

# BULLYING BEHAVIOR AFFECT TO COGNITIVE DEVELOPMENT OF ELEMENTARY SCHOOL STUDENTS IN PUNGGUL VILLAGE

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**Abstract:** Bullying is a repeated, conscious action that harms others due to an imbalance in power between the perpetrator and the victim. Based on the KPAI (Komisi Perlindungan Anak Indonesia) from 2011 to August 2014, there were 369 complaints related to bullying, which a quarter of total complaints were bullying in the school environment. Bullying can affect children's development and cause other problems in the children's life. Various studies have shown a correlation of bullying behavior both as perpetrators and victims with cognitive deficits. The purpose of this study was to determine the relationship of bullying behavior to the cognitive development of elementary school students in Punggul Village. This study is an observational analytic study using the cross-sectional method. Total sampling was 64 respondents using consecutive sampling based on inclusion and exclusion criteria in the population. The results of the study show a significant relationship between bullying status of children who are the perpetrator of bullying towards cognitive development ( $p = <0.01$ ) with moderate correlation ( $r = -0.579$ ). There is also a significant relationship between bullying status of children who are victims of bullying towards cognitive development ( $p = <0.01$ ) with moderate correlation ( $r = -0.444$ ). The conclusion is there a relation between bullying behavior and cognitive development of elementary school students in Punggul Village. Implementation of strategies to suppress bullying in schools needs to be improved to reduce the possibility of bullying.

**Keywords:** Bullying, Cognitive, Elementary School.

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## I. INTRODUCTION

Education is an essential process in developing children's potential. Through the education process, children are expected to improve their talent and form their personality. A school is an ideal place for children's education. In school, children can learn many things to enhance not only their cognitive potential but also their psychosocial, moral, and emotional abilities.<sup>1</sup> However, the school can also become a stressor that can interfere with children's development because of the existence of bullying behavior in school.<sup>1</sup> Some research results show that bullying behavior is a serious problem that occurs in children. The results of a survey conducted by C.S. Mott Children's Hospital National found that bullying was included in the top 10 health problems on children prove the high incidence and serious impact on children.<sup>2</sup>

Bullying is a behavior characterized by taking actions harmful to others, accompanied by an imbalance of power between the perpetrators and victims. This behavior includes physical actions such as kicking, punching, biting, threatening, harassing, isolating, and spreading issues through electronic devices or cyberbullying.<sup>3</sup> The prevalence of bullying in schools in several Asian, American, and European countries is estimated to be around 8% -50%.<sup>4</sup> While in Indonesia, KPAI noted from 2011 to August 2014, there were 369 complaints related to bullying issues, which a quarter of total

complains were in education.<sup>5</sup> KPAI also states that 87.6% of children claimed to have violence experience in the school environment in various forms, where teachers perpetrated 29.9 % of the violence, classmates committed 42.1 %, and 28% was committed by other friends.<sup>1</sup>

Bullying in school can cause trauma and fear in children. As a result, the children become reluctant to go to school, experience disruption in the learning process, and impact cognitive development.<sup>6</sup> Besides, according to the results of research conducted by the SEJIWA foundation in 2006 stated that during the period from 2002 to 2005 in Indonesia there had been 30 suicides which happened to the victims of bullying at the age range of 6-15 years.<sup>7</sup>

Related to cognitive aspects, various studies show a correlation of bullying behavior both as perpetrators and victims with cognitive deficits. Dertelmann in Medeiros found lower performance in victims of bullying when tested for cognitive flexibility tests compared to groups that did not experience bullying.<sup>8</sup> Another research from Verlinden also found that both bullying offenders and victims got lower test scores on tests that required attention verbal memory like dictation. The deficit of one or more cognitive functions in the young age group is considered being more meaningful and can impact to disruption of social gatherings, work, daily activities which causes a decrease in quality of life.<sup>9</sup> Poor cognitive function at an early age is also a predictor of health status markers in old age later on.<sup>10</sup>

This research was implemented in two schools in the Abiansemal region. This study involves fifth-grade and sixth-grade students because, at this grade, the child has mastered the ability to read and write so that the results will be more valid.

## II. METHODOLOGY

This study is an observational analytic study with a cross-sectional study design. The independent variable and the dependent variable observed only once at the same time. This research conduct in Punggul Village, Abiansemal Subdistrict, Badung Regency, Bali, in August 2019. Samples were selected from the population-based on inclusion criteria and exclusion criteria using a non-probability sampling method and voluntary sampling technique. Inclusion criteria are students aged 10 to 13 years, able to read and write, physically and mentally healthy, and willing to take part in research by filling out informed consent. Exclusion criteria were students transferring schools or not wanting to take part in this study.

The instrument used is a questionnaire, and the validity of demographic questionnaire content and the questionnaires related to bullying behavior have been tested. The questionnaire was categorized into sample characteristics (name, age, date of birth, gender, last education, address, and telephone number); gang status; physical bullying status; verbal bullying status; relational bullying status; bullying status of children; and average report card.

Respondents who fulfilled the inclusion criteria will be asked for informed consent first, and then respondents can fill out the questionnaire sheets that have been prepared. After completing the questionnaire, the data will be processed using a data processing program, and its frequency is calculated. The data analysis technique was performed using SPSS software. The data were analyzed descriptively and analytically. First, univariate analysis is performed, which displays data in proportion to the characteristics of the respondents presented on the table. Second, it continued by correlative analysis for the relationship between the cognitive development of children with peer bullying behavior in Punggul Village Elementary School, which was analyzed using the Pearson or Spearman test. The results of the bivariate analysis are presented on the table.

## III. RESULT

Table 1 shows a total of 64 respondents who took part in this study were from the ages 10 to 13. The study found that a higher proportion of boys took part in the survey than girls with a percentage of 62.5%. There were 22 students from fifth grade and 42 students from sixth grade.

**Table 1: Characteristics of Research Samples**

Characteristics	Total	Persentase (%)
<b>Gender</b>		
Boy	40	62.5
Girl	24	37.5
<b>Grade</b>		
Fifth Grade	22	34.4

Sixth Grade	42	65.6
<b>Age</b>		
10 years	19	29.7
11 years	24	37.5
12 years	17	26.6
13 years	4	6.3
<b>Physical Bullying Status</b>		
Physical bullying victims	14	21.9
Physical bullying perpetrators	12	18.8
Both	17	26.6
Not Both	21	32.8
<b>Verbal Bullying Status</b>		
Verbal bullying victims	14	21.9
Verbal bullying perpetrators	10	15.6
Both	23	35.9
Not Both	17	26.6
<b>Relational Bullying Status</b>		
Relational bullying victims	9	14.1
Relational bullying perpetrators	14	21.9
Both	28	43.8
Not Both	20	31.3
<b>Total</b>	<b>64</b>	<b>100</b>

The physical bullying status of respondents in Punggul Village, Abiansema Subdistrict, Badung Regency, Bali dominated by the status of not being a perpetrator or victim with a proportion of almost one-third (32.8%). While the verbal bullying status of respondents dominated by the status of the perpetrators and victims at the proportion of more than one third (35.9%). The status of perpetrators and victims dominated the relational bullying status of respondents at almost half (43.8%). Furthermore, overall, the status of child bullying in Punggul Village, Abiansema District, Badung Regency, Bali is dominated by the status of not a perpetrator or victim with a proportion of 31.3%.

**Table 2: Crosstabulation Result, and Correlation Coefficient**

Variable	Significant	Correlation Coefficient
Bullying perpetrators status with children's cognitive development	<0.01**	-0.579
Bullying victims status with children's cognitive development	<0.01**	-0.442

**Noted:** “ \* ” p-value < 0.05, significant; “ \*\* “ p-value < 0.01, highly significant.

#### IV. DISSCUSSION

The final results of this study based on bivariate analysis using Spearman's Rank correlation found that the child's bullying status as preparators with children's cognitive development has a significant relation (p-value is <0.01) with a moderate correlation (correlation coefficient r is -0.579). The child's bullying status as a victim of bullying with the child's cognitive development also found to have a significant relation (p-value <0.01) with a moderate correlation (correlation coefficient r of -0.444). The correlation coefficient shows a minus sign that shows the relationship of a child's bullying status with cognitive development is a negative relationship. This shows that the higher child's bullying score, which is an instrument used to assess whether a child is classified as a bullying category or a bullying victim, the lower the child's cognitive development as assessed by the report card.

The result conducted with a variety of studies by other researchers, such as Roman and Murillo, who found elementary school students who experienced bullying behavior both as victims and perpetrators in school significantly showed the acquisition of mathematics scores and reading achievement worse than those who did not engage in bullying.<sup>11</sup> Another study from Ladd points out that students who are intimidated for most of their time in primary school are at a significant risk of scoring low academic grades. Ladd's also shows the difference between those children who are victims only in the first year or in a short duration show an increase in self-esteem, school performance, and how they like school after the intimidation of them stops.<sup>12</sup>

Various studies have found changes in brain structure because of persistent exposure to bullying that affects cognitive and academic achievement. Recent research shows that bullying can reduce the brain volume of the caudate and putamen. Caudate plays an essential role in memorizing and processing memory. This part of the brain uses information from experiences to influence future actions and decisions. Putamen regulates the coordination of body movements and influences cognitive processes. Changes in the caudate and putamen can be found in the elderly who have experienced various stresses in life. Physical changes in the brain of bullying victim at a young age explain the relationship between peer bullying and top levels of anxiety at a young age. This finding is the first study to show that ongoing bullying from an early age can affect adolescent neurologists by changing their brain structure.<sup>13</sup>

Besides the caudate and putamen, the study also found a reduction in volume, thickness, and coverage of gray matter areas in the group of bullying victims in several locations such as the medial orbitofrontal cerebral cortex, bilateral middle temporal lobes, and bilateral supra-marginal gyrus. The cerebral cortex is the center of a higher cognitive process that includes motivation and decision making. Gray matter is a place where neuron cell bodies are in the brain and is the most active place in the brain. The entire process of cognitive coordination, sensing, and personality controlled by gray matter. The thickness and coverage of the gray matter area can indicate the existence of self-control associated with bullying behavior.<sup>14</sup>

Other studies also found that bullying is associated with a decrease in cortical thickness in the medial, lateral prefrontal, and temporal lobes. The thickness of the middle temporal gyrus is reduced and predicted to mediate symptoms of generalized anxiety disorder. The thickness of the parahippocampal gyrus left, and right is also reduced and predicted to mediate the relationship between bullying behavior during childhood with symptoms of antisocial behavior as a teenager.<sup>15</sup>

Many researchers were starts to find out how stress due to bullying affects brain development in the long term. The body needs neurological stress hormones in many ways. The body needs stress hormones like cortisol to help it do its job better, improve memory and cognitive sharpening, improve heart function, and even make the body more resistant to infections. When a short-term buzz turns into persistent chronic stress, stress begins to harm the body.<sup>16</sup>

High cortisol levels can damage and kill neurons, especially in the hippocampus area. Hippocampus is part of the brain that responsible for consolidating information, namely the process of transfer from short-term memory to long-term memory. If this area becomes damaged, it can lead to disorientation and memory loss. Damage to neurons in the hippocampus at an early age can cause memory problems that make learning in school and learning more difficult. The study shown that those who bullied others perform worse on verbal and standardized tests than those who do not. In different tests using mice showed that those who are stimulated by stress would experience persistent neurogenesis or the creation of new neurons. The new neurons are still made, but they die before the manufacturing process is complete.<sup>17</sup>

The results of the study report that those who frequently bully others tend to have more reduced sleep quality, which can be explained by the fact that sleep is disturbed by disturbing thoughts and reflections before and after the episode bullying. Not only the perpetrator but being a victim of bullying can also cause a worsening of sleep quality to insomnia.<sup>18</sup> This happens because of the changes in the hypothalamus-pituitary-adrenal (HPA) axis produced by chronic stress. The HPA shaft is known to affect sleep. When someone feels or experiences negative emotions such as fear, anxiety, worry, anger, hate, frustration, or other negative emotions, automatically trigger the HPA axis. Then, the brain will interpret it as a precarious situation that must be addressed immediately by specific mechanisms. Negative emotions activate the hypothalamus and release corticotrophin-releasing factor (CRF) into the nervous system. CRF stimulates the pituitary gland to produce prolactin and adrenocorticotrophic hormone (ACTH), which stimulates the adrenal glands to produce cortisol. This system is subsequently responsible for helping the body maintain homeostasis when the brain receives signals of threat or danger, whether real or only in imagination.<sup>19</sup>

The active HPA system, when the body is resting, results in decreased sleep quality. Bullying perpetrators and victims with sleep problems tend to report more negative emotional states such as feeling easily fatigued, tense, anxious, depressed, and negligent in performing tasks, especially in the study process. Stressful situations can cause disturbed sleep. Sleep disturbance psychologically is associated with a lack of confidence to deal with stressful situations or the use of coping strategies that are not effective during bullying by peers.<sup>18</sup>

Bullying can harm both the perpetrator and the victim. The impact can be long term and short term. Short-term impacts due to bullying behavior in elementary schools can form feelings of insecurity and threat, lack of enthusiasm when studying, high levels of absenteeism at school, or decreased academic achievement at school.<sup>20</sup> The long-term impact of

bullying children is that the children will have a higher risk of depression and low self-esteem in the later stages of life. Children also become more at risk of leaving home or running away, committing suicide, and having problems with alcohol and drugs. The long-term impact of bullying behavior can occur in children who were bullying, namely the emergence of aggressive behavior after the child grows up. Milsom and Gallo reported that bullying perpetrators were more at risk for depression, engaging in criminal behavior, delinquency, and alcohol use when growing up.<sup>21</sup>

There are several limitations in this study, so it is necessary to test the next research in increasing practical value and provide a definite justification regarding the relationship of bullying behavior to the cognitive development of elementary school students in Punggul Village. The limitation of this study is the cross-sectional design, which influences observation. Based on some of these limitations, we expect that further research can be carried out holistically to obtain more accurate results.

This research can contribute to the context of the development of science, especially regarding the correlation of bullying behavior on cognitive development. This potential is expected to continue to be developed to reduce the incidence of bullying, given the impact it has on the cognitive aspects of students. Development with higher research methods is needed in improving the quality of output in the form of correlation. Knowledge of early bullying correlation in order to prevent cognitive decline has great potential in supporting science in the future.

## **V. CONCLUSION, SUGGESTION AND THANK-YOU NOTED**

Based on the results of the discussion above, it found that the bullying status of children as preparators was significant to children's cognitive development with moderate correlations. Meanwhile, the bullying status of children as victims of bullying is significantly related to children's cognitive development with moderate correlation.

Further analytic studies need to be done to look for risk factors for bullying in Punggul Village and multilevel analysis to assess their correlation to cognitive. Promotive and preventive efforts need to be made by the local school on risk factors that influence the incidence of bullying in schools.

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