THE DEVELOPMENT OF SCHOOL RESILIENCE TO REDUCE BULLYING IN SCHOOLS: A CONFIRMATORY FACTOR ANALYSIS

減少學校欺凌行為的學校適應性發展：一項確認因素分析

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Abstract

This article presents the school resilience profile for seven high schools in Makassar, Indonesia and explains the relationship between school resilience and bullying behavior at the schools. Confirmatory factor analysis (CFA) was conducted to assess the status of school resilience, the dynamics of the bullying phenomenon in the schools, and the relationship between school resilience and bullying. The data were obtained using a structured questionnaire administered to 490 high school students (Grade 11, aged 15-17). The results of the analysis suggest that the six main aspects of school resilience have been implemented in the studied high schools. Further, the results indicate that increasing school resilience could reduce the occurrence of bullying cases. The measures the schools have implemented to improve school resilience are expected to continue to lower the occurrence of bullying cases. The results of this study provide valuable data for the development of effective school resilience-based anti-bullying policies.

Keywords: Bullying, Confirmatory Factor Analysis, High School Students, Indonesia, School Resilience

摘要 本文介紹了印度尼西亞望加錫的七所中學的學校彈性概況，並解釋了學校彈性與學校欺凌行為之間的關係。進行了驗證性因素分析（CFA），以評估學校彈性的**狀**態，學校中欺凌現象的動態以及學校彈性與欺凌之間的關係。數據是通過對 490 名高中學生（11 年級，年齡 15-17）進行的結構化問卷調查而獲得的。分析結果表明，在所研究的中學中已經實現了學校彈性的六個主要方面。此外，結果表明，提高學校的應變能力可以減少欺凌案件的發生。學校為提高學校適應力而採取的措施有望繼續減少欺凌案件的發生。這項研究的結果為製定有效的基於學校應變能力的

反欺凌政策提供了有價值的數據

关键词: 欺凌，確認性因素分析，高中生，印度尼西亞，學校彈性

I. INTRODUCTION

One of the antisocial behaviors that occur in adolescents, the social issue of bullying in schools has become a greater concern than ever before [1], [2]. Bullying in schools is difficult to eliminate due to the continuous imbalance of the social relationships between the perpetrators and victims [3]. This is confirmed by the results of a study on intimidation [4], which defines bullying behavior as " . . . aggressive, intentional actions carried out by groups or individuals repeatedly and over time against victims who cannot easily defend themselves" [5]. Although there is some debate about the definition, most researchers agree that bullying involves an intention to hurt and an imbalance of power between the perpetrators and the victim; further, it tends to happen repeatedly [6], [7]. In short, bullying is often defined as the systematic abuse of power by peers [8].

Bullying behavior turns schools and classrooms into unconducive, unsafe, and uncomfortable learning environments [9], [10]. Unfortunately, solutions and interventions to reduce the intensity of bullying that rely on personal approaches, such as an excessive focus on changing the victims' behaviour to make them less vulnerable to bullying, are no longer considered to be sufficient [11]. Thus, innovative anti-bullying strategies need to be developed, which requires proactive research attitudes. One such strategy that schools can implement to overcome the problem of bullying is to develop resilience—in particular, to develop school resilience, which can be defined as the capability of schools to develop students' potential to adapt to the changes and face adversities, in this context is to deal with bullying. [12], [13], [14].

Various studies on the relationship between resilience and bullying have been conducted. For example, one study on primary and secondary school students in Australia showed that a low level of resilience was related to a student's propensity to be a victim or perpetrator of bullying [15]. Another study conducted in the United States on high school students suggested that students with higher levels of resilience were less likely to be negatively impacted by bullying [16]. The study also found that interventions focusing on improving specific resilience elements such as tolerance, trust, optimism, and sensitivity were efficacious in developing students' resilience and reducing cases of bullying [15].

However, based on previous work, awareness of the importance of school resilience in Indonesia is still low [17]. The study reported that students and other school actors did not understand the elements needed to build school resilience—their efforts to reduce bullying in schools using the school resilience approach would be challenging. Therefore, this study conducted an in-depth investigation of school resilience and its relation to the phenomenon of bullying on 490 students and 70 teachers and principals from seven high schools in Makassar, Indonesia. This study used a structured questionnaire, focus group discussion (FGD), and interviews with school principals, teachers, and students to assess the status of schools' resilience, the dynamics of the bullying phenomenon in the schools, the relationship between school resilience and bullying, as well as their strategies for strengthening school resilience. The study creates a school resilience profile for the Indonesian context and explains the relationship between school resilience and bullying in school as preliminary data. This format is critical for the development of effective school policies to reduce bullying behavior in schools.

II. METHODOLOGY

A. Sample

Study participants were selected using a purposive sampling approach. The subjects were students aged 15–17 (Grade 11) from seven different high schools in Makassar, South Sulawesi, Indonesia. The seven high schools in this study were chosen based on their experience in dealing with bullying issues. Students from 11th grade were chosen because they have been studying in a high school context for more than one year and were considered to be familiar with the school environment. Thus, they can provide an objective assessment of the status of school resilience and the phenomenon of bullying in their schools. The number of participants (490; 70 students per school) was determined using Slovin's formula based on the total number of high school students in Makassar (96,607) [18]. Moreover, 10 teachers of different subjects and

one principal from each high school participated as subjects in the study.

B. Data Collection Procedure

Quantitative data were collected from the 490 students using structured questionnaires. The questionnaire related to a school's resilience status was constructed based on Henderson and Milstein's work [13]. The present authors modified and validated the questionnaire according to the context of Indonesian society. It covers the six aspects of school resilience as shown in Table 1 below [17]. All the items on the questionnaire were scored on a four-point Likert scale.

Table 1.
The content of the structured questionnaire

School resilience aspect	Indicator of the aspect school resilience	Number of questions
Improving the links among all school elements	● Positive organizational culture to support school's program ● Togetherness in risk-taking and learning improvement ● Clear vision and mission which are communicated to and agreed upon by all school elements	6
Establishing clear and consistent school rules	● Sharing the school policies to the students ● All school elements are involved in determining policies and rules	6
Teaching life skills to the students	● Encouraging risk-taking for the development of individual skill ● The existence of practical role model	6
Providing caring and supports to the students	● All school elements have a sense of belonging ● Encouraging cooperation in various activities ● Giving appreciation for student's achievement ● The existence of good leadership	6
Setting and communicating expectations to the students	● Encouraging he importance of individual's effort ● Encouraging risk-taking behavior	6
	● Encouraging positive behavior ● Promoting and monitoring individual development of the students	
Providing meaningful opportunities to students to encourage participation	● Recognizing the contribution of students ● All school elements grow together through continuous learning and mutual respect ● Encourage experimentation and improvisation by students.	6

A second questionnaire contained 36 questions related to the 12 aspects (three for each aspect) of bullying at school: (1) case of bullying, (2) setting of bullying, (3) intensity of bullying, (4) perpetrator of bullying, (5) victim of bullying, (6) reason for bullying, (7) form of bullying, (8) response of bullying victims, (9) form of support, (10) impact of bullying, (11) bullying prevention, and (12) handling of bullying case. The questionnaire was also based on the concept of bullying developed by Rigby [19]. All items on the questionnaire were scored on a five-point Likert scale.

Qualitative data were collected via FGDs and in-depth interviews with principals, teachers, and students to confirm and clarify the results of the questionnaires and formulate strategies for building and strengthening school resilience.

C. Data Analysis

Quantitative research data were processed both manually and computationally using Microsoft Excel and SPSS Statistics 17.0. Descriptive statistics in the form of percentages are used to describe the status of school resilience according to students in 7 high schools in this study. Qualitative data will be analyzed descriptively and interpreted by reducing data (selection, concentration, simplification and abstraction of raw data) in accordance with the research objectives. Data analysis process that refers to the model of Miles and Huberman [20] was conducted at the time of data collection and after data collection. Furthermore, in-depth quantitative data analysis was also conducted using the Confirmatory Factor Analysis (CFA) method using the Strictly Confirmatory or Confirmatory Modelling strategy in Lisrel v8.4 software. As for the qualitative data, analysis was conducted through the data were analyzed through the stages of data reduction,

categorization, and interpretation in accordance with the research objectives.

III.   RESULTS AND DISCUSSION

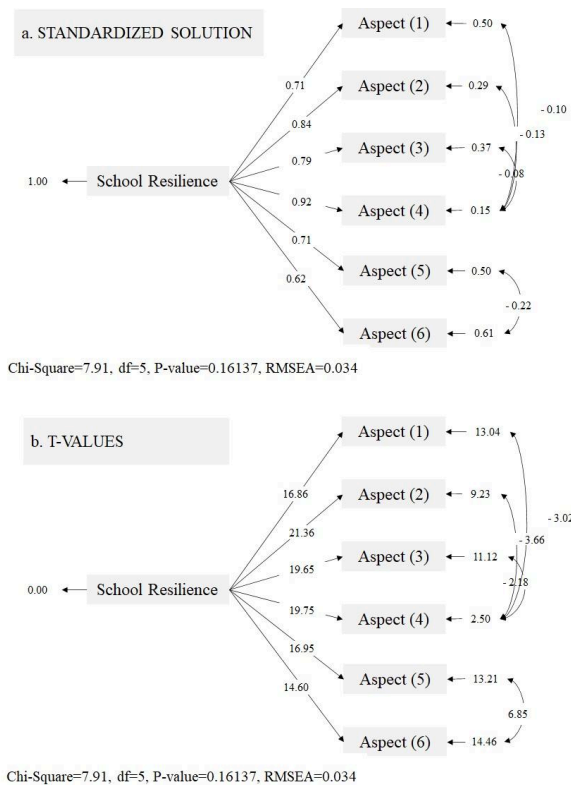### A.   Quantitative Analysis of the School Resilience Status

Figure 1. Standardized solution (a) and t-values (b) of 6 aspects of school resilience

From the standardized solution in Figure 1, all six aspects of school resilience fulfil the criteria of standardized loading factors of ≥0.50. Aspect with the biggest loading factor which is the most influential on building school resilience according to the high school students in Makassar in this study is "providing caring and supports to the students" (Aspect 4) with the value of 0.92. Next, the second biggest loading factor (0.84) is "establishing clear and consistent school rules" (Aspect 2). Third is the aspect of "teaching life skills to the students" (Aspect 3) with a loading factor value of 0.79, followed by "improving the links among all school elements" (Aspect 1) and "setting and communicating expectations to the students" (Aspect 5) has loading factor of 0.71. Finally, the last is "providing meaningful opportunities to students to encourage participation" (Aspect 6) with loading factor value of 0.62.

The result of the hypothesis test is shown in the printed output and the path diagram. Significant relationship is indicated by t-value of 1.96 in the path diagram. The analysis result of the six aspects showed t-value ≥1.96 with confidence level of 95% as shown in table 2. The conclusions of the hypothesis test are presented in Table 2 below.

Table 2.
The hypothesis test of school resilience manifestation

Aspect	Path	t-values	Result
Aspect 1	Improving the links among all school elements →school resilience	16.86	Accepted
Aspect 2	Establishing clear and consistent school rules→ school resilience	21.36	Accepted
Aspect 3	Teaching life skills to the students → school resilience	19.65	Accepted
Aspect 4	Caring and supports provided to the students→ school resilience	19.75	Accepted
Aspect 5	Setting and communicating expectations to the students→ school resilience	16.95	Accepted
Aspect 6	Providing meaningful opportunities to students to encourage participation → school resilience	14.60	Accepted

A. Quantitative Analysis of the Aspects Related to Bullying Phenomenon at School

According to Figure 2, all 12 aspects of bullying fulfill the criteria of standardized loading factors, which should be greater than or equal to 0.50. The most influential aspects, according to students, are "case of bullying" (Aspect 1) and "form of bullying" (Aspect 7), with loading factors of 0.84 each, which are the highest. Meanwhile, "handling of bullying case" (Aspect 12) is the least influential aspect, with a loading factor of 0.24.

STANDARDIZED SOLUTION

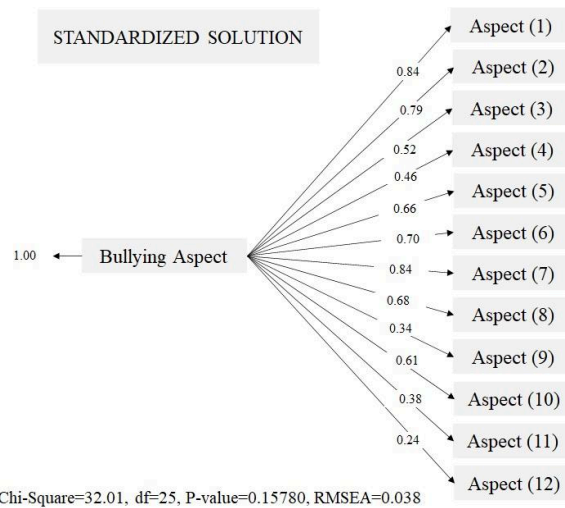Chi-Square=32.01, df=25, P-value=0.15780, RMSEA=0.038

Figure 1. Standardized solution of 12 aspects of bullying

A significant relationship is indicated by the t-value in the path diagram, which is greater than or equal to 1.96. The analysis results of the 12 aspects have a significant correlation with the bullying phenomenon in school, with a precision of 95%. The conclusions of the hypothesis test are presented in Table 3 below.

Table 3.
The hypothesis test of bullying in school manifestation

Aspect	Path	t-values	Result
Aspect 1	Case of bullying → Bullying in School	12.61	Accepted
Aspect 2	Setting of bullying →Bullying in School	11.91	Accepted
Aspect 3	Intensity of bullying →Bullying in School	7.60	Accepted
Aspect 4	Perpetrator of bullying →Bullying in School	6.47	Accepted
Aspect 5	Victim of bullying →Bullying in School	10.35	Accepted
Aspect 6	Reason for bullying →Bullying in School	10.25	Accepted
Aspect 7	Form of bullying →Bullying in School	12.94	Accepted
Aspect 8	Response of bullying victims →Bullying in School	9.44	Accepted
Aspect 9	Form of support →Bullying in School	4.72	Accepted
Aspect 10	Impact of bullying →Bullying in School	8.74	Accepted
Aspect 11	Bullying prevention → Bullying in School	5.44	Accepted
Aspect 12	Handling of bullying case →Bullying in School	3.45	Accepted

B. Confirmation of the Relationship between School Resilience and the Bullying Phenomenon in School Using the Structural Model Compatibility Test

Structural model testing was carried out to determine the relationship between 12 aspects of the bullying phenomenon and six aspects of school resilience based on the perception of the subjects of this study. The results of the evaluation are shown in Table 4 below.

Table 4.
Results of goodness of fit index model for the bullying-related aspects

Index	Limit Value	Estimated Results Student	Fitness level
Chi Square(X^2) and Probability (p)	Small & p>0.05	**32.01** P=0.157	Good fit
Root Mean Square Error of Approximation (RMSEA)	≤0.08	0.038	Good fit
Normed Fit Index (NFI)	≥0.90	0.98	Good fit
Non-Normed Fit Index (NNFI)	≥0.90	0.99	Good fit
Comparative Fit Index (CFI)	≥0.90	1.00	Good fit
Incremental Fit Index (IFI)	≥0.90	1.00	Good fit
Relative Fit Index (RFI)	≥0.90	0.96	Good fit
Goodness of Fit Index (GFI)	≥0.90	0.97	Good fit
Adjusted Goodness of Fit Index (AGFI)	≥0.90	0.92	Good fit

As shown in Table 4, all index models fit well, which means that the proposed bullying indicator model is highly suitable for explaining its relationship with the six aspects of school resilience. The test results suggest that school resilience can influence the occurrence of bullying in school and that a strong school resilience level is expected to lower the occurrence of bullying cases in school.

C. The Formulation of Strategies for Strengthening School Resilience

To further explore data related to school efforts in shaping school resilience, which is needed to reduce bullying in schools, focus group discussions and interviews with principals, teachers and students were also conducted. The

results of the discussion and interviews then were used to formulate proposed strategies to strengthen school resilience as shown in Table 5.

Table 5.
Proposed strategies for strengthening school resilience

Indicator	Forms of school activity
Improving the links among all school elements	▪ Schools make reprimands and warnings, and apply penalties in a humane way to students who violate school rules or commit acts of violence, including bullying, at school. ▪ The school develops staff professionalism.
Establishing clear and consistent school rules	▪ Schools make clear and detailed Standard Operating Procedures on indicators of school violence and regulations that will be applied strictly to address them. ▪ Schools have a supervisory team that directly or indirectly observes student behavior at school.
Teaching life skills to the students	▪ Schools directly and indirectly teach soft skills in accordance with the conditions and needs of students. ▪ Schools strengthen the character education needed to strengthen soft skills in the form of religious, social and scientific activities. ▪ Schools design educational programs to help students develop skills in conflict resolution, negotiation, listening, communication and decision making.
Providing caring and supports to the students	▪ Schools develop an anti-bullying culture by posting various anti-bullying moral messages in the school environment. ▪ Schools provide excellent services for students who are victims and bullies to resolve conflicts that occur appropriately.
Setting and communicating expectations to the students	▪ Schools develop various extracurricular activities that are able to overcome the problem of discrimination, and establish the principle of equality in the learning process at school. ▪ Schools design curricula that are responsive to cultural diversity through multicultural education integrated in the learning process.
Providing meaningful opportunities to students to encourage participation	▪ Schools provide opportunities for all students to be able to choose their preferred activities. ▪ Schools request to choose at least one extracurricular activity that has been agreed upon by students and other school elements.

D. Discussion

Building and strengthening resilience is very critical for every school. This is in agreement with the definition of resilience, which is the ability to maintain or return to positive mental health following adversity or crisis, by utilizing multiple internal (personal characteristics and strengths such as empathy, self-awareness, problem-solving skills, etc.) and external (support, expectation, and opportunity for contributions from family, school, community, etc.) supporting factors [21], [22]. Resilience in the study is understood as the factors and processes that affect how children under difficulties could achieve positive development and maintain their mental and physical well-being (such as avoiding mental disorders, antisocial behaviors, self-harm behaviors, etc.) [23].

Strong school resilience is expected to help reduce bullying behavior. This is consistent with the findings in this study, which suggest that strong school resilience reduces bullying behavior in schools. This finding is supported by the social-ecological perspectives theory [24], where resilience can be used to overcome problems in schools, especially in dealing with school bullying. This means that it is necessary to build school resilience to overcome the problem of bullying by strengthening the six aspects of school resilience [25]. Furthermore, the results of this study also suggest that each of these aspects contributes to building school resilience. Each of the six aspects has a positive and significant contribution in shaping school resilience, although the contribution of each dimension is not equal; this indicates that each school studied has different abilities in building school resilience.

Likewise, the characteristics of bullying behavior that occur in each studied high school are unique. This is proven by the findings that show that manifestations of school bullying indicators (12 aspects related to bullying) are one-dimensional. The results prove that all of the 12 aspects have positive and significant contributions in shaping school bullying in the studied high schools. Furthermore, the result implies that each of the studied high schools in Makassar have different dynamics of bullying when viewed from these 12 aspects. Therefore, the strategies for reducing bullying behavior should be adjusted to the characteristics of cases that occur in each school. More specifically, efforts to tackle the problem of bullying require a comprehensive approach through prevention, diagnostic, and technical measures which require the collaboration of schools, students' families and other stakeholders involved in the education field.

Based on the structural model compatibility test result, it is suggested that a strong school resilience level is expected to lower the occurrence of bullying cases at school. However, further in-depth analysis, especially of the relation between the level of school resilience and the occurrence of bullying incidents in schools, is still needed. The results of this analysis would further elaborate upon the role of school resilience as capital to realize bullying-free schools.

Efforts to strengthen school resilience should not only be limited to one main activity but should involve more diverse and varied ones. These activities should also be continuously improved and fine-tuned according to the periodic review of the status of bullying at the school. Furthermore, in accordance with previous research conducted by Healy, Grzazek, and Sanders, cooperation between all the stakeholders of the school, including students, teachers, administrative staff, parents, and community members, is critical to strengthening school resilience, which might consequently reduce and even prevent the occurrence of bullying incidents [26].

Finally, reducing bullying behavior at school via strengthening school resilience will be effective with the aid of sufficient policy support. Intervention via policies is expected to influence the behavior of all school stakeholders in terms of preventing and reducing the occurrence of bullying incidents, for example, by prohibiting aggressive behavior, such as threatening and harassing students or retaliating against students who witness and report bullying incidents, and by encouraging actions such as reporting bullying incidents to school management [27]. Another interesting anti-bullying school policy design was proposed by Gokkaya through establishing various school programs including the following: (1) the creation of a peaceful school environment, where students are provided with social skills in the form of communication techniques and techniques for solving problems without aggression; (2) the creation of a "zero tolerance" school environment towards all forms of intimidation in which, for example, students are given martial arts training to establish discipline and self-control; (3) the establishment of standard procedures for reporting bullying incidents and forming special teams to enforce policies related to bullying; and (4) the incorporation of elements related to the prevention of bullying behavior into the curriculum, such as integrating anti-bullying related material into the subjects of religion and character, guidance and counseling, as well as civic education. [28]. The results of these discussions and interviews, related to the formulation of methods for building school resilience to reduce bullying behavior, from the studied high schools have included several elements designed by Hall and Gokkaya above.

IV. CONCLUSION

The instrument developed in this study can be considered accurate and consistent in determining school resilience manifestation, which is related to these six aspects: (1) improving the links among all school elements, (2) establishing clear and consistent school rules, (3) teaching life skills to students, (4) providing care and support to students, (5) setting and communicating expectations to students, (6) providing meaningful opportunities to students to encourage participation. The same applies to bullying manifestation in school, which is related to these 12 aspects: (1) case of bullying, (2) setting of bullying, (3) intensity of bullying, (4) perpetrator of bullying, (5) victim of bullying, (6) reason for bullying, (7) form of bullying, (8) response of bullying victims, (9) form of support, (10) impact of bullying, (11) bullying prevention and (12) handling of bullying case. Furthermore, the results of this study prove that school resilience is needed to reduce bullying in schools. Various strategies to strengthen school resilience were proposed based on focus group discussions and interviews with principals, teachers and students, which could be used as elements to formulate efficient anti-bullying policies.

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