

## Conference Paper

# The Relationship Between the Intensity of Gaming and Aggressive Behavior in Adolescents Playing Games MMOFPS (Massively Multiplayer Online First- Person Shooter)

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### Abstract.

This study aimed to analyze the association between the frequency of playing games and aggressive behavior. This study consisted of 350 subjects between 12 and- 24 years old who were selected through purposive sampling. The data were tested using validity and reliability tests to measure the level of validity of the study instrument with a significance transfer of 0.5%, while also using the Pearson correlation test and the normality test. The results of the analysis showed that there was a positive correlation value with a significance value of (sig) of  $0.786 < 0.05$ . This shows that there is a positive relationship between the frequency of playing games MMOPS and aggression behavior.

**Keywords:** intensity of Gaming, aggressive behavior, MMOFPS

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## 1. Introduction

The presence of the internet has a big impact on human life, so that nowadays humans are always involved in carrying out all their activities using the internet. This statement is in accordance with data from We Are Social which shows that in Indonesia internet consumption has increased every year, in January 2022 there were 204.7 million people using the internet, which increased by 1.03% from 2021 with 202.6 million users. Consumption pattern of internet has increased in 54,25% at Indonesia [1].

From the data recorded at the Central Bureau of Statistics, internet users in 2017 to 2019 based on age groups were dominated by users aged 15 to 24 years. In the age range of less than 15 years, there were 18.06% - 31.23% from 2017-2019. The number of gamers (game players) is mostly in the age range of 12-24 years, starting from 2017-2018. This happens because of various background factors, namely the relationship

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between online game dependence in adolescents, how the relationship patterns are formed between parents and children, peers, and the school environment. Friend can influence a game addiction [2]

Four criterions of internet utilization by users [3]namely: (1) email; (2) fun activities are activities that make someone fun, for example watching video clips, listening to audio recordings and music, short messages, chatting, and playing games; (3) information utility is an activity on the internet that has the purpose of seeking information, for example searching for information related to news, books, weather, movies, products, music, travel, information about politics, health, work, finance, government, and schools; and (4) transactions are buying and selling activities that occur on the internet, such as booking travel tickets, online banking, or buying something.

As internet users increase, so do online game users in Indonesia. Based on a survey from Decision Lab[4] in 2018 in August, the results state that 27% of gamers in Indonesia are in the age range of 16-24 years and 25-34 years, and as many as 5% of gamers are over 55 years old. This is also evidenced by the We Are Social report that as of January 2022, Indonesia is the third-ranked country in the world in the number of video game players, which is 94.5% of all internet users in Indonesia who play video games with an age range of 16-64 years [5].

Based on the data previously described, it is known that gamers in Indonesia are dominated by the age range of 16-24 years and 25-34 years. Ages 16 to 24 years are included in the teenage age category and 25-34 years are included in the adult age category. Papaioannou, et. al [6] stated that adolescents are more vulnerable to being affected by online games compared to older ages, where online games have negative and positive impacts on adolescents. Fajardo et.al. [5] revealed that playing video games can change the behavior of players for better or worse. These behavioral changes are evident in adolescents' personalities because video game content affects the way the player's personality grows, which is not yet fully formed. The impact that video games may have on the player's personality can have a positive impact, such as improving social skills, mental skills, and finding solutions. Besides the positive impact, it can also have a negative impact on the player's personality, such as stress, aggression, violence, and anxiety.

Referring to the survey results from APJII (Association of Indonesian Internet Service Providers) in 2014, the results state that as many as 50-60% of gamers play games with the MMOFPS genre (Massively Multiplayer Online First-person shooter), which is an online game that emphasizes the use of firearms as the main weapon, killing each other between players later in order to win a mission where games with this genre

can be played individually or in groups, The next survey results state that the remaining percentage from the previous one is followed by MMORPG (Massively Multiplayer Online Role-playing games), which are online games played by playing a role of a fictional character by building a predetermined storyline through social interactions between characters like in the real world [7]. Fajardo, et. al.[5]explains that shooter games can increase aggression and fighting games can increase hostility and aggressiveness of players. This is also in line with the statement of clinical psychologist, Personal Growth, Anita Carolina Hendarko if online games in the form of warfare can have an influence on the cognitive and psychological of players which can cause the emergence of aggression behavior[8].

Blake and Louw[9] define aggression as behavior that has the aim of causing harm to others. Not only does it cause harm to the target subject, aggression behavior must also be able to make the target subject have the motivation to avoid this behavior. Allen [10] explains aggression as behavior that is deliberately carried out with the aim of harming or hurting others. Hong and Espelage [11]say that aggressive behavior is a behavior or behavioral tendency that aims to hurt others, physically or psychologically to express negative feelings so that the goal is achieved. From the several definitions of aggression above, the conclusion of aggression that can be drawn is that aggression is a behavior or tendency of deliberate behavior that aims to hurt or harm others psychologically or physically in order to express their negative feelings so that they can achieve their goals. The perpetrator is also aware that this behavior can harm others and the target tries to avoid this behavior.

Blake and Louw [9]state that aggression behavior has four dimensions, namely the first is physical aggression where someone tends to express their anger through physical attacks. The second is verbal aggression, which is an attack through words or rejection of something as a form of defense from the individual for a stimulus that is felt to be harmful and painful. The third is anger, which is an emotional (affective) picture shown through physiological urges as the initial stage (preparation) of aggression. The fourth is hostility, which is aggression behavior with the aim of protecting oneself from a stimulus that is believed to be harmful.

Fajardo et.al.[5]a revealed that online games can influence the emergence of aggression behavior not only because of the content of online games, but also the page of time spent playing them. This is relevant to what Keskin, et. al. [12] stated that the negative effects associated with gaming increase with more intense gaming time. In particular, more than five hours of online gaming per day in adolescence appears to increase the risk of negative consequences. The period of time in gaming is referred to as intensity.

Fajardo et. al. [5] defines the intensity of gaming as the frequency or magnitude of a personal's interest in gaming through internet network access (virtual games). Keskin [12] also defines the period of gaming where it is the average time a person uses to gaming in one week. Katz and Stupel [13] states that there are two things that must be considered in seeing the intensity of an individual's use of internet applications, namely duration and frequency, which relates to the number of times accessing internet applications.

Referring to various previous research results, it is found that there is a positive and significant correlation between the intensity of gaming and aggression behavior. This means that the high intensity of a person gaming will be accompanied by a high tendency to behave aggressively, this applies inversely where the low intensity of a person gaming means that the tendency to behave aggressively is also low. According to Bandura [14], aggressive behavior arises as a result of observation of others, practice or instruction, abstract beliefs, and experiences that get positive and negative reinforcement. Through social learning theory, Bandura believes that through observation it can pave the way for someone to learn. Humans can observe natural phenomena, plants, animals, and others. Humans can learn from observing the behavior of other individuals, so the higher a person's intensity in playing violent online games, the more he observes violent acts in the online game, and then does it to others.

From what has been explained above, the researcher is interested in conducting a research on the relationship between the intensity of gaming and aggression behavior in adolescents. The purpose of this research is to find out "The Relationship Between Intensity of Gaming and Aggression Behavior in Adolescents Who Play MMOFPS Games". The difference between the research that the researcher wants to do with various previous studies is that this research focuses on online games with the MMOFPS (Massively Multiplayer Online First- Person Shooter) genre, the variables studied are the level of intensity and aggressiveness, as well as the criteria and number of respondents used in the research.

## 2. Method

The research method used is descriptive quantitative using a correlational approach [15]. The research target is adolescents aged 12-24 years who like to play online games with the MMOFPS (Massively Multiplayer Online First- Person Shooter) genre, including Call of Duty, Point Blank, Counter Strike, Unreal, Blood, and Quake. The sampling method used in this research is purposive sampling, in which the selection of respondents has been determined by the researcher [15].

In collecting data, the method used is a questionnaire, which is in the form of a questionnaire sheet containing several written questions with the aim of obtaining data from respondents about everything they already know and experience[15]. Before this instrument is distributed to respondents, a research trial is carried out first, which includes a validity trial using the Pearson product moment correlation test with a significance level  $<0.5\%$  said to be valid, while for the reliability test using the Cronbach's alpha test with a significance level of Cronbach's  $\alpha > 0.6$  said to be reliable. The instrument scale used in this research has a score in the range of 1-4 (1 = Strongly Disagree to 4 = Strongly Agree) which is then summed in each aspect.

The data analysis in this research uses two forms of analysis, namely descriptive analysis and inferential analysis[15]. Inferential analysis in this research uses the Pearson correlation test and also the normality test, in order to find out and answer the research hypothesis whether there is a relationship between the intensity of gaming and aggression behaviour in adolescents. As for descriptive analysis here in the form of data analysis that provides an empirical description related to the data that has been collected[15].

### 3. Result and Discussion

The subjects of this research are teenagers in the age range of 12-24 years who play online games with the MMOFPS (Massively Multiplayer Online First-Person Shooter) genre, including Call of Duty, Point Blank, Counter Strike, Unreal, Blood, and Quake. The results obtained from the field at the time of data collection were, researchers obtained a subject of 350 respondents consisting of adolescents aged 12-24 years who enjoyed gaming with the MMOFPS (Massively Multiplayer Online First- Person Shooter) genre, including Call of Duty, Point Blank, Counter Strike, Unreal, Blood, and Quake. The determination of the number of sample members in this research uses purposive sampling, where the sample selection has been predetermined by the researcher based on age criteria. As for the approach itself, the researcher uses a correlation approach which aims to see the relationship and its degree in the variables to be studied in the absence of attempts to influence and manipulate these variables so that what is obtained later is very pure in its authenticity[15].

In this research, the author uses research subjects from the age range of 12-24 years which consists of 350 research subjects, ages 12 to 24 years are included in the adolescent age category. According to Mcgeown. et. al.[16] that adolescence is more susceptible to being affected by online games than older ages, where online games

have negative and positive impacts on adolescents. In this research, researchers used measuring instruments from O kiraly where the scale used by researchers was the intensity of gaming. From the results of the calculations that have been carried out by researchers, it is found that the output of the validity test shows that the research instrument in this research is declared to have 10 valid items, while for the reliability test all questions are declared reliable with a significance range of 0.7-0.9. The results of the research instrument trial which were declared very valid and reliable were declared suitable for use in research [17].

The results of the research show that there is an age range that plays the highest average online game is in the age range of 22 years, which is 72%, while for the medium range is around 21 years old with an average of 43% and for the lowest is at the age of 12 years by 6%. Based on the results of the respondents produced, it shows that from a total of 350 respondents, it includes data on female and male users with a representation for male online game users of 64.6% while for women it is 35.4%. From this research, the average value is obtained on the variable intensity of gaming (X) and the tendency of aggressiveness (Y) which will be shown in table 1 below for more details.

TABLE 1: Categorization Agression.

Indicator	Frequency	Percentage
Low	165	47,1
High	185	52,5

TABLE 2: Categorization Intensity.

Indicator	Frequency	Percentage
Low	158	45,1
High	192	54,7

Based on the results of the calculation of table 1, the highest percentage of each indicator is obtained with a frequency of 185 with a percentage value of 52.5%, this is in accordance with the level of intensity obtained by adolescents in gaming in table 2, obtained a high intensity categorization value with a frequency of 192 with a percentage of 54.7%. Meanwhile, for the low indicator value of aggression categorisation, the frequency value is 165 with a percentage of 47.1%, while for the intensity level it is 158 with a percentage of 45.1%. So in this case it can be concluded that, aggression has a positive and high value which in this case if the level of aggressiveness of the MMOFPS (Massively Multiplayer Online First-Person Shooter) game, triggered by

physical, verbal, and anger aggression is still relatively high. The empirical mean value of the theoretical aggressiveness tendency is in the  $X < 60$  interval, which means that gamers (Massively Multiplayer Online First-Person Shooter), have aggression behaviour in the high category, with a value of 185 or a percentage of 52.5.

After the categorisation test is carried out, a linearity test is carried out by researchers using the anova test. The linearity test has the aim of seeing the relationship between variable X and variable Y, which if the significance  $(p) > 0.05$  then the data is said to be linear while if  $(p) < 0.05$  then the data is not linear. The output of the linearity test can be seen in the table below:

TABLE 3: Linierity Outcome.

			ANOVA Table				
			Sum of Squares	df	Mean Square	F	Sig.
Agresi Intensitas Bermain Game Online	* Between Groups	(Combined)	15282.285	69	221.482	10.043	.000
		Linearity	13271.347	1	13271.347	601.806	.000
		Deviation from Linearity	2010.938	68	29.573	1.341	.053
	Within Groups		6174.712	280	22.053		
	Total		21456.997	349			

In table 3, it is known that the results of the linearity test of the aggression behaviour variable with the intensity of gaming obtained an F value of 601.806 with a significance value of  $p = 0.000$ . From the calculation output, it can be concluded that if the  $p$  value  $> 0.005$ , it means that the form of relationship that occurs in the variable of aggression behaviour and intensity of gaming is linear and has a relationship. When testing normality, researchers use normality tests with kurtosis and skewness because the sample data used is larger. The normality test is carried out to see the distribution of the data, whether the distribution is normal or not by means of statistical analysis. The data is declared normal or not when the statistical skewness and kurtosis are divided by the standard error of the statistical skewness and kurtosis. From the results of the calculations carried out. The ratio values obtained are between -2 and +2 which indicates that the data is well modelled with a normal distribution[15]

After the linearity and normality tests, the next stage that is passed is hypothesis testing by empirically testing the effect of online game intensity (X) on aggression behaviour (Y). Based on the normality test conducted, the results stated that the skewness and

TABLE 4: Normality Outcome.

Descriptives				
			Statistic	Std. Error
X	Mean		70.8829	1.00818
	95% Confidence Interval for Mean	Lower Bound	68.9000	
		Upper Bound	72.8657	
	5% Trimmed Mean		71.2222	
	Median		69.0000	
	Variance		355.748	
	Std. Deviation		18.86129	
	Minimum		27.00	
	Maximum		108.00	
	Range		81.00	
	Interquartile Range		32.00	
	Skewness		-.084	.130
	Kurtosis		-1.014	.260

kurtosis values based on statistical values obtained a value of -2, namely .130 and +2, namely .260. Furthermore, this hypothesis testing uses simple correlation regression test analysis with the results of statistical calculations expressed as follows:

TABLE 5: Hypothesis Outcome.

Correlations			
		Frequency in gaming	aggression
Frequency gaming	Pearson Correlation	1	.786**
	Sig. (2-tailed)		.000
	N	350	350
Aggression	Pearson Correlation	.786**	1
	Sig. (2-tailed)	.000	
	N	350	350

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

From the table of Pearson Correlation hypothesis test results above, it shows that in this research, the r value is = 0.786 (p <0.05). based on the test results, it can be stated that there is an influence and relationship between the intensity and aggression of adolescents in gaming, which from the data obtained a sig value. 0.000 (p<0.05) which means that there is a positive relationship between the intensity of gaming and aggression behaviour in adolescents in this study.



## 4. Discussion

Based on the output of the correlation test, it shows that there is a positive relationship between adolescent aggression in gaming and the level of intensity of gaming. The positive correlation value can be interpreted if the increase in the intensity of gaming will be followed by an increase in the aggression behaviour of adolescents who play the game, as well as the opposite applies where the low intensity of gaming means that the level of adolescent aggression behaviour is also low. This is in line with research conducted by Fajardo [5] who conducted research on the effect of the intensity of gaming on aggressiveness by teenage children. The results of this study suggest that the intensity of gaming has a positive influence between the intensity of gaming and aggressive behaviour in children. The higher the intensity of gaming, the higher the aggressiveness behaviour.

In this study, researchers used a measuring instrument for the intensity of gaming from O Kiraly, which is seen from two aspects, namely aspects of frequency and duration of access. for the frequency aspect in the form of a level of how often to play online games, while the duration of access is related to the level of intensity in gaming. In this study it is included in the high category with an amount of 54.7%, with the number of players based on gender, the intensity of male game players is much higher than women. Every game at the beginning must use a low level and then increase to a higher one. The high level of playing intensity will cause many failures and obstacles when playing, this repeated failure ultimately causes frustration which causes a tendency for players to commit nonverbal or verbal aggressive acts.

Supported by previous research by Allen [10], the results state that the intensity of gaming can have an influence on aggressiveness. This is shown from the increasing intensity of playing, the appearance of aggressive behaviour is getting higher. In line with what Mcgeown. et. al. [16] did, where individuals with online games in the form of PUBG mobile (FPS genre) have a tendency to behave aggressively, this is motivated by adolescents having a habit of seeing impressions that contain elements of aggressive behaviour. Aggressiveness is learned through the modelling method obtained from the family environment, friendships, and mass media. Another opinion also states that, aggression behaviour is obtained from observation of others, training or instruction, abstract beliefs, and experiences that get positive and negative reinforcement[11].

A similar thing was found in research conducted by Papaioannou et. al. [6], where the results said that there was an influence from the intensity of gaming on the aggression behaviour of players. The frequency with which a person plays online games, to the

genre of the game played, greatly influences the acts of aggression that come out. The behavioural form of the emergence of aggression as a result of the tendency to play online games is in the form of swearing and saying harsh words to each other, slamming the tools used to play games (cellphones or keyboards), to some physically fighting each other with other friends.

The process of gaming intensively indirectly encourages the creation of stimulus slowly to children or adolescents. The process leads children or adolescents to pour the desired character. This is in line with what Alanov said that players can create characters as they wish, sometimes even the nature of the player can be reflected in the characters created [5]. The stimulus that is formed will develop further according to the duration of play that affects it.

The intensity of gaming that have elements of violence in them is a problem that affects aggression behaviour in adolescents. The negative relationship that exists between online games and aggression is likely due to the strong modelling of the characters in the game, which can lead to aggression. This statement is reinforced by the findings of Cheng & Lam[7] which states that if someone who imitates a character in the game will bring about a learning process so that if the character in the game behaves violently with acts of violence, it will potentially lead to aggression behaviour in the player. This is also relevant to research from Keskin et. al.[12], the results of which say that there is an established relationship between the intensity of gaming and aggression behaviour in adolescents whose relationship pattern is very significant positive. The high rate of aggression and also the intensity of gaming in adolescents will certainly have a negative impact where aggression and intensity are interconnected with psychological stress and teenage gaming time. This is because adolescents do not only use one platform, but also use different platforms, ranging from PC players, PC and Console players, or console players.

The aggression behaviour that often occurs in adolescents in this study has high intensity is aggression behaviour in the form of physical, verbal and relational aggressive behaviour. In physical aggressive behaviour, the indicators are more shown by attacking other children directly in the form of kicking and hitting actions, this is because children too often play games that contain aggressive behaviour in the games they play. Furthermore, verbal aggressive behaviour, a more prominent indicator is urging several people to verbally say hurt the target, this is because children are used to controlling a character to attack their enemies so that children are used to ordering someone to hurt others. As for relational aggression behaviour, the prominent indicator is ignoring and spreading other people's secrets. This is because when gaming children can communicate through

online by grouping, thus children are accustomed to interacting in groups and ignoring other people around them.

The game players are classified as low, which means that they are not included in the aspects which only get responses from the surrounding environment which only take actions that do not lead to aggression, for example, these actions are in the form of laughing and making light jokes, by replying to other aggressive behaviour. However, the intensity of gaming that contain elements of violence is a problem that affects aggression behaviour in adolescents. By regulating the intensity of gaming, it will help someone to be able to control good aggression behaviour, otherwise if the level of intensity of gaming is high, it will be difficult to control aggression. Fajardo [5] states that, online game players, they sacrifice their time to sleep, work, or study, socialise with friends and time for family. The habit of playing games also makes them rivaled from their real environment. Thus, a conclusion can be drawn in this research, that there is a relationship between the intensity of gaming and aggression behaviour in adolescents who play MMOFPS games.

## 5. Conclusion

From the research that has been carried out, it can be concluded that there is a significant positive relationship between the intensity of gaming and aggression behaviour in adolescents who play MMOFPS (Massively Multiplayer Online First-Person Shooter) games. Because the relationship formed is positive, if there is an increase in the score of gaming, it will be followed by an increase in the score of aggression behaviour in adolescents, and vice versa. The results of the level of intensity of gaming are categorised as high with a score of (54.7%), while the level of adolescent aggression behaviour in gaming is 52% with a high category. Of the total number of respondents with a total of 350, it was found that the representation for the most online game users was male users with a total percentage of 64.6% while for women it was 35.4%.

Supported by the acquisition of a correlation test stated to be positive, this is the relationship between the intensity of gaming and aggression behaviour that is positive and interconnected, where the results obtained are the level of intensity and aggression classified as both being in the high category, high intensity which is indicated by the presence of aggression behaviour in the form of physical, verbal and relational aggressive behaviour. The results of the correlation test obtained a significance value (sig) of  $0.786 < 0.05$  in this research can be concluded if the hypothesis that has been determined where it reads "there is an effect of the intensity of gaming on aggression

behaviour in adolescents” is accepted, which indicates a relationship between the intensity of gaming and aggression behaviour that is positive and interconnected.

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