

Emotion Regulation and Life Skills Among Adolescents with Problematic Online Gaming Behaviour

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Received: 24th April, 2026; Revised: 20th May 2026; Accepted: 30th June, 2026; Available Online: 10th July, 2026

ABSTRACT

The present study examined the relationship between emotion regulation and life skills among adolescents with problematic gaming behaviour. A total of 184 participants aged 14 to 18 from various private and public schools participated in this cross-sectional comparative study. They were categorised into low- and high-problematic gaming behaviour groups based on their gaming habits. Standardized measures were used: the Problematic Online Gaming Questionnaire – Short Form (POGQ-SF) categorized gaming behavior; the Emotion Regulation Questionnaire (ERQ) measured emotion regulation. Additionally, the Life Skills Scale (LSS-AAPS) evaluated life skills. Data analysis included independent t-tests and Pearson correlation tests. The findings indicated that adolescents in the high-problematic gaming group reported significantly higher levels of emotional suppression and less self-awareness than those in the low problematic gaming behaviour group. No significant differences appeared in overall life skills, implying problematic gaming might not impair key life skills in this sample. In the low-problematic group, cognitive reappraisal was significantly and positively associated with self-awareness, critical thinking, decision-making, and problem-solving. Conversely, in the high-problematic group, it was positively associated with interpersonal relationships. These findings underscore the importance of encouraging healthy emotion regulation and balanced gaming among adolescents.

Keywords: Problematic online gaming behaviour; Emotion regulation; Life skills; Self-awareness; Adolescent psychology

How to cite this article: Janghu P and Ahsan A, Emotion Regulation and Life Skills Among Adolescents with Problematic Online Gaming Behaviour. *Int J Drug Deliv Technol.* 2026;16(7): 916-928; DOI: 10.25258/ijddt.16.7.99

Source of support: Nil.

Conflict of interest: None

1. INTRODUCTION

Adolescence is a period marked by heightened neurobiological sensitivity, emotional reactivity, and increased vulnerability to reward-seeking, risk-taking and addictive behaviour, making adolescents susceptible to problematic digital behaviour such as problematic online gaming¹⁻⁶. WHO identified adolescents and young adult males aged 12 to 20 years as the most vulnerable group for ‘Gaming Disorder’⁷.

With the rapid rise in adolescents' participation in online gaming worldwide, it has attracted attention because of its psychological consequences and has become one of the most popular forms of entertainment worldwide⁸⁻¹², with over 3.42 billion people playing some form of game. About 80% of children and adolescents aged 2–18 years engage in gaming, totaling 1.5–1.8 billion young gamers worldwide¹³. A 2024 global survey found that over 80% of internet users aged 16 to 44 have played video games on any device, with men slightly more likely to do so¹⁴. The 2023 KPMG¹⁵ report identified India as the world's largest mobile gaming market, adding 23 million new gamers in FY24, pushing the total to over 590 million players. The demographic is diverse, with 66% of gamers from non-

metro areas and women constituting 44% of players¹⁶. Excessive gaming concerns parents, educators, and administrators^{17,18}.

Although gaming offers cognitive stimulation, social engagement, and entertainment, excessive gaming has raised concerns about potential behavioural and psychological effects on young users¹⁹. Recognising the potential clinical significance of excessive gaming, the American Psychiatric Association included Internet Gaming Disorder in section III of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-5)*. Subsequently, the World Health Organisation formally recognized Gaming Disorder in the 11th Revision of the International Classification of Diseases (ICD-11) defining it as a pattern of gaming behavior (“digital-gaming” or “video-gaming”) characterized by impaired control over gaming, increasing priority given to gaming over other activities to the extent that gaming takes precedence over other interests and daily activities, and continuation or escalation of gaming despite the occurrence of negative consequences²⁰.

Among the psychological correlates of problematic gaming behaviour, emotion regulation has emerged as an

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important explanatory factor. Emotion regulation (ER) refers to attempts to influence our own or others' emotions²¹. According to the Process Model of Emotion Regulation proposed by James J. Gross, individuals employ strategies such as cognitive reappraisal and expressive suppression to regulate their emotions. Existing evidence on video gaming and emotion regulation has yielded mixed but noteworthy findings. Several studies indicate that video gaming may facilitate emotional management by providing opportunities for mood regulation, stress relief, and emotional expression^{22,1,23,24}. Similarly, other studies report that moderate gaming can enhance emotional resilience, stress coping, and recovery from negative affect through interactive engagement and challenge-based environments²⁵⁻²⁸. Games may also function as safe spaces where individuals practice managing emotions while facing in-game challenges^{29,30}. However, some research suggests that excessive gaming may be linked with emotional dysregulation and maladaptive coping patterns³¹⁻³⁵.

In addition to emotion regulation, another important developmental competency during adolescence is the acquisition of life skills. WHO has identified 10 core life skills essential for adaptive and positive behaviour, allowing individuals to handle daily demands and challenges. These skills, often promoted by UNICEF and UNESCO, focus on psychosocial competence, including self-awareness, empathy, critical and creative thinking, decision-making, problem-solving, effective communication, interpersonal relationship skills, and coping with stress and emotions. Studies exploring the relationship between video gaming and life skills present contrasting findings. Some research highlights that gaming environments can enhance certain cognitive abilities such as problem-solving, attention, and strategic thinking^{36,37}. In contrast, several studies suggest that excessive gaming may reduce opportunities for real-world social interaction and experiential learning, which are essential for the development of interpersonal and behavioural competencies³⁸⁻⁴⁰. Other studies report that adolescent gamers may exhibit lower levels of decision-making ability, impulse control, and social competence than non-gamers^{41,42}.

Despite the growing literature on problematic gaming, there remains a lack of integrated research examining emotion regulation and life skills simultaneously within severity-based gaming groups, particularly in the Indian adolescent context. Most existing studies focus on aggression, addiction and mental health rather than adaptive functioning (emotion regulation and life skills). No research has directly examined the effects of video games on life skills, although some studies have examined their individual dimensions separately. Very limited comparative work between high-problematic gaming behaviour groups and low-problematic gaming behaviour groups. Therefore, gaining a clearer understanding of the emotional and functional differences between adolescents with high versus low problematic gaming behaviour could

shed light on potential risk indicators and help identify targets for intervention.

The present study is conceptually grounded in Gross's process model of emotion regulation and the WHO's Life Skills framework. Accordingly, the present study adopts a comparative approach to examine differences in emotion regulation and life skills between adolescents with high and low problematic gaming behaviour. By examining these psychological and behavioural aspects, it is hoped to enhance understanding of the developmental factors associated with problematic online gaming in youth.

Accordingly, the objective of the present study was to investigate whether problematic online gaming behaviour is associated with emotion regulation and life skills among adolescents.

2. METHOD

2.1. Research design and sample

The research design followed in the present study was a cross-sectional comparative design. A sample of 393 adolescents recruited via purposive sampling in the age range of 14-18 years participated in the study. The questionnaires of 10 participants were incomplete and were removed from the analysis due to inadequate information. The data from the remaining 383 participants were entered into a spreadsheet, and the final analysis was carried out using IBM SPSS 29. The sample was drawn from Delhi NCR by using convenience sampling between July 2025 and November 2025. The research participants were selected by a multi-stage screening and matching process to create two equal groups for comparison, i.e., the high-risk problematic gaming group (n = 92) and the low-risk gaming group (n = 92).

2.1.1. Inclusion criteria

1. Adolescents aged 14-18 years.
2. Consistent exposure to video games for at least six months (at least 5 hours per week and 3-4 days per week).
3. For the problematic gaming group, participants scoring above the established cut-off on the problematic online gaming behaviour questionnaire (POGQ-SF).
4. Provided informed consent
5. Ability to comprehend and respond to the questionnaire language.

2.1.2. Exclusion criteria

1. No exposure to video games within the past six months.
2. Participants with any physical or psychological illness.
3. Incomplete or inconsistent questionnaire responses.
4. Adolescents who reported temporary gaming abstinence during the time of data collection.

2.2. Measures

2.2.1. Problematic online gaming questionnaire – Short Form (POGQ-SF): The POGQ-SF instrument, developed by Orsolya Pápay et al.⁴³, includes 12 items on a 5-point Likert scale, with higher scores indicating problematic online gaming across six subscales: preoccupation, overuse, immersion, social isolation, interpersonal conflicts, and withdrawal. The POGQ-SF, a shorter revision, scores from 12 to 60, with 32+ indicating risk. Subscale scores are the sum of respective items. The scale showed excellent internal consistency in the original validation study ($\alpha = 0.91$), with subscale reliability coefficients ranging from 0.72 to 0.83. The internal consistency as measured by Cronbach's alpha of the POGQ-SF for the present study was found to be 0.905, as shown in Table 1, and dimension-wise reliability was found to be as follows: preoccupation $r = 0.610$, Immersion $r = 0.327$, withdrawal $r = 0.605$, overuse $r = 0.571$, interpersonal conflict $r = 0.695$ and social isolation $r = 0.727$.

2.2.2. Emotion regulation questionnaire (ERQ): The 10-item Emotion Regulation Questionnaire developed by James J. Gross and Oliver P. John⁴⁴ assesses individual differences in the habitual use of two emotion regulation strategies: cognitive reappraisal and expressive suppression. Respondents answer each item on a 7-point Likert-type scale ranging from 1 (strongly disagree) to 7

(strongly agree). The ERQ demonstrates acceptable internal consistency, with alpha reliabilities averaged 0.79 for Reappraisal and 0.73 for Suppression. Test-retest reliability across 3 months was 0.69 for both scales. The internal consistency of the ERQ for the present study was found to be 0.695 as shown in Table 1 (although the reliability for the ERQ was slightly below the conventional 0.70 threshold, it remained acceptable for exploratory psychological research), and dimension-wise reliability was found to be as follows: 0.644 for cognitive reappraisal and 0.660 for expressive suppression.

2.2.3. Life skills scale (LSS-AAPS): The LSS-AAPS, developed by Anjum Ahamad and Saba Parveen⁴⁵, was used in the study. The scale consists of 40 items. It is divided into 10 dimensions: self-awareness, Empathy, Critical thinking, decision-making, problem-solving, Effective communication, Creative thinking, interpersonal relationships, coping with stress, and coping with emotions. This scale can be administered to secondary school and undergraduate students, aged 15 to 24 years. The LSS-AAPS demonstrated satisfactory internal consistency reliability, with a Cronbach's alpha coefficient of 0.765 and a split-half coefficient of 0.732. The overall reliability for LSS-AAPS for the present study was found to be 0.905, as shown in Table 1.

Table 1: Summary of Cronbach's α from previous studies and current research

Scale / Questionnaire	Cronbach's α for Previous Research Works	Cronbach's α for the Current Study
Problematic Online Gaming Questionnaire – Short Form (POGO-SF)	0.91	0.905
Emotion Regulation Questionnaire (ERQ)	0.69	0.695
Cognitive Reappraisal	0.79	0.644
Expressive Suppression	0.73	0.660
Life Skills Scale (LSS-AAPS)	0.765	0.905

2.3. Procedure

To collect data from respondents, the researcher approached the local educational authority of Delhi-NCR. In the case of schools, Principals were approached, and for universities, Deans and Directors were approached, and permission was taken from them to collect data from the enrolled students. The study's objectives were briefed to the research participants, and each participant was given a consent form and asked to sign it before the data collection process. Further, they were briefed on their rights as study participants and assured that their responses would be kept confidential. The data were collected from participants via self-administration, and all participants completed the questionnaire within 20-25 minutes.

Responses were screened for completeness, with incomplete or inconsistent entries excluded before

statistical analysis. Based on the Problematic Online Gaming Questionnaire–Short Form (POGQ-SF), a score above 32 was used to identify high levels of problematic gaming; accordingly, 92 participants met the criterion and were classified as problematic gamers.

Participants scoring below 32 underwent further screening to create a control group. The average score of this subgroup was calculated, and those who scored 25 or less were initially categorized as low-risk gamers. Due to the high variability in scores within this control group, a second mean was calculated, resulting in a value of 19, which classified 97 gamers as non-problematic. Five cases with partially incomplete responses across scales were excluded, leaving a final sample of 184 adolescents divided into two equal groups, i.e., high-risk problematic gaming group ($n = 92$) and low-risk gaming group ($n = 92$).

After classification, participants completed the Emotion Regulation Questionnaire, which assessed cognitive reappraisal and expressive suppression, and the Life Skills Assessment Scale, which measured psychosocial life skills among adolescents.

2.4. Data analysis

Data analysis was carried out using SPSS (Version 29). Prior to conducting inferential analysis, the assumptions of normality and homogeneity of variance were examined. The skewness and kurtosis values for all the study variables fell within the acceptable range, indicating an approximately normal distribution of the data. Additionally, Levene's test of homogeneity of variance was non-significant for most variables, suggesting that the assumption of equal variance was met. Therefore, an independent-samples t-test and a Pearson correlation were deemed appropriate for the study. Descriptive statistics, such as mean and standard deviation, were calculated for all variables. Data were examined for missing values and outliers prior to analysis. An independent-samples t-test compared the low- and high-video-game-exposure groups on measures of emotion regulation and life skills. Additionally, Pearson correlation analyses within each group examined the relationship between emotion regulation and life skills. Gender differences within each group were assessed using independent-samples t-tests. The significance level was set at $p < .05$. Effect sizes (Cohen's d) were considered for interpretation.

2.5. Ethical issues considered

All participants in this study were treated in accordance with the ethical guidelines of the "American Psychological Association." Ethical approval was secured from the appropriate authority before the research commenced. Participation was entirely voluntary, and data confidentiality was guaranteed for all participants in advance. The specific date and time for data collection from students were scheduled based on the school authorities' convenience.

3. RESULTS

3.1. Demographic and gaming characteristics of the sample

The main objective of the study was to assess whether problematic online gaming behaviour is associated with differences in emotion regulation and life skills among adolescents. Table 1 presents the demographic and gaming characteristics of adolescents classified into low problematic gaming behaviour groups (Low VG; $n = 92$) and high problematic gaming behaviour groups (High VG; $n = 92$). A higher proportion of participants in the High VG group were males (92.4%) compared to the Low VG group (63.0%), whereas females constituted a larger proportion of the Low VG group (37.0%) than the High VG group (7.6%). Regarding school type, most participants in the Low VG group attended private schools (75.0%), whereas the High VG group showed a relatively higher representation from government schools (40.2%).

With respect to residential background, the majority of participants in both groups resided in urban areas; however, rural participants were more prevalent in the High VG group (37.0%) than in the Low VG group (23.9%). Most adolescents lived in nuclear and joint families, with no significant difference across the two groups.

Mobile phones were the primary gaming device for both groups (72.8% in the Low VG group and 69.6% in the High VG group). Nevertheless, adolescents with high problematic gaming behaviour were more likely to report using multiple gaming devices (9.8%) than those in the Low VG group (3.3%). Gaming frequency differed noticeably between the groups. Daily gaming was considerably more common among the High VG group (58.7%) than the Low VG group (17.4%), whereas occasional gaming (1-2 times per week or rarely/never) was more frequently reported by adolescents in the Low VG group. Similarly, adolescents in the High VG group reported spending longer durations gaming each day. Approximately one-quarter (26.1%) reported gaming for more than three hours daily compared with only 3.3% in the Low VG group. Session duration also showed that longer uninterrupted gaming sessions were more prevalent among the High VG participants. Online gaming was the dominant mode in both groups but was reported more frequently among adolescents with high problematic gaming. Behaviour (58.7%). Furthermore, violent games were substantially more common among the High VG group (66.3%) than the Low VG group (41.3%). Entertainment remained the primary motivation for gaming across both groups; however, adolescents with high problematic gaming behaviour more frequently reported social interaction and skill development as their primary motivation. See Table 1 for further information on the sample demographics.

3.2. Descriptive statistics for study variables

Table 2 presents the descriptive statistics for emotion regulation and life skills variables among adolescents with low and high problematic gaming behaviour. For emotion regulation, the mean cognitive reappraisal scores were nearly identical between Low VG ($M = 27.40$, $SD = 6.20$) and High VG ($M = 27.53$, $SD = 5.55$) groups. In contrast, expressive suppression showed a higher mean score in the High VG group ($M = 19.57$, $SD = 5.08$) than in the Low VG group ($M = 17.48$, $SD = 5.70$). Across the life skills dimensions, adolescents in the Low VG group demonstrated slightly higher mean scores than those in the High VG group on most variables, including self-awareness, empathy, critical thinking, creative thinking, interpersonal relationships, coping with stress, and coping with emotions. The skewness and kurtosis values for all study variables fell within acceptable limits, indicating that the distributions were approximately normal and suitable for parametric statistical analyses.

3.3. Pearson Correlation among study variables

Tables 4 and 5 present the Pearson correlation among emotion regulation and life skills variables for adolescents

with low and high problematic gaming behaviour groups. Cognitive reappraisal demonstrated significant positive correlations with self – awareness ($r = .232, p < .05$), critical thinking ($r = .215, p < .05$), decision making ($r = .355, p < .01$) and problem solving ($r = .302, p < .01$) among adolescents with low problematic gaming behaviour (see table 4), suggesting greater use of cognitive reappraisal was associated with better life skills among adolescents with low problematic gaming behaviour. Expressive suppression exhibited non-significant relationships with the life skills dimensions, indicating that suppression was not strongly associated with these outcomes in this group.

Unlike the Low VG group, the High VG group demonstrated a significant positive relationship only between cognitive reappraisal and interpersonal relationships ($r = .208, p < .05$). Expressive suppression was not significantly associated with any life skills dimension, suggesting that suppression did not meaningfully relate to adaptive functioning among adolescents with higher problematic gaming behaviour.

3.4. Comparison of emotion regulation and life skills between low and high problematic gaming behaviour groups

Table 6 presents the independent-samples t-test comparing emotion regulation dimensions between adolescents with low and high problematic gaming behaviour. No statistically significant difference was observed between

the two groups in cognitive reappraisal, $t(182) = -0.15, p = .881, d = -0.02$, indicating that adolescents with low and high problematic gaming behaviour reported comparable levels of cognitive reappraisal. In contrast, expressive suppression differed significantly between the groups, $t(182) = -2.62, p = .010, d = -0.39$. Adolescents with high problematic gaming behaviour ($M = 19.58, SD = 5.08$) reported significantly greater use of expressive suppression than adolescents with low problematic gaming behaviour ($M = 17.49, SD = 5.70$). The effect size was small to moderate.

Table 7 presents the independent-samples t-test comparing life skills dimensions between adolescents with low and high problematic gaming behaviour. A statistically significant group difference was observed only for self-awareness, $t(182) = 2.03, p = .043, d = 0.30$. Adolescents with low problematic gaming behaviour ($M = 14.00, SD = 2.37$) demonstrated significantly higher self-awareness than adolescents with high problematic gaming behaviour ($M = 13.25, SD = 2.63$). The effect size was small. No statistically significant differences were found between the two groups on empathy, critical thinking, creative thinking, decision making, problem solving, effective communication, interpersonal relationship, coping with stress or coping with emotions (all $> .05$). Although the Low VG group consistently showed slightly higher mean scores across most life skills dimensions, these differences did not reach statistical significance.

Table 2: Demographic and Gaming Characteristics by Problematic Gaming Behaviour Group

Characteristic	Category	Low VG n (%)	High VG n (%)
Gender	Male	58 (63.0)	85 (92.4)
	Female	34 (37.0)	7 (7.6)
School Type	Private	69 (75.0)	55 (59.8)
	Government	23 (25.0)	37 (40.2)
Locale	Urban	70 (76.1)	58 (63.0)
	Rural	22 (23.9)	34 (37.0)
Family Type	Nuclear	39 (42.4)	41 (44.6)
	Joint	47 (51.1)	45 (48.9)
	Single Parent	5 (5.4)	5 (5.4)
	Extended	1 (1.1)	1 (1.1)
Gaming Device	Mobile only	67 (72.8)	64 (69.6)
	PC only	8 (8.7)	7 (7.6)
	Mobile and PC	11 (12.0)	9 (9.8)
	Mobile and Console	2 (2.2)	1 (1.1)
	PC and Console	1 (1.1)	
	Console only		2 (2.2)
	Multiple devices	3 (3.3)	9 (9.8)
Gaming Frequency	Daily	16 (17.4)	54 (58.7)
	3–5 times/week	26 (28.3)	14 (15.2)
	1–2 times/week	24 (26.1)	15 (16.3)
	Rarely/Never	26 (28.3)	9 (9.8)
Daily Duration	10-30 mins	2 (2.2)	
	1 hours	77 (83.7)	50 (54.30)
	2 hours	10 (10.9)	17 (18.5)
	More than 3 hours	3 (3.3)	24 (26.1)

	3-6 hours		1 (1.1)
Session Duration	<1 hour	60 (65.2)	29 (31.5)
	1–2 hours	28 (30.4)	38 (41.3)
	2-3 hours	2 (2.2)	14 (15.2)
	More than 3 hours	2 (2.2)	11 (12.0)
Game Mode	Online	45 (48.9)	54 (58.7)
	Offline	14 (15.2)	3 (3.3)
	Both	33 (35.9)	35 (38.0)
Game Genre	Violent	38 (41.3)	61 (66.3)
	Non-violent	28 (30.4)	10 (10.9)
	Mixed	26 (28.3)	21 (22.8)
Gaming Motivation	Entertainment	54 (58.7)	29 (31.5)
	Emotion Regulation	9 (9.8)	11 (12.0)
	Social Motivation	4 (4.3)	16 (17.4)
	Skill oriented	10 (10.9)	21 (22.8)
	Mixed	15 (16.3)	15 (16.3)

Table 3: Descriptive Statistics for Study Variables

Variable	Group	M	SD	Min	Max
CR	Low	27.40	6.20	14	41
	High	27.53	5.55	17	41
ES	Low	17.48	5.70	4	28
	High	19.57	5.08	5	28
SA	Low	14.00	2.37	8	20
	High	13.25	2.62	8	20
E	Low	10.17	2.40	5	15
	High	9.97	2.90	4	15
CRT	Low	17.96	3.32	12	25
	High	17.10	3.04	9	25
CT	Low	14.04	3.12	6	20
	High	13.77	3.18	8	20
DM	Low	13.27	2.48	8	19
	High	12.94	2.60	7	19
PS	Low	14.04	2.98	7	20
	High	13.69	2.60	7	20
EC	Low	17.34	3.46	9	25
	High	16.46	3.50	8	24
IR	Low	11.30	2.80	6	15
	High	10.57	3.06	4	15
CWS	Low	11.44	2.84	5	15
	High	11.25	2.77	5	15
CWE	Low	17.68	3.33	9	24
	High	16.94	3.28	9	25

Table 4: Pearson Correlations Among Study Variables (Low Problematic Gaming Behaviour Group)

	CR	ES	SA	E	CRT	CT	DM	PS	EC	IR	CWS	CWE
CR	1	.310**	.232*	.167	.215*	.148	.355**	.302**	.176	.164	.167	.162
ES		1	.104	-.154	.172	.085	.081	.126	-.027	.046	.049	.123
SA			1	.241*	.600**	.532**	.467**	.522**	.580**	.607**	.610**	.486**
E				1	.323**	.513**	.250*	.336**	.414**	.582**	.437**	.494**
CRT					1	.609**	.552**	.654**	.655**	.650**	.684**	.601**
CT						1	.544**	.671**	.628**	.756**	.727**	.653**
DM							1	.554**	.536**	.521**	.536**	.443**
PS								1	.605**	.589**	.638**	.568**
EC									1	.655**	.687**	.543**
IR										1	.792**	.625**
CWS											1	.689**
CWE												1

Note. CR = Cognitive Reappraisal, ES = Expressive Suppression, SA = Self-Awareness, CRT = Critical Thinking, CT = Creative Thinking, DM = Decision Making, PS = Problem Solving, EC = Effective

Communication, IR = Interpersonal Relationship, CWS = Coping with Stress, CWE = Coping with Emotion

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

Table 5: Pearson Correlations Among Study Variables (High Problematic Gaming Behaviour Group)

	CR	ES	SA	E	CRT	CT	DM	PS	EC	IR	CWS	CWE
CR	1	.169	-.147	.172	.111	.081	-.019	.185	-.015	.208*	-.054	.157
ES		1	-.053	.114	.061	.107	-.046	.191	.119	.037	.004	.036
SA			1	.211*	.433**	.455**	.377**	.409**	.396**	.226*	.274**	.480**
E				1	.346**	.519**	.295**	.435**	.362**	.461**	.396**	.489**
CRT					1	.513**	.458**	.527**	.416**	.450**	.334**	.461**
CT						1	.388**	.510**	.529**	.573**	.537**	.485**
DM							1	.439**	.429**	.413**	.325**	.504**
PS								1	.423**	.597**	.363**	.597**
EC									1	.393**	.413**	.451**
IR										1	.452**	.502**
CWS											1	.458**
CWE												1

Note. CR = Cognitive Reappraisal, ES = Expressive Suppression, SA = Self-Awareness, CRT = Critical Thinking, CT = Creative Thinking, DM = Decision Making, PS = Problem Solving, EC = Effective

Communication, IR = Interpersonal Relationship, CWS = Coping with Stress, CWE = Coping with Emotion

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

Table 6: Independent Samples t-Test Comparing Emotion Regulation Dimensions Between Low and High Problematic Gaming Behaviour Group

Dimension	Low VG Mean (SD)	High VG Mean (SD)	t	df	p	Cohen's d
CR	27.40 (6.21)	27.53 (5.56)	0.15	182	.881	-0.02
ES	17.49 (5.70)	19.58 (5.08)	2.62	182	.010*	-0.39

Note. CR = Cognitive Appraisal, ES = Expressive Suppression

Table 7: Independent Samples t-Test Comparing Life Skills Dimensions Between Low and High Problematic Gaming Behaviour Group

Dimension	Low VG Mean (SD)	High VG Mean (SD)	t	df	p	Cohen's d
SA	14.00 (2.37)	13.25 (2.63)	2.03	182	.043*	0.30
E	10.17 (2.41)	9.98 (2.90)	0.50	182	.619	0.07
CRT	17.97 (3.33)	17.11 (3.04)	1.83	182	.069	0.27
CT	14.04 (3.12)	13.77 (3.18)	0.58	182	.560	0.09
DM	13.27 (2.48)	12.95 (2.61)	0.87	182	.386	0.13
PS	12.61 (2.81)	12.26 (2.79)	0.84	182	.401	0.12
EC	14.90 (3.44)	14.02 (3.56)	1.71	182	.088	0.25
IR	14.53 (2.96)	13.80 (2.57)	1.68	182	.094	0.25
CWS	13.60 (2.81)	13.40 (2.81)	0.47	182	.637	0.07
CWE	16.21 (3.23)	15.47 (3.39)	1.51	182	.132	0.22

Note. SA = Self-Awareness, CRT = Critical Thinking, CT = Creative Thinking, DM = Decision Making, PS = Problem Solving, EC = Effective

Communication, IR = Interpersonal Relationship, CWS = Coping with Stress, CWE = Coping with Emotion

4. DISCUSSION

The present study aimed to examine differences in emotion regulation and life skills among adolescents categorised into high- and low-problematic gaming behaviour groups.

The current study revealed no significant difference in cognitive reappraisal between adolescents with low and high problematic gaming behaviour, $t(182) = 0.15$, $p = .881$. These findings suggested that both groups reported a comparable tendency to reinterpret or reframe emotionally challenging situations using adaptive cognitive strategies. Although cognitive reappraisal is generally considered a protective emotion regulation strategy, its absence as a distinguishing factor between the two groups indicates that problematic gaming behaviour may not necessarily be associated with deficits in all aspects of emotion regulation. Instead, maladaptive strategies may play a more central role in differentiating adolescents with higher levels of problematic gaming behaviour. This finding is partially consistent with previous literature, which has shown mixed evidence regarding the role of cognitive reappraisal in problematic gaming. Yen et al.⁴⁶ reported that individuals with Internet Gaming Disorder (IGD) demonstrated lower cognitive reappraisal than healthy controls, whereas other studies have suggested that maladaptive emotion regulation strategies are stronger predictors of problematic gaming than reduced use of adaptive strategies⁴⁷.

In contrast, expressive suppression differed significantly between the groups, $t(182) = 2.62$, $p = 0.10$, indicating that adolescents with high problematic gaming behaviour reported greater use of expressive suppression than those with low problematic gaming behaviour. Expressive suppression refers to the tendency to inhibit or conceal outward emotional expressions after an emotional response has already been generated⁴⁸. The present finding aligns with an emerging body of literature suggesting that problematic gaming is closely associated with maladaptive emotion regulation, particularly the tendency to suppress, avoid, or escape from negative emotional experience. A recent systematic review by Estupiñá et al.⁴⁷ concluded that emotional dysregulation is a central characteristic of Gaming Disorder, with many individuals using video games as a means of emotional escapism and self-suppression rather than confronting or expressing unpleasant emotions. The review further suggested that suppression-based coping may distinguish problematic gamers from recreational gamers, highlighting emotion regulation as an important mechanism underlying the development and maintenance of problematic gaming behaviour. Similarly, Yen et al.⁴⁶ found that young adults with Internet Gaming Disorder (IGD) show higher expressive suppression and lower cognitive reappraisal than controls. These findings support the present study by indicating that adolescents who engage in problematic gaming may rely more heavily on suppressive emotion regulation strategies to manage distress.

More recent evidence also reinforces this interpretation. Demianowska et al.⁴⁹ reported that individuals with more severe gaming disorder exhibited significantly greater use of maladaptive regulation strategies, including suppression, avoidance, rumination, catastrophizing, and self-blame. The authors further demonstrated that these maladaptive strategies contributed to elevated symptoms of depression, anxiety, and psychological pain, suggesting that ineffective emotion regulation may represent an important psychological pathway linking emotional distress with problematic gaming behaviour. More specifically, Müller & Bonnaire⁵⁰ examined 207 participants (37 non-gamers, 133 non-problematic gamers, 37 problematic gamers) and found that problematic gamers had significantly higher expressive suppression scores than the other groups. Likewise, Blasi et al.⁵¹ studied 390 MMORPG players and demonstrated that emotion dysregulation—including suppressive strategies—predicted problematic gaming, with escapism partially mediating this relationship. Across multiple designs and age groups, high problematic gaming behaviour is linked with emotion suppression, escapist coping, and broader emotion regulation problems. Taken together, the present findings and previous research consistently indicate that expressive suppression, emotional avoidance, and escapist coping are closely associated with problematic gaming behaviour across adolescents and the young adult population. Rather than openly processing or expressing negative emotions, adolescents with high problematic gaming behaviour may preferentially suppress emotional experiences and seek temporary emotional relief through gaming. This interpretation is consistent with the Interaction of Person - Affect - Cognition - Execution (I-PACE) model, which proposes that maladaptive emotion regulation and avoidant coping strategies contribute to the initiation and maintenance of addictive online behaviours⁵².

The findings of the present study further revealed that among the ten life skills assessed, only self-awareness showed a statistically significant difference between the two groups, $t(182) = 2.03$, $p = .043$, with adolescents in the low problematic gaming behaviour group reporting significantly higher self-awareness than those in the high problematic gaming behaviour group. Although the remaining life skills, including empathy, critical thinking, creative thinking, decision-making, problem-solving, effective communication, interpersonal relationships, coping with stress, and coping with emotions, did not reach statistical significance, the high problematic gaming behaviour group consistently obtained lower mean scores across all life skills dimensions. Furthermore, the observed effect sizes were small (Cohen's $d = 0.07 - 0.30$), suggesting that while problematic gaming behaviour may be associated with reduced life skills, these differences are modest rather than substantial.

The significant difference observed in self-awareness highlights its potential role as an important psychological characteristic associated with problematic gaming

behaviour. Self-awareness, identified by the World Health Organisation as a core life skill, refers to an individual's ability to recognise their thoughts, emotions, strengths, weaknesses, values, and behavioural patterns. Adolescents with greater self-awareness are more likely to monitor their emotions and behaviours, recognize excessive gaming habits, and regulate their behaviour before it becomes maladaptive. In contrast, lower self-awareness may reduce adolescents' ability to recognize problematic gaming patterns, making them more vulnerable to excessive gaming and its associated consequences. The present findings are consistent with previous research suggesting that positive self-related characteristics protect against problematic gaming behaviour. Yayla et al.⁵³ reported that self-esteem was negatively associated with problematic digital gaming, with this relationship being fully mediated by social anxiety and self-concealment. Although self-esteem and self-awareness are distinct constructs, both reflect adaptive self-functioning and contribute to healthier emotional and behavioural regulation. Similarly, a meta-analysis by Kavanagh et al.⁵⁴ found that lower self-esteem represents a significant risk factor across various forms of digital addiction, suggesting that adolescents with poorer self-perceptions may be more susceptible to excessive engagement in digital environments. These findings collectively indicate that stronger self-related competencies may serve as protective factors against problematic gaming.

These findings also align with recent evidence emphasising the importance of self-control and self-regulation in problematic gaming. A systematic review and meta-analysis by Hu et al.⁵⁵, which synthesised data from 46 studies involving more than 64,000 adolescents and emerging adults, reported a moderate negative association between self-control and problematic gaming ($r = -0.287$). The authors concluded that stronger self-control consistently protects against problematic gaming across different populations, highlighting self-regulation as a critical target for prevention and intervention efforts.

An important observation from the present study is that all life skills were lower in the high problematic gaming behaviour group, although most differences did not reach statistical significance. Notably, critical thinking ($p = .069$), effective communication ($p = .088$), and interpersonal relationships ($p = .094$) approached statistical significance and demonstrated small effect sizes ($d = 0.25 - 0.27$). Although these findings should be interpreted cautiously, they suggest a consistent trend towards poorer psychosocial functioning among adolescents with high problematic gaming behaviour. It is possible that these differences did not reach statistical significance because the observed effects were relatively small or because the available sample size limited statistical power. Further studies employing larger and more diverse samples may clarify whether these trends represent meaningful differences.

In the present study, Pearson correlation analysis was used to examine relationships between emotion regulation and

life skills among adolescents with low problematic gaming behaviour ($n = 92$). Results indicated that cognitive reappraisal was significantly and positively associated with self-awareness ($r = .232$, $p < .01$), critical thinking ($r = .215$, $p < .05$), decision making ($r = .355$, $p < .01$), and problem solving ($r = .302$, $p < .01$). These results imply that adolescents who habitually reinterpret emotional situations in a constructive manner tend to have stronger critical thinking, decision-making, self-awareness, and problem-solving skills. The strongest positive association was observed between cognitive reappraisal and decision-making, followed by problem-solving, suggesting that effective emotional regulation through cognitive reappraisal may enhance adolescents' ability to evaluate situations rationally, consider alternatives, and make thoughtful decisions. These findings align with Gross's⁵⁶ process model of emotion regulation⁴⁸, which describes cognitive reappraisal as an antecedent-focused strategy that alters the interpretation of emotional events before emotional responses fully develop. By adjusting how they interpret a situation, individuals can reduce emotional distress and conserve cognitive resources for higher-level thinking. This mechanism likely explains the positive link between cognitive reappraisal and cognitive life skills, such as decision-making, critical thinking, and problem-solving, found in this study. The present findings align with Modecki⁵⁷, who suggested that emotion regulation, coping, and decision-making are interconnected developmental skills in adolescence. The review indicates that effective emotion regulation helps adolescents assess situations more carefully and choose appropriate responses. This perspective could explain the observed positive link between cognitive reappraisal and decision-making in this study. Additionally, Lantrip et al.⁵⁸ found that adolescents who frequently use cognitive reappraisal tend to have stronger executive functioning. Since executive functions are vital for higher-level tasks like planning, reasoning, and problem-solving, increased use of cognitive reappraisal may promote the growth of these essential skills.

In contrast, Pearson correlation analysis conducted to examine relationships between emotion regulation and life skills among adolescents with high problematic gaming behaviour ($n=92$) revealed a significant positive relationship between cognitive reappraisal and interpersonal relationships ($r = .208$, $p < .05$). The findings suggest that adolescents who reported greater use of cognitive reappraisal also tend to demonstrate better interpersonal relationships despite exhibiting problematic gaming behaviour. This positive relationship observed in the present study indicated that even among adolescents with problematic gaming behaviour, the ability to cognitively reframe emotional experiences may help maintain healthier interpersonal relationships. The findings are consistent with the process model of emotion regulation^{56,48}, which proposes that cognitive reappraisal promotes adaptive emotional functioning by altering emotional appraisals before behavioural responses occur. Through this mechanism, adolescents are better able to

regulate emotional reactions during interpersonal interactions, enhancing cooperation, empathy, and conflict resolution. Previous studies have shown that adaptive emotion regulation strategies, especially cognitive reappraisal, promote healthier interpersonal functioning even in adolescents with problematic gaming behaviour⁵⁹. Furthermore, Güngör⁶⁰ found that interventions focusing on emotion regulation in adolescents with digital game addiction led to notable improvements in emotional functioning. These results indicate that strategies like cognitive reappraisal can serve as protective factors, helping adolescents with problematic gaming to sustain better interpersonal relationships despite the psychosocial issues linked to excessive gaming.

A key finding of this study is that, unlike the low problematic gaming group, in which cognitive reappraisal was significantly linked to various life skills such as self-awareness, critical thinking, decision-making, and problem-solving, adolescents with high problematic gaming showed a significant connection only to interpersonal relationships. This pattern suggests that problematic gaming may diminish the broader positive impact of adaptive emotion regulation on cognitive life skills. Although cognitive reappraisal still aids certain social aspects, its connection to higher-order cognitive abilities seems less prominent in adolescents with problematic gaming behaviour.

However, this study did not reveal significant gender-based differences among those with low problematic gaming behaviour. Conversely, in the high problematic group, females scored significantly higher in areas such as self-awareness, critical thinking, decision-making, and coping skills. These findings hint at possible gender differences in adapting to problematic gaming, but caution is advised because of the small number of female participants in the highly problematic group. More balanced future samples are needed to confirm the strength of these effects.

5. LIMITATIONS

The present study should be interpreted in light of several limitations. Firstly, future longitudinal and prospective studies are needed to clarify the directionality of these relationships. Secondly, the data were collected from the research participants by using a self-report assessment. Hence, it is difficult to comment on the quality of data obtained from the respondents, even though they were clearly briefed about the objectives after taking informed consent to ensure the confidentiality of the obtained data. Future research could incorporate multiple sources of information, including parent and teacher reports, behavioural observations, objective gaming data and qualitative findings. Thirdly, the study included adolescents from a specific geographical region and educational setting, which may limit generalizability of the findings to adolescents from different cohorts. Fourthly, gaming motives were assessed using items created specifically for this study rather than a validated questionnaire. This was due to the lack of a validated tool

to evaluate the diverse motives associated with the wide range of video games included in our research. Lastly, gender imbalance in the sample limits the generalizability of the findings.

6. CONCLUSION

The present study examined differences in emotion regulation and life skills among adolescents with high and low problematic gaming behaviour and explored the relationships between these constructs within each group. The findings indicated that adolescents with high problematic gaming behaviour reported significantly greater use of expressive suppression and significantly lower self-awareness than adolescents with low problematic gaming behaviour. In contrast, no significant group differences were observed for cognitive reappraisal or the remaining life skills dimensions, suggesting that problematic gaming behaviour may be more closely associated with specific psychosocial processes than with widespread deficits in psychosocial functioning.

Correlation analysis further demonstrated that self-awareness was positively related to nearly all life skills dimensions in both groups, highlighting its central role in adolescents' psychosocial functioning. Moreover, the relationship between cognitive reappraisal and expressive suppression was evident only among adolescents with low problematic gaming behaviour, suggesting greater flexibility in emotion regulation in this group. These findings support emotion theoretical perspectives that emphasize the importance of adaptive emotion regulation in understanding problematic gaming behaviour.

The study contributed to the growing literature by demonstrating that problematic gaming behaviour in adolescence is primarily associated with maladaptive emotion regulation, particularly expressive suppression, and with reduced self-awareness, rather than with broad impairments across all life skills. These findings underscore the importance of incorporating emotion regulation and self-awareness training into school-based mental health and life skills programs. Strengthening adolescents' capacity to recognise, understand, and regulate their emotions may promote healthier gaming habits and reduce the risk of problematic gaming behaviour.

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