher ADHD rating scale. *J Korean Neuropsychiatr Assoc* 2002;41:283-289.
45. Jeong S, Hong JS, Han DH. Brain activation in response to literature-related activities. *Psychiatry Investig* 2025;22:574-582.
46. McAdams DP. The psychology of life stories. *Rev Gen Psychol* 2001;5:100-122.
47. Edwards L, Ritchie B. Challenging and confronting: the role of humanities in fostering critical thinking, cultural competency and an evolution of worldview in enabling education. *Student Success* 2022;13:10-20.
48. Han DH, Kim SK, Kim S, Park Y. Treatment effects of art therapy on adolescents with problematic Internet gaming behavior. *Arts Psychother* 2025;93:102287.
49. Bong SH, Won GH, Choi TY. Effects of cognitive-behavioral therapy based music therapy in Korean adolescents with smartphone and internet addiction. *Psychiatry Investig* 2021;18:110-117.
50. Torres-Rodríguez A, Griffiths MD, Carbonell X, Oberst U. Treatment efficacy of a specialized psychotherapy program for internet gaming disorder. *J Behav Addict* 2018;7:939-952.
51. Tee EY. Enhancing emotional intelligence with the positive humanities: a narrative review and proposal for well-being interventions. *Emotion Rev* 2024;16:162-179.
52. Mar RA, Oatley K. The function of fiction is the abstraction and simulation of social experience. *Perspect Psychol Sci* 2008;3:173-192.
53. van der Kleij SW, Apperly I, Shapiro LR, Ricketts J, Devine RT. Reading fiction and reading minds in early adolescence: a longitudinal study. *J Exp Child Psychol* 2022;222:105476.
54. Devine RT, Apperly IA. Willing and able? Theory of mind, social motivation, and social competence in middle childhood and early adolescence. *Dev Sci* 2022;25:e13137.
55. Prasetyawan H, Barida M, Handaka IB, Widyastuti DA, Wahyudi A, Muyana S, et al. Counselor strategies to reduce online gaming addiction through creative cognitive behavior counseling. *Pegem J Educ Instruct* 2023;13:147-152.
56. Santos GD, Lima-Rodrigues LM. Expressive arts-embodying inclusive teachers. *J Res Spec Educ Needs* 2016;16:506-509.
57. Stern P, Shalev L. The role of sustained attention and display medium in reading comprehension among adolescents with ADHD and without it. *Res Dev Disabil* 2013;34:431-439.
58. Ghelani K, Sidhu R, Jain U, Tannock R. Reading comprehension and reading related abilities in adolescents with reading disabilities and attention-deficit/hyperactivity disorder. *Dyslexia* 2004;10:364-384.
59. Liu J, Tai Z, Hu F. Prevalence and coping of depression and anxiety among college students during COVID-19 lockdowns in China. *J Affect Disord* 2024;348:305-313.