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Determinants of Emotional Intelligence in Adolescents Engaged in Online Gaming

Determinantes de la Inteligencia Emocional en Adolescentes que participan en juegos en línea

Artika Nurrahima[1ab*], Risma Fatika Sari[2b], Ah. Yusuf[3a], Ilya Krisnana[4a], Elis Hartati[5b]

SUMMARY

Introduction: *The number of adolescents playing online games worldwide is increasing. This poses a risk of low emotional intelligence among adolescents. This study aimed to determine whether gender, age, duration of play, and online gaming addiction affect the emotional intelligence of adolescents who play online games.*
Methods: *A cross-sectional study was conducted among 277 junior high school students selected through proportionate random sampling, with the inclusion criterion of having played online games for the past 6 months. Data were collected online using the Indonesian version of the Game Addiction Scale. Logistic regression analysis was used to identify determinants of adolescents' emotional intelligence.*
Results: *The prevalence of high emotional intelligence among adolescents engaged in online gaming is 85.2 %. The omnibus test showed a significance of 0.004 (< 0.05), indicating that gender, age, duration, and online game addiction simultaneously affect emotional intelligence. The Nagelkerke R-squared value is 0.105. Gender has a partial effect on emotional intelligence (OR 3.981; 95 % CI 1.75-9.034).*
Conclusion: *Gender, age, duration, and addiction to online games affect emotional intelligence; therefore, it is necessary to control online gaming behavior and strengthen emotional intelligence, especially in teenage boys.*

Keywords: *Emotional intelligence, adolescent, online game.*

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ORCID: 0000-0002-2653-2959[1]
ORCID: 0009-0007-0121-371X[2]
ORCID: 0000-0002-6669-0767[3]
ORCID: 0000-0001-8076-9036[4]
ORCID: 0000-0002-4937-9635[5]

[a]Faculty of Nursing, Universitas Airlangga, Surabaya, Indonesia
[b]Department of Nursing Science, Faculty of Medicine, Universitas Diponegoro, Semarang, Indonesia

*Corresponding Author: Artika Nurrahima
E-mail: artikanurrahima@fk.undip.ac.id

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RESUMEN

Introducción: *El número de adolescentes que juegan a videojuegos en línea está aumentando en todo el mundo. Esto supone un riesgo de baja inteligencia emocional en los adolescentes. El objetivo de este estudio fue determinar si el género, la edad, la duración del juego y la adicción a los videojuegos online afectan a la inteligencia emocional de los adolescentes que juegan a videojuegos online.*
Métodos: *Se realizó un estudio transversal con 277 estudiantes de secundaria, seleccionados mediante muestreo aleatorio proporcional, con el siguiente criterio de inclusión: haber jugado a videojuegos online en los últimos 6 meses. La recopilación de datos*

se realizó en línea mediante la versión indonesiana de la Escala de Adicción a los Videojuegos. Se utilizó un análisis de regresión logística para identificar los factores determinantes de la inteligencia emocional en los adolescentes.

Resultados: *La prevalencia de alta inteligencia emocional entre adolescentes que participan en juegos en línea es del 85,2 %. El resultado de la prueba ómnibus mostró una significancia de 0,004 (< 0,05), lo que indica que las variables de género, edad, duración y adicción a los juegos en línea afectan simultáneamente a la inteligencia emocional. El valor de R cuadrado de Nagelkerke es 0,105. El género tiene un efecto parcial en la inteligencia emocional (OR 3,981; IC del 95 %: 1,75-9,034).*

Conclusión: *El género, la edad, la duración y la adicción a los juegos en línea afectan la inteligencia emocional; por lo tanto, es necesario controlar el comportamiento de juego en línea y fortalecer la inteligencia emocional, especialmente en los adolescentes varones.*

Palabras clave: *Inteligencia emocional, adolescente, juego en línea.*

INTRODUCTION

Online games are widely used today, but not all adolescents play them responsibly. Adolescents who play online games excessively are at risk of experiencing psychological effects (1). Adolescents with high levels of gaming addiction tend to have lower emotional intelligence (2). Emotional intelligence plays various roles in adolescents' mental health and behavioral management. Adolescents with higher emotional intelligence tend to have better psychological well-being and resilience (3,4). Adolescents with high emotional intelligence are at a lower risk of engaging in problematic behavior (5).

Most adolescents worldwide play online games. As many as 85 % of adolescents in the US play games (6). More than 85 % of internet users in Indonesia actively play online games, with adolescents accounting for the majority of this group (7). A survey by the Indonesian Child Protection Commission found that 55 % of children and adolescents play online games, and 49 % play daily while studying (8). In fact, a meta-analysis study found an estimated 8.6 % of gaming disorder among a total of 641 763 adolescents (9).

Adolescents who play online games for excessive periods of time and who have developed an addiction to online gaming are at risk of having low emotional intelligence (10). Excessive online gaming and gaming addiction can affect emotional control, social awareness, and empathy, which are components of emotional intelligence (11).

Age and gender are additional factors to consider. The influence of age on emotional intelligence varies. Dimensions of emotional intelligence, such as emotion recognition, develop during adolescence (12), but the dimension of stress management does not change significantly (13). Gender affects emotional intelligence, with female adolescents generally exhibiting higher emotional intelligence and improved emotional regulation skills than male adolescents (14).

Although the relationship between excessive online gaming and emotional intelligence has been widely studied previously, research that comprehensively examines the combined effects of age, gender, duration, and online gaming addiction on the emotional intelligence of adolescents is still limited. Therefore, this study aimed to provide a more comprehensive understanding of how age, gender, duration, and online gaming addiction affect the emotional intelligence of adolescents who play online games.

METHODS

This study is an analytical cross-sectional study of junior high school students. A total of 277 of 672 junior high school students were selected via proportionate random sampling, meeting the inclusion criterion of having played online games for at least 6 months. The variables under study include gender, age, duration of play, online game addiction, and emotional intelligence.

The instrument used to measure online game addiction is the Indonesian version of the Game Addiction Scale, comprising 21 items rated on a Likert scale. The validity and reliability test results obtained were r = 0.883 (> r table = 0.878) and Cronbach's alpha = 0.770 (15). Emotional intelligence was measured using the Indonesian

version of the Self-Reported Emotional Intelligence Test, comprising 33 statements rated on a Likert scale. The validity test results yielded an r of 0.62 (r> 0.355) and a Cronbach's alpha of 0.846 (16). Age, gender, and duration of online gaming were asked using closed-ended questions with the following response options: age (11-14 years and 15–17 years); gender (male and female); duration of gaming in hours (<= 3 hours/day and > 3 hours/day); frequency of playing (1-3 days/ week and 4–7 days/week).

Procedure

The sampling technique used in this study was proportionate random sampling, whereby the sample size was allocated proportionally across classes. The total sample comprised 277 respondents, selected using the Slovin formula, with 93 in grade 7, 92 in grade 8, and 92 in grade 9. Grades 7, 8, and 9 each comprised 7 classes: 7A-7G, 8A-8G, and 9A-9G. The sample was drawn proportionally from each class relative to the overall sample, so that the average sample size for each small class (7A-7G, 8A-8G, and 9A-9G) is 13. A web-based randomizer was used to draw a random sample of all respondents who met the inclusion criteria, achieving the required sample size.

After obtaining research permission from the school principal, the purpose of the study, the treatment to be administered to the respondents, the benefits and risks, the right to withdraw, data confidentiality, the incentives to be provided, and the research procedures were explained directly to the parents and children. If parents agreed to their children participating as research respondents, they were asked to sign an informed consent form. Respondents then completed the questionnaire online via a Google Form provided by the researchers.

Data Analysis

Data analysis was conducted independently by the researcher. The proportions of each independent and dependent variable were presented in frequency distributions. The Hosmer-Lemeshow test was used to assess model fit, the F test was used to determine the combined effect of independent variables on the dependent variable, and logistic regression was conducted in SPSS to determine the determinants of emotional intelligence in adolescents who play online games.

Ethical Clearance

Ethical clearance was obtained from the Health Research Ethics Committee (KEPK) of the Faculty of Medicine, Diponegoro University, with number 124/EC/KEPK/FK-UNDIP/IV/2023.

RESULTS

Table 1

Determinants and emotional intelligence of respondents (n=277)

Variable	n	%
Age		
a. Pre-adolescents (11–14 years old)	220	79.4
b. Middle adolescents (15–17 years old)	57	20.6
Total	277	100.0
Gender		
a. Male	125	45.1
b. Female	152	54.9
Total	277	100.0
Duration of online gaming (hours)		
a. 1-3 hours/day	214	77.3
b. >=4 hours/day	63	22.7
Total	277	100.0
Duration of online gaming (days)		
a. 1-3 days/week	171	61.7
b. 4-7 6 days/week	106	38.3
Total	277	100.0
Online gaming addiction		
a. Not addicted	252	91.0
b. Addicted	25	9.0
Total	277	100.0
Emotional intelligence		
a. Low	41	14.8
b. High	236	85.2
Total	277	100.0

Table 1 shows that the majority of respondents are in the pre-adolescent stage (79.4 %), with a nearly balanced gender distribution, although the percentage of female respondents is slightly

higher (54.9 %). The majority of respondents (77.3 %) play online games for 1-3 hours per day, 61.7 % play online games 1-3 days per week, and 91 % do not experience addiction. The majority of respondents (85.2 %) have high emotional intelligence.

Table 2

Simultaneous influence of determinants on emotional intelligence

Step	Chi-square	df	p-value	Nagelkerke R-squared
1	17.005	5	0.004	0.105

Table 2 shows that gender, age, duration of play, and online game addiction simultaneously affect emotional intelligence (p-value: 0.004 < 0.05). The ability of independent variables (gender, age, duration of play, and online game addiction) to explain emotional intelligence in adolescents who play online games is 10.5 %.

Table 3

Determinants related to emotional intelligence

Determinant	OR	95 % CI	p-value
Sex	3.981	1.75- 9.034	< 0.001
Play duration (hours)	0.937	0.379- 2.318	0.888
Play duration (day)	0.908	0.391- 2.112	0.832
Age	0.705	0.311- 1.596	0.402
Game online addiction	1.717	0.453- 6.507	0.427

Table 3 indicates that gender partially influences emotional intelligence in adolescents (OR 3.981; 95 % CI 1.75-9.034). Female adolescents are 3.981 times more likely than male adolescents to have high emotional intelligence.

DISCUSSION

The study's results indicate that adolescents' emotional intelligence when playing online games is mostly strong. This shows that online games are not a significant factor in adolescent emotional intelligence. Furthermore, gender, age, duration of play, and online game addiction simultaneously affect adolescents' emotional intelligence, although the influence of these variables is low. To some extent, gender influences adolescents' emotional intelligence when playing online games. Meanwhile, playing duration, age, and online game addiction do not partially influence adolescents who play online games.

Female adolescents are likely to have higher emotional intelligence than male adolescents who play online games. This is consistent with findings indicating that pre-adolescent and adolescent girls have higher emotional intelligence scores than adolescent boys (17). Female adolescents naturally exhibit stronger emotional intelligence components, such as perception and emotion regulation, than male adolescents (18). Women tend to express their emotions with their peers, thereby strengthening their emotional intelligence (17). Female adolescents find it easier to manage their emotions. They understand how to express their feelings and listen to other female adolescents as they pour out theirs. This supports the improvement of female adolescents' emotional intelligence.

In the context of online gaming, male adolescents generally play more intensely than female adolescents, which may influence the development of emotional intelligence (19). Female adolescents tend to choose music and dance games, while boys prefer adventure games (20). The game genres that female adolescents enjoy provide opportunities to express their feelings more effectively, thereby enhancing their emotional intelligence.

Age does not affect emotional intelligence among adolescents who play online games. Emotional intelligence develops with age (21,22). In early adolescence, emotional intelligence is relatively unstable compared to middle and late

adolescence (23-25). However, previous research shows that EI development in adolescents is more influenced by family and school factors than by small age differences during early, middle, and late adolescence (14). The respondents were pre-adolescents and early adolescents, with the majority in the pre-adolescent category. In adolescents, emotional intelligence increased across each phase but remained relatively stable. Adolescents' emotional intelligence is not yet fully developed.

The duration of online gaming does not affect adolescents' emotional intelligence. These results are consistent with previous studies explaining that the duration of gaming in adolescents is not always associated with mental health problems (26). In this study, most participants played games for 1-3 hours per day, with a playing time of 1-3 days per week. The duration of gaming is much shorter than that of addicted gamers, who play for at least 30 hours per week (27). Short playtime allows teenagers to maintain strong self-control, including emotional regulation.

Online gaming addiction does not partially affect the emotional intelligence of adolescents who play online games. The results of this study differ from previous studies, which suggest that adolescents who play online games excessively are at risk of experiencing emotional and behavioral problems, which negatively affect their emotional intelligence (28). Several studies explain that gaming addiction is negatively related to adolescents' emotional intelligence (2,10). This is possible because the majority of teenagers who play online games in this study do not experience addiction, or in other words, teenagers use online games for recreational purposes. Recreational games are intended for momentary entertainment and, when played for a reasonable amount of time, do not affect emotional abilities that can hinder the development of emotional intelligence.

CONCLUSION

Multiple factors, including age, gender, duration of play, and online game addiction influence the emotional intelligence of adolescents who play online games. Efforts are needed to maintain healthy gaming behavior so that it does not develop into online game addiction, which can interfere with adolescent emotional development. In addition, interventions are needed to strengthen emotional intelligence, particularly among male adolescents.

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