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## COMPARISON OF THE STRUCTURES OF BULLYING PARTICIPANTS' AGGRESSIVE BEHAVIORS IN THE SCHOOL ENVIRONMENT

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### ABSTRACT

The aim of the study is to compare the structures of bullying participants' behaviors in the school environment. The study involved students aged 10 to 16 who attended secondary schools in Kyiv (Ukraine), with a total number of n = 173. We created a diagram of bullying participants'

aggressive behaviors in the school environment. It was found that bullies significantly surpassed victims in four aggressiveness parameters ( $p \leq .010$ ;  $p < .001$ ): “physical aggression”, “indirect aggression”, “irritation”, “pangs of conscience”, and on the integral aggressiveness scale. Victims significantly surpassed ( $p \leq .050$ ;  $p \leq .010$ ;  $p < .001$ ) active bystanders in eight aggressiveness parameters and on two integral scales, passive bystanders – in three aggressiveness parameters and on the integral aggressiveness scales, and participants with no school-based bullying experience – in eight aggressiveness parameters and on two integral scales. It was substantiated that our comparative research is a confirmatory strategy with the elements of comparison that operationalize the most relevant dimensions characterizing the bullying phenomenon – aggressiveness parameters. It was summarized that bullying was considered a systemic model of the interrelated aggressive behaviors of all participants in this process. We obtained important scientific facts that should be learnt by the organizers of the educational activities in secondary education institutions to develop prevention and psycho-correction training courses on school bullying.

Keywords: psychology of violence, bully, victim, value orientations, physical aggression, indirect aggression.

## INTRODUCTION

Bullying, or ill-treatment, in the school environment is a serious problem in the geopolitical dimension. This problem concerns children and adolescents in various life areas, including educational and leisure activities. Unfortunately, Ukraine is listed among countries with a high rate of teenagers' aggression. It is known that bullying has an adverse effect on its victims, bullies, and other participants, affecting their physical, psychological, and social wellbeing. School-based bullying is systematic persecution and ill-treatment of a child or a group of children by others that manifests in physical, psychological, or social violence.

## LITERATURE REVIEW

Aggression in bullying manifests as physical and psychological abuse aimed at humiliating and harming a victim. This is a systemic behavioral model that involves direct physical aggression, verbal insults, spreading rumors, ignoring an individual, and other forms of humiliation. Bullying can have severe consequences for the victim, including emotional and mental problems, as well as social difficulties. Clarifying the factors of preventing abuse in schools, researchers Thaçi & Shatri (2024) identified four elements of creating a positive learning environment: 1) a favorable social and psychological climate; 2) the modernized content of educational programs; 3) a high-quality, balanced diet; and 4) opportunities for personal growth.

The current media space is overwhelmed by displays of aggression. After watching episodes featuring respectful characters who manifest violence and aggressiveness, children and adolescents strive to imitate them and choose their behaviors as role models and examples to follow. Afterwards, violence becomes for them the most acceptable method for solving their problems. The cross-sectional study by Akbaş & İşleyen (2024) recorded moderate game addiction and aggression among adolescents. Aggression manifests in various forms, including physical, psychological, and digital abuse. It is often caused by a number of factors such as family problems, congenital or acquired defects, learning difficulties, or insufficiently developed emotion management skills (Feng et al., 2025; Jabbarov et al., 2023; Yaacov et al., 2025). It is important to understand the reasons for aggression and take measures to prevent and address it (Cowie et al., 2008). The study by Shatri and Thaçi (2024) convincingly demonstrates that social networks influence the manifestation of aggression among adolescents. The research by Popovych et al. (2022) emphasizes that ill-treatment can manifest in various forms: intimidating, giving offensive names, ignoring, and physical violence. Bullying differs from conflict in the

criterion of duration, since bullying involves only systematic attacks on a student that persist over time; the intentional nature of the actions; harm to the student; and the bully's abuse of power or influence.

A considerable number of researchers agree that bullying is not just a conflict between children but a targeted, repeated, and systematic violence aimed at humiliating, intimidating, or isolating a victim (Huang & Wan, 2025; Shablystyj et al., 2021; Zhu et al., 2025). Therefore, the focus of our attention is on identifying the psychological content parameters and comparing the bullying participants' aggressive behaviors in the school environment.

We find it appropriate to analyze the profiles of school bullying participants' aggressive behaviors in scientific literature. The study by Hong et al. (2019) clarifies the structure of subgroups of bullies and victims and examines a considerable number of variables, including aggressiveness. A high level of aggression was recorded across all subgroups. It was also found that bullies and victims were more likely to suffer from depression. Researchers Malamut et al. (2020) compared the behavioral profiles of bullying types and non-bullying, focusing on aggressive behaviors and social statuses. In all types of interactions, bullies exhibited the highest levels of aggressiveness, which differed only in the victim's popularity. The study by Unnever (2005) explores the models of bullies' aggressive behaviors, aggressive victims, and pure victims. Aggressive victims are those who have been subjected to bullying and have bullied other students. Logistic regression analysis showed that aggressive victims demonstrated significantly different behavioral models from those of pure victims and pure bullies. Another study by Veenstra et al. (2005) also compares bullies, victims, and respondents not involved in bullying. It was found that aggressiveness most closely connects the bully and the victim. Researchers Li et al. (2022) studied various aggression functions and conceptually differentiated between reactive and proactive aggressions. Their study statistically established and substantiated that there is a correlation between teenagers' watching violence and their aggressive behaviors.

Retrospective analysis of the structures of bullying participants' aggressive behaviors in the school environment reveals that, in scientific literature, there are studies focusing on the severity, forms, and types of aggression and the causal nature of aggressive actions. However, there is no comparison of the aggressiveness profiles of all school bullying participants. Therefore, our study aims to fill this gap.

Comparative research into the structure of bullying participants' aggressive behaviors in the school environment is a confirmatory study with the elements of comparison, in which researchers consider the most relevant dimensions – aggressiveness parameters characterizing the bullying phenomenon. It is important that bullying is considered not only an ordinary conflict or quarrel but also as a systemic model of interrelated aggressive behaviors that can have severe consequences for all participants in this process.

## METHODOLOGY

### Hypotheses

The theoretical study of the issue of the structures of bullying participants' aggressive behaviors in the school environment logically suggests the verification of the following statistical hypotheses: 1) the comparison of aggressiveness parameters in the studied groups of bullying victims, bullies, active and passive bystanders, and participants with no school bullying experience will reveal significant differences; 2) the comparison of aggressiveness parameters in bullying victims and bullies will allow for identifying significant differences; 3) the comparison of aggressiveness parameters in bullying victims and active bystanders will reveal significant differences; 4) the comparison of aggressiveness parameters in bullying victims and passive bystanders will show significant differences; 5) the comparison of aggressiveness parameters

in bullying victims and participants with no school bullying experience will demonstrate significant differences.

## The aim

To compare the structures of bullying participants' behaviors in the school environment.

## The methodological basis

The methodological basis of comparing the structures of bullying participants' aggressive behaviors in the school environment includes the initial assumptions substantiating that bullying has the most destructive effect on bystanders. Moreover, this effect is more powerful on passive bystanders who are helpless than on active bystanders who begin to act (defend or provide support to the victim). Choosing between strength and weakness causes a bullying participant to experience psychological trauma. Since they do not want to show a preference for the weak (victim), some choose the strong (bully), thereby involving themselves in a destructive space. On the one hand, bystanders do not feel responsible, and, on the other hand, pangs of conscience cause them to suffer constantly. Bullying can lead to the provocation "do as everyone does". Repeated observation of the victim causes a lack of empathy (Klenina, 2021; Rubin & Pepler, 1991). When designing the research according to a comparative strategy, we analyzed empirical models containing the initial assumptions about the individual's behavioral self-regulation (Halian et al., 2021; Popovych et al., 2020b), and the patterns of shaping a learning environment (Homel, 2013; Popovych et al., 2020a). The aforementioned list was directly or indirectly related to the research design and the content aspects of the empirical study on the structure of bullying participants' aggressive behaviors in the school environment.

## Participants

Secondary school students of Kyiv (Ukraine) participated in the empirical research. The total number of research participants was  $n = 173$  students, aged 10 to 16. The age's descriptive frequency characteristics are given below:  $M = 12.45$ ;  $Me = 12.50$ ,  $SD = 2.25$ . The total sample comprised  $n = 113$  (65.32%) girls and  $n = 60$  (34.68%) boys. The randomly selected sample of respondents ( $n = 173$ ) was statistically relevant, which ensured high reliability with a small error.

## Organization of Research

The confirmatory cross-section of comparative research, which involved selecting psychodiagnostic tools, identifying the algorithm of purposeful observation and planned interviews, and creating Google Forms, was held between September and December 2024. The organizers randomly selected secondary education institutions of Kyiv (Ukraine). The research was conducted within the framework of bullying prevention according to the targeted National Program of Ukraine. We obtained consent from the administrations of secondary education institutions for the planned events, which also involved preventive work with students and counseling with parents and teachers. Parents gave their consent for their children's participation in research. Students voluntarily agreed to participate and undergo all procedures. They were informed about the conditions of participation and the confidentiality of data collection. The organizers met all the requirements of the provisions and ethical principles of the WMA Declaration of Helsinki (2013) for empirical and experimental studies in psychology.

## Procedures and Instruments

School bullying participants were identified using the adapted version of the questionnaire "Bullying Situation in Schools" (BSS), proposed by V. Petrosiants (Popovych et al., 2022). In addition to identifying traditional bullying participants, the three categories of students who took part in ill-treatment – the victim, bully, and bystanders – the modified version involved differentiating between passive bystanders and those who actively helped the victim. The empirical data of participants who were educated with the above categories but had never played

any of the roles were added to the research. The questionnaire contained two parts: the first was separate for girls and boys and the second was shared. The organizers filled out forms of purposeful observation –  $n = 52$  sessions and conducted  $n = 87$  planned interviews. In the first and second parts of the questionnaire, a unipolar semantic scale with answers “always”, “often”, “sometimes”, “once”, “do not remember”, and “never” was used. As a result, we identified respondents by the following role repertoire: the “victim” – students who were or are prone to be the victim of bullying and did not manifest aggression towards other students; “bullies” – students who were repeatedly the initiators, organizers, and instigators of bullying; “passive bystanders” were bullying participants but were neither victims nor bullies, did not attempt to help the victim and did not actively articulate their viewpoint; “active bystanders” were bullying participants who manifested activity and attempted to help the victim and provide support. Bystanders who actively supported tormenting the victim were identified as bullies. The role “never” belonged to students with no school-based bullying experience. This category included a considerably smaller number of respondents. The empirical data’s statistical reliability was assessed at a high-level using Cronbach’s alpha ( $\alpha = .892-.956$ ). Another methodology used in the research was the “Buss-Durkee Hostility Inventory” (BDHI), developed by A. Buss and A. Durkee and adapted by A. Osnitsky (Stepanyuk & Melnychenko, 2020). The questionnaire consisted of seventy-five statements that required a clear position from the respondent – agreement or disagreement. This psychodiagnostic tool allowed us to identify the group of respondents “never” by aggression dimensions on eight scales encompassing the features of bullies’ behavior (physical aggression (PA), irritation (IR), verbal aggression (VA)), bystanders (indirect aggression (IA), pangs of conscience (PC)) and victims’ behavior (negativism (N), resentment (R), suspiciousness (S)). We determined the aggressiveness index (AI) and the hostility index (HI), which are integral scales. The statistical consistency, as indicated by Cronbach’s alpha, for the methodology scales was  $\alpha = .679-.965$ , corresponding to satisfactory to high levels.

## Variables

The confirmatory research aimed at comparing the structures of bullying participants’ aggressive behaviors in the school environment was conducted using ten variables represented by direct dimensions (eight) and integrated dimensions (two). The division into dependent, independent, and additional variables was not implied by the research design. The variable “bullying participant” served as the grouping variable. External variables were identified: age was a controlled external variable, as all research subjects were school students aged 10 to 16; gender distribution and socioeconomic status were randomized external variables.

## Statistical Analysis

All empirical data (purposeful observations and interviews) were entered manually into the tabular matrix “MS Excel” or downloaded from Google Forms. Afterwards, the empirical dataset was visually verified and processed using the computer program “SPSS” 27.01.01.00.01. The following statistical operations with data were performed in the research: the statistical reliability of ten scales of the methodology “BDHI” (Stepanyuk & Melnychenko, 2020) was assessed using Cronbach’s alpha ( $\alpha$ ); descriptive frequency characteristics were determined for each group of respondents; the differences between the studied groups were identified using the Kruskal-Wallis test (H); bivariate correlations were established using Spearman’s correlation coefficient (rs); Student’s t-test was employed for independent samples; a number of standard statistical operations allowed for determining effects size, adjustments for multiple comparisons and identifying significant differences of the comparative research. Our research interpreted significant values at  $p \leq .050$ ,  $p \leq .010$  and  $p < .001$ .

## RESULTS

The set of studied parameters of bullying participants' aggressive behaviors in the school environment is relevant and methodologically substantiated. When selecting psychodiagnostic tools, we considered a number of key criteria: alignment with the research aim and hypothesis; representativeness, reliability, and validity of the methodologies; accessibility and usability for organizers and subjects; open access and possibility of application in reproducing research. At the initial stage, we used the questionnaire "Bullying Situations in Schools" (BSS) (modified by Klenina, 2021) to identify the role repertoire of bullying participants in the school environment: Group 1 – bullying victims (n = 88; 50.87%), Group 2 – bullies (n = 38; 21.97%), Group 3 – active bullying bystanders (n = 22; 12.72%), Group 4 – passive bullying bystanders (n = 13; 7.51%), and Group 5 – participants with no school-based bullying experience (n = 12; 6.93%). Table 1 presents the results of the comparison of aggressiveness parameters in the studied groups according to the methodology "Buss-Durkee Hostility Inventory" (BDHI) (Stepanyuk & Melnychenko, 2020) using the Kruskal-Wallis H-test.

*Table 1. Comparison of aggressiveness parameters based on the Kruskal-Wallis H-test in the studied groups (n = 173)*

Group	DC	Scales of "BDHI" (Stepanyuk & Melnychenko, 2020)									
		PA	IA	IR	N	R	S	VA	PC	AI	HI
1	<i>Me</i>	<i>5.00</i>	<i>5.00</i>	<i>5.00</i>	<i>3.00</i>	<i>5.50</i>	<i>5.00</i>	<i>7.00</i>	<i>5.00</i>	<i>18.50</i>	<i>11.00</i>
	min	1.00	2.00	2.00	1.00	1.00	3.00	3.00	2.00	8.00	4.00
	max	9.00	7.00	10.00	5.00	8.00	9.00	12.00	9.00	27.00	16.00
2	<i>Me</i>	<i>6.00</i>	<i>6.00</i>	<i>7.00</i>	<i>3.00</i>	<i>5.00</i>	<i>5.00</i>	<i>7.00</i>	<i>6.00</i>	<i>19.50</i>	<i>9.00</i>
	min	2.00	2.00	4.00	1.00	1.00	3.00	4.00	3.00	12.00	5.00
	max	9.00	9.00	10.00	5.00	7.00	8.00	11.00	8.00	28.00	14.00
3	<i>Me</i>	<i>5.00</i>	<i>3.50</i>	<i>5.00</i>	<i>3.00</i>	<i>4.00</i>	<i>4.00</i>	<i>5.00</i>	<i>4.00</i>	<i>15.00</i>	<i>9.00</i>
	min	2.00	2.00	2.00	2.00	1.00	2.00	3.00	3.00	9.00	4.00
	max	6.00	6.00	7.00	5.00	6.00	7.00	9.00	8.00	20.00	11.00
4	<i>Me</i>	<i>3.00</i>	<i>3.00</i>	<i>5.00</i>	<i>3.00</i>	<i>5.00</i>	<i>5.00</i>	<i>6.00</i>	<i>5.00</i>	<i>14.00</i>	<i>10.00</i>
	min	1.00	2.00	4.00	2.00	4.00	4.00	4.00	4.00	12.00	8.00
	max	5.00	4.00	7.00	4.00	6.00	8.00	8.00	6.00	16.00	13.00
5	<i>Me</i>	<i>3.50</i>	<i>2.50</i>	<i>4.00</i>	<i>2.00</i>	<i>3.00</i>	<i>4.50</i>	<i>4.00</i>	<i>2.50</i>	<i>11.50</i>	<i>7.00</i>
	min	2.00	2.00	2.00	2.00	1.00	2.00	3.00	2.00	8.00	5.00
	max	5.00	4.00	6.00	4.00	5.00	6.00	6.00	3.00	14.00	10.00
H		<i>45.104</i>	<i>47.121</i>	<i>29.113</i>	<i>1.235</i>	<i>21.828</i>	<i>13.268</i>	<i>23.648</i>	<i>37.559</i>	<i>47.379</i>	<i>22.611</i>
p		< .001	< .001	< .001	.872	< .001	.010	< .001	< .001	< .001	< .001

*Note: Group 1 – bullying victims; Group 2 – bullies; Group 3 – active bullying bystanders; Group 4 – passive bullying bystanders; Group 5 – participants with no school-based bullying experience; DC – descriptive frequency characteristic; Me – the median (given in italics); min – the minimum value; max – the maximum value; PA – physical aggression; IA – indirect aggression; IR – irritation; N – negativism; R – resentment; S – suspiciousness; VA – verbal aggression; PC – pangs of conscience; AI – aggressiveness index; HI – hostility index. Source: Own research.*

To achieve the aim of creating the structure of bullying participants' aggressive behaviors in the school environment, we decided to present the structure of aggressive behavior as a petal diagram (Figure 1). It is noteworthy that only primary scales were used to create a diagram, and no integral scales were employed.

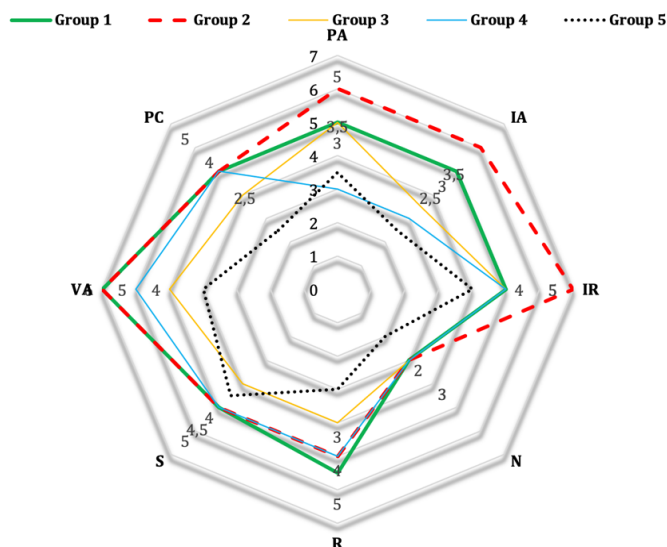


Figure 1. Diagram of bullying participants' aggressive behaviors in the school environment

Note: Group 1 – bullying victims; Group 2 – bullies; Group 3 – active bullying bystanders; Group 4 – passive bullying bystanders; Group 5 – participants with no school-based bullying experience; PA – physical aggression; IA – indirect aggression; IR – irritation; N – negativism; R – resentment; S – suspiciousness; VA – verbal aggression; PC – pangs of conscience.

The petal diagram of bullying participants' aggressive behaviors in the school environment is a combination of five contours of bullying participants' aggressive behaviors, distinguished by the role repertoire. Overlaying contours and visual perception allowed for recording that measurement locations and the area are considerably smaller in the victims (Group 1 – green solid line), and, interestingly, it was the first nearest area enclosed by the area of the bullies' diagram (Group 2 – red dotted line). The visual presentation allowed for comparing all parameters with the victim's parameters. The fact that the participants in Groups 3, 4, and 5 do not surpass the representatives of Groups 1 and 2 in any parameter is also of great interest. Participants with no school-based bullying experience had the less contour (Group 5).

The empirical data on the studied groups of bullying participants in the school environment were presented based on the main descriptive frequency characteristics: the median (Me), the minimum value (min), and the maximum value (max). The non-parametric Kruskal-Wallis test (H) was used to identify statistically significant differences across the groups in the studied parameters. Differences were found in the following parameters: physical aggression (H = 45.104;  $p < .001$ ), indirect aggression (H = 47.121;  $p < .001$ ), irritation (H = 29.113;  $p < .001$ ), resentment (H = 21.828;  $p < .001$ ), suspiciousness (H = 13.268;  $p < .001$ ), verbal aggression (H = 23.648;  $p < .001$ ), pangs of conscience (H = 37.559;  $p < .001$ ), aggressiveness index (H = 47.379;  $p < .001$ ), and hostility index (H = 22.611;  $p < .001$ ). No difference was identified in the only parameter "negativism" ( $p = .872$ ). The strongest superiority was recorded in the parameter "indirect aggression" (H = 47.121;  $p < .001$ ) and on the integral scale "aggressiveness index" (H = 47.379;  $p < .001$ ). The first hypothesis has been proven. According to the research design, we compared bullying victims (Group 1) with the rest of the groups of bullying participants. Table 2 presents the results of comparing victims (Group 1) and bullies (Group 2) using Student's t-test for two independent samples, with determining effect size.

Table 2. Indicators of the comparative analysis of victims (n = 88) and bullies (n = 38)

Scales	Levene's test		Student's t-test for the equality of variances					Cohen's d
	F	p	t	df	p <sup>a</sup>	95 CI		
						Lower	Upper	
PA	.985	.323	<b>-1.932</b>	124	.006	-1.311	.016	-.375
IA	.605	.438	<b>-2.920</b>	124	< .001	-1.580	-.303	-.567
IR*	4.258	.041	<b>-3.693</b>	101.19	< .001	-2.189	-.659	-.618
N	.791	.376	.237	124	.081	-.390	.496	.046
R*	4.337	.039	.500	94.95	.062	-.467	.782	.086
S	.093	.761	.451	124	.065	-.468	.745	.087
VA	1.566	.213	.066	124	.095	-.817	.873	.013
PC*	17.255	< .001	<b>-2.083</b>	106.38	.004	-1.142	-.028	-.341
AI	3.201	.076	<b>-2.328</b>	124	.002	-3.971	-.321	-.452
HI*	4.937	.028	.682	90.96	.051	-.652	1.334	.119

Note: Group 1 – bullying victims; Group 2 – bullies; \* – data presented using Welch's t-test; Group 1 – females' subsample; Group 2 – males' subsample; F – Levene's test for the equality of variances (bivariate); df – degrees of freedom; p – significance level; a – Bonferroni correction; t – Student's t-test (significant values are given in bold); 95 CI – confidence interval; Cohen's d – effect size; PA – physical aggression; IA – indirect aggression; IR – irritation; N – negativism; R – resentment; S – suspiciousness; VA – verbal aggression; PC – pangs of conscience; AI – aggressiveness index; HI – hostility index. Source: Own research.

Five significant differences were identified on the scales “physical aggression” ( $t = -1.932$ ;  $p = .006$ ;  $d = -.375$ ), “indirect aggression” ( $t = -2.920$ ;  $p < .001$ ;  $d = -.567$ ), “irritation” ( $t = -3.693$ ;  $p < .001$ ;  $d = -.618$ ), “pangs of conscience” ( $t = -2.083$ ;  $p = .004$ ;  $d = -.341$ ), and “aggressiveness index” ( $t = -2.328$ ;  $p = .002$ ;  $d = -.452$ ). When interpreting the results, we considered the traditional differentiation of effect size based on Cohen's d (small – .200; medium – .500; large – .800). All significant superiorities were recorded in the group of bullies. The largest effect size was determined in the parameter “irritation” ( $d = -.618$ ). Thus, bullies significantly surpass victims in four aggressiveness parameters and on the integral aggressiveness scale. The second hypothesis has been proven. Table 3 presents the results of comparing victims (Group 1) and active bullying bystanders (Group 3) using Student's t-test for two independent samples, with determining effect size.

Table 3. Indicators of the comparative analysis of victims (n = 88) and active bullying bystanders (n = 22)

Scales	Levene's test		Student's t-test for the equality of variances					Cohen's d
	F	p	t	df	p <sup>a</sup>	95 CI		
						Lower	Upper	
PA	2.038	.156	<b>2.217</b>	108	.003	.095	1.700	.529
IA*	5.165	.025	<b>4.030</b>	46.08	< .001	.585	1.755	.770
IR*	12.225	< .001	<b>2.143</b>	71.56	.004	.055	1.535	.343
N	.559	.456	<b>.124</b>	108	.090	-.510	.578	.030
R	.937	.335	<b>2.737</b>	108	< .001	.341	2.135	.652
S	.067	.797	<b>3.202</b>	108	< .001	.454	1.931	.763
VA*	4.947	.028	<b>3.329</b>	39.77	< .001	.593	2.428	.688
PC*	15.358	< .001	<b>2.514</b>	52.05	.002	.162	1.450	.454
AI*	5.297	.023	<b>3.573</b>	55.77	< .001	1.322	4.699	.627
HI*	5.552	.020	<b>4.081</b>	44.94	< .001	1.162	3.428	.790

Note: Group 1 – bullying victims; Group 3 – active bullying bystanders; \* – data presented using Welch's t-test; Group 1 – females' subsample; Group 2 – males' subsample; F – Levene's test for the equality of variances (bivariate); df – degrees of freedom; p – significance level; a – Bonferroni correction; t – Student's t-test (significant values are given in bold); 95 CI – confidence interval; Cohen's d – effect size; PA – physical aggression; IA – indirect aggression; IR – irritation; N – negativism; R – resentment; S – suspiciousness; VA – verbal aggression; PC – pangs of conscience; AI – aggressiveness index; HI – hostility index. Source: Own research.

Nine significant differences were identified on the scales “physical aggression” (t = 2.217; p = .003; d = .529), “indirect aggression” (t = 4.030; p < .001; d = .770), “irritation” (t = 2.143; p = .004; d = .343), “resentment” (t = 2.737; p < .001; d = .652), “suspiciousness” (t = 3.202; p < .001; d = .688), “verbal aggression” (t = 3.239; p < .001; d = .688), “pangs of conscience” (t = 2.514; p = .015; d = .454), “aggressiveness index” (t = 3.573; p < .001; d = .627), and “hostility index” (t = 4.081; p < .001; d = .790). Victims (Group 1) have significant superiorities on nine scales, most of which have a medium effect size. Thus, victims significantly surpass active bullying bystanders in seven aggressiveness parameters and on two integral scales. The third hypothesis has been proven. Table 4 presents the results of comparing victims (Group 1) and passive bullying bystanders (Group 4) using Student's t-test for two independent samples, with determining effect size.

Table 4. Indicators of the comparative analysis of victims (n = 88) and passive bullying bystanders (n = 13)

Scales	Levene's test		Student's t-test for the equality of variances					Cohen's d
	F	p	t	df	p <sup>a</sup>	95 CI		
						Lower	Upper	
PA	.806	.372	<b>4.532</b>	99	< .001	1.322	3.382	1.347
IA*	14.375	< .001	<b>6.647</b>	39.82	< .001	1.140	2.137	1.078
IR*	7.750	.006	.548	38.34	.059	-.579	1.009	.090
N	3.389	.069	-.291	20.59	.077	-.605	.456	-.065
R*	8.184	.005	-.009	42.25	.099	-.604	.598	-.001
S	.174	.678	-.353	99	.073	-1.081	.754	-.105
VA*	11.160	.001	<b>1.768</b>	26.50	.009	-.119	1.596	.339
PC*	16.486	< .001	-.096	36.55	.093	-.637	.579	-.016
AI*	8.373	.005	<b>4.729</b>	67.15	< .001	1.851	4.555	.661
HI*	9.608	.003	-.228	29.60	.082	-1.204	.962	-.041

Note: Group 1 – bullying victims; Group 4 – passive bullying bystanders; \* – data presented using Welch's t-test; Group 1 – females' subsample; Group 2 – males' subsample; F – Levene's test for the equality of variances (bivariate); df – degrees of freedom; p – significance level; a – Bonferroni correction; t – Student's t-test (significant values are given in bold); 95 CI – confidence interval; Cohen's d – effect size; PA – physical aggression; IA – indirect aggression; IR – irritation; N – negativism; R – resentment; S – suspiciousness; VA – verbal aggression; PC – pangs of conscience; AI – aggressiveness index; HI – hostility index. Source: Own research.

Four significant differences were identified on the scales “physical aggression” ( $t = 4.532$ ;  $p < .001$ ;  $d = 1.347$ ), “indirect aggression” ( $t = 6.647$ ;  $p < .001$ ;  $d = 1.078$ ), “verbal aggression” ( $t = 1.768$ ;  $p = .009$ ;  $d = .339$ ) and “aggressiveness index” ( $t = 4.729$ ;  $p < .001$ ;  $d = .661$ ). Victims (Group 1) have significant superiorities on four scales with a large effect size. Thus, victims significantly surpass passive bullying bystanders in three aggressiveness parameters and on the integral aggressiveness scale. The fourth hypothesis has been proven. Table 5 presents the results of comparing victims (Group 1) and participants with no school-based bullying experience (Group 5) using Student’s  $t$ -test for two independent samples, with determining effect size.

Table 5. Indicators of the comparative analysis of victims ( $n = 88$ ) and participants with no school-based bullying experience ( $n = 12$ )

Scales	Levene's test		Student's $t$ -test for the equality of variances					Cohen's $d$
	F	p	t	df	p <sup>a</sup>	95 CI		
						Lower	Upper	
PA	3.437	.067	<b>3.663</b>	98	< .001	.886	2.984	1.127
IA*	7.386	.008	<b>7.257</b>	26.31	< .001	1.469	2.629	1.336
IR*	6.486	.012	<b>3.868</b>	27.16	< .001	.793	2.585	.702
N	.353	.554	<b>.927</b>	98	.036	-.375	1.034	.285
R	3.285	.073	<b>2.981</b>	98	< .001	.586	2.921	.917
S	1.335	.251	<b>2.203</b>	98	.003	.103	1.979	.678
VA*	13.185	< .001	<b>6.701</b>	27.07	< .001	1.842	3.468	1.218
PC*	20.728	< .001	<b>10.423</b>	60.96	< .001	2.121	3.128	1.465
AI*	3.965	.049	<b>7.018</b>	27.89	< .001	4.374	7.981	1.259
HI*	6.470	.013	<b>4.974</b>	23.56	< .001	1.660	4.020	.968

Note: Group 1 – bullying victims; Group 5 – participants with no school-based bullying experience; \* – data presented using Welch's  $t$ -test; Group 1 – females' subsample; Group 2 – males' subsample; F – Levene's test for the equality of variances (bivariate); df – degrees of freedom; p – significance level; a – Bonferroni correction; t – Student's  $t$ -test (significant values are given in bold); 95 CI – confidence interval; Cohen's  $d$  – effect size; PA – physical aggression; IA – indirect aggression; IR – irritation; N – negativism; R – resentment; S – suspiciousness; VA – verbal aggression; PC – pangs of conscience; AI – aggressiveness index; HI – hostility index. Source: Own research.

Ten significant differences were identified on the scales “physical aggression” ( $t = 3.663$ ;  $p < .001$ ;  $d = 1.127$ ), “indirect aggression” ( $t = 7.257$ ;  $p < .001$ ;  $d = 1.336$ ), “irritation” ( $t = 3.868$ ;  $p < .001$ ;  $d = .702$ ), “negativism” ( $t = .927$ ;  $p = .036$ ;  $d = .285$ ), “resentment” ( $t = 2.981$ ;  $p < .001$ ;  $d = .917$ ), “suspiciousness” ( $t = 2.203$ ;  $p = .003$ ;  $d = .678$ ), “verbal aggression” ( $t = 6.701$ ;  $p < .001$ ;  $d = 1.218$ ), “pangs of conscience” ( $t = 10.423$ ;  $p < .001$ ;  $d = 1.465$ ), “aggressiveness index” ( $t = 7.018$ ;  $p < .001$ ;  $d = 1.259$ ), and “hostility index” ( $t = 4.974$ ;  $p < .001$ ;  $d = .968$ ). Victims (Group 1) have significant superiorities on ten scales, most of which have a large effect size. Thus, victims significantly surpass participants with no school-based bullying experience in eight aggressiveness parameters and on two integral scales. The fifth hypothesis has been proven.

## DISCUSSION

In scientific literature, the problem of school-based bullying is paid sufficient attention in various aspects, ranging from diagnostics and prevention to therapy and effective recommendations on how to counteract it (Fung et al., 2006; Gómez Tabares & Landinez-Martínez, 2021). However, scientific interest in school-based bullying remains high, as testified by a sufficient number of the analyzed modern studies published over the last two or three years (El Keshky & Alganami, 2025; Nurhalimah et al., 2025; Pang et al., 2025). Our research subject pertains to aggressiveness. Aggression itself, as a manifestation of aggressiveness, can be instinctive, the consequence of frustration, or the result of social learning, for instance, through violent video games.

The confirmatory research strategy with the elements of comparison allowed us to establish interesting scientific facts. Analyzing descriptive characteristics (see Table 1) and creating the profiles of bullying participants' behaviors in the school environment (see Figure 1) immediately evoked our interest. The petal diagram allowed us to assess the placement of contours visually. Almost all contours (five studied groups) are enclosed by each other, with the bully's longest contour, except for the parameter "resentment". The parameter "resentment" is the most pronounced in the group of victims. This superiority is considered logical, though it is not significant. The data in Table 1 and the diagram (see Figure 1) show that the epicenter of bullying confrontation is between the two longest contours – the bully's and the victim's contours. This fact is consistent with the findings in the study by Lv et al., (2025). The researchers proved the theory of Cognitive Dissonance, arguing that teenagers who experience an emotional-cognitive conflict are more prone to aggressive behavior after being rejected by peers. Interestingly, the victim's aggressiveness contour is only less than the bully's contour. The facts established in our research are consistent with the concept by Unnever (2005) about aggressive victims' and pure victims' behaviors. Seemingly, the victim's contour could have been lower than that of active or passive bystanders. Bullies may be encouraged to bully others by hedonistic motives and self-assertion.

Our research presents a successful attempt to compare and substantiate the obtained results of aggressiveness in the group of victims and four other groups (see Table 2–5). It was found (see Table 2) that the group of bullies significantly surpasses the group of victims in four aggressiveness parameters: "physical aggression", "indirect aggression", "irritation", "pangs of conscience", and on the integral aggressiveness scale. The most pronounced bully's superiority over the victim was identified in the aggressiveness parameter "irritation" ( $t = -3.693$ ;  $p < .001$ ;  $d = -.618$ ). Obviously, there are cases when the bully dominates due to their strong irritation reinforced by other factors: status, physical superiority, and impulsiveness. Only systemic manifestations of harassment and ill-treatment are conventionally considered bullying; the attempts to compete, which end up in physical and psychological confrontations, when each participant defends their opinion, are not referred to as bullying. They are regarded as manifestations of aggression.

It was established (see Table 3) that the group of victims significantly surpasses the group of active bystanders on nine scales, most of superiorities having a medium effect size: "physical aggression", "indirect aggression", "irritation", "resentment", "suspiciousness", "verbal aggression", "pangs of conscience", "aggressiveness index", and "hostility index". This indicates the total superiority of the group of victims.

It was found (see Table 4) that the group of victims significantly surpasses the group of passive bystanders on four scales, with three superiorities having a large effect size: "physical aggression", "indirect aggression", and "aggressiveness index". These parameters convincingly indicate the superiority of the group of victims. Notably, the group of passive bystanders is in the closest position to the group of victims in the parameter values. These facts align with the study by Duan et al., (2020). The researchers found that the consequences of direct participation (the bully and the victim) and indirect participation (active and passive bystanders) have similar consequences – negative styles of coping, depression symptoms, and suicide risks. Another study involving a school sample proves the theory of psychological pain in suicide (El Keshky & Alganami, 2025). It was found that victimization positively correlates with suicidal thoughts through bullying.

It was established (see Table 5) that the group of victims significantly surpasses the group of participants with no school-based bullying experience in eight aggressiveness parameters and on two integral scales: "physical aggression", "indirect aggression", "irritation", "negativism", "resentment", "suspiciousness", "verbal aggression", "pangs of conscience", "aggressiveness index", and "hostility index". All superiorities have a large effect size. It is noteworthy that this group is in the closest position to the group of active bystanders in the parameter values.

According to the research design, other comparisons were not performed. A comparison with other findings (Iordache et al., 2025) corroborates that passive bystanders do not interfere in bullying due to a high status and mutual respect. However, as shown by the structure (see Figure 1 and Table 4), they are potentially capable of this. The scientific facts established in our research are characterized by cognitive value and, as evidenced by retrospective analysis, scientific novelty. The substantiated facts should be used when developing training courses on school bullying prevention and psycho-correction of the bully's/victim's aggressive behaviors.

## CONCLUSIONS

It was substantiated that our comparative research is a confirmatory strategy with the elements of comparison, which operationalize the most relevant dimensions characterizing the bullying phenomenon – aggressiveness parameters. We successfully attempted to study the phenomenon of bullying as a systemic model of the interrelated aggressive behaviors of all its participants. We created a petal diagram of bullying participants' aggressive behaviors in the school environment (five groups – five contours). The victim's aggressiveness contour is only less than the bully's contour. It was established that bullies significantly surpass victims in four aggressiveness parameters: "physical aggression", "indirect aggression", "irritation", "pangs of conscience", and on the integral aggressiveness scale. Victims significantly surpass active bullying bystanders in eight aggressiveness parameters and on two integral scales; passive bystanders – in three aggressiveness parameters and on the integral aggressiveness scale; participants with no school-based bullying experience – in eight aggressiveness parameters and on two aggressiveness scales. It was underscored that the group of passive bystanders is in the closest position to the group of victims in the parameter values. We obtained important scientific facts that should be considered by the organizers of educational activities in secondary education institutions to develop prevention and psycho-correction training courses on school bullying.

## DATA AVAILABILITY STATEMENT

The datasets generated during and/or analyzed during the current are available from the corresponding author on reasonable request.

## ETHICS STATEMENT

This research was conducted in accordance with the principles of the Declaration of Helsinki. Respondents provided personal written consent to participate in the study, after which they received access to the questionnaires.

## AUTHOR CONTRIBUTIONS

NZ, KS, NY, IP: conceptualization and methodology of the study. VZ, PK, NB, VN: data collection and data proofing. KS, NY, NB, IP: data analysis. IP, NZ, NB, VN: manuscript writing. NZ, KS, NY, VZ, PK, NB, VN, IP: manuscript review, editing, and rewriting. All authors contributed to the article and approved the submitted version.

## CONFLICT OF INTERESTS

The authors report there are no competing interests to declare. Authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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## NOT USING AI TOOLS

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