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Differences in Elementary School Students' Resilience Levels Based on Types of Extracurricular Activities

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ABSTRACT

Elementary school students face increasing psychosocial and academic pressures, yet the role of extracurricular activities in shaping their resilience remains underexplored, particularly in the Indonesian primary education context. This study aims to analyze differences in resilience levels among elementary school students based on the types of extracurricular activities they participate in. A quantitative cross-sectional survey design was employed involving 114 fourth-to-sixth-grade students from six private elementary schools in Kuningan Regency, selected through stratified random sampling. Data were collected using a resilience questionnaire grounded in seven adaptive skill aspects and analyzed using descriptive statistics, cross-tabulations, Pearson's Chi-Square test, and Monte Carlo simulation, with relationship strength measured using Cramér's V coefficient. Results showed that the majority of students fell in the moderate resilience category, but significant differences existed across extracurricular activity types. Science and sports activities showed a greater proportion of high resilience compared to arts, religious, English, and scouting activities. The difference was statistically significant ($p < 0.05$) with a medium-to-large effect size (Cramér's V = 0.416). These findings confirm that not all extracurricular activities contribute equally to resilience development. This research enriches Positive Youth Development studies by providing comparative quantitative evidence in Indonesian primary education and highlights the importance of designing evidence-based extracurricular programs that integrate social-emotional skills development.

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1. INTRODUCTION

A central problem in the field of elementary education and developmental psychology concerns how schools can systematically cultivate resilience — the adaptive capacity that enables children to cope with adversity — particularly through structured activities beyond the formal curriculum. Despite the widely acknowledged importance of extracurricular participation in supporting child development, it remains unclear whether different types of

extracurricular activities contribute equally to building resilience or whether certain types are more effective than others. This question has significant practical implications for school programme design, yet has received limited empirical investigation, particularly in the Indonesian primary education context. Elementary school students today face increasingly complex psychosocial challenges, encompassing heightened academic demands, evolving peer dynamics, and rapid socio-technological change. At this critical developmental stage, children must not only meet academic expectations but also adapt emotionally and socially to mounting pressures. Empirical evidence consistently identifies elementary school-aged children as a vulnerable group susceptible to psychological stress, particularly when confronting stressful life events such as academic pressure, social conflict, or significant loss [1], [2]. In response, resilience, defined by Reivich and Shatte as an individual's capacity to adapt effectively to life's stresses and setbacks through the management of emotions, mindsets, and problem-solving skills [3], [4] has emerged as a crucial protective construct. Low resilience in school-aged children is associated with elevated risks of mental health disorders, diminished psychological well-being, and long-term academic difficulties [5], [6]. These conditions collectively underscore the urgent need to strengthen adaptive capacity from the earliest stages of formal education.

Resilience is no longer regarded as a static, innate trait; rather, it is a dynamic capacity shaped through continuous interactions between individuals and their proximal environments [3]. Within Bronfenbrenner's bioecological model [7], the school constitutes a primary microsystem that exerts a significant influence on children's psychological development. Positive interpersonal relationships within schools, including teacher support and peer bonds, serve as external protective factors that buffer students against academic and social stress [8], [9]. Converging evidence from a systematic review confirms that school-based interventions consistently enhance resilience in children and adolescents, albeit with varying effect sizes [10]. While social-emotional learning programmes in elementary settings have been shown to improve self-efficacy, emotional regulation, and prosocial relationships [11]. The Positive Youth Development (PYD) framework further asserts that optimal child development depends on the presence of protective factors across family, school, and community contexts [12], [13]. Within this framework, resilience emerges from adaptive interactions between individuals and social contexts that provide support, meaningful challenge, and learning opportunities.

A widely advocated mechanism for cultivating resilience within the school setting is structured participation in extracurricular activities organised, goal-directed programmes that extend beyond the formal academic curriculum [7]. From a PYD perspective, such activities function as protective contexts that activate both internal assets (self-efficacy, emotional regulation, optimism) and external assets (social support, positive adult engagement) [14], [15]. Prior research demonstrates differential contributions across activity types: sports-based programmes have been linked to improved emotional regulation, impulse control, and sense of belonging [16], [17]; arts and religious activities support emotional expression, meaning-making, and perseverance [18], [19]; and science or STEM-oriented activities cultivate problem-solving, cognitive flexibility, and growth-oriented persistence [20]. Despite these promising findings, the evidence base remains largely descriptive or qualitative, and

comparative quantitative studies that examine multiple extracurricular types simultaneously, particularly at the elementary school level, are conspicuously absent from the literature.

A review of previous studies reveals important contextual gaps that this research seeks to fill. Zolkoski and Bullock [6] conducted a comprehensive review of resilience in children and youth and confirmed that school-based environments play a decisive role in shaping adaptive capacity; however, their review did not differentiate among types of structured activities. Madsen, Hicks, and Thompson [16] demonstrated that sport-based extracurricular programmes positively influence youth development indicators, yet their study focused exclusively on physical activity and did not compare other activity types. Godor [17] similarly found psychosocial benefits in sport-based development programmes but acknowledged the absence of comparative evidence across diverse extracurricular categories. In the Indonesian context, Rahmanto [18] examined character education through extracurricular activities at the elementary level and found positive contributions to social-emotional development, yet the study employed a qualitative approach and did not quantify resilience outcomes across activity types. Artati and Wahyuni [11] reported on the psychological well-being of upper-grade elementary students but did not systematically compare how different extracurricular modalities contributed to resilience. Collectively, these prior studies share a common limitation: none has provided comparative quantitative evidence of resilience differences across multiple extracurricular types within a single elementary school sample, particularly in the Indonesian primary education context. This constitutes the central research gap that the present study addresses.

To address these gaps, this study employs a comparative quantitative approach to analyse differences in resilience levels among fourth- to sixth-grade students at private elementary schools in Kuningan Regency, West Java, Indonesia, based on the extracurricular activities they participate in. Specifically, the study: (1) profiles overall student resilience using a 32-item instrument grounded in Reivich and Shatte's seven-component model of adaptive skills [4]; (2) compares resilience distributions across six extracurricular types (sports, arts, science, religion, English, and scouting); and (3) tests the statistical significance and practical effect size of observed group differences using Pearson's Chi-Square test with Monte Carlo simulation and Cramér's V coefficient. The novelty of this study lies in three dimensions: (a) it is among the first comparative quantitative investigations of resilience across multiple extracurricular types within a single Indonesian elementary school sample; (b) it employs Monte Carlo simulation to produce robust inferential estimates under violated distributional assumptions, a methodological refinement rarely applied in this domain; and (c) it reports a standardised effect-size index (Cramér's V), enabling direct comparison with future replication studies. The findings are expected to enrich the empirical foundation of the PYD framework in the context of Indonesian primary education and to inform evidence-based design of extracurricular programmes that consciously integrate social-emotional skill development. More broadly, this study is expected to benefit three stakeholder groups: (1) school administrators and curriculum designers, who can use these findings to make more intentional, evidence-based decisions when planning and evaluating extracurricular programmes; (2) counsellors and teachers, who can identify students in activity types associated with lower resilience and provide targeted developmental support; and (3) policymakers in Indonesian

primary education, who can leverage comparative empirical evidence to formulate guidelines that maximise the psychosocial value of structured school activities beyond their academic functions.

2. METHOD

This study used a quantitative approach with a cross-sectional survey design. The quantitative approach was chosen because this study aimed to examine group differences in resilience levels through inferential statistical analysis, a goal that aligns with the objective numerical measurement paradigm [21]. The cross-sectional design allows data to be collected at a single point in time without experimental manipulation, thus enabling the efficient identification of distribution patterns across student groups [22]. This design is well-suited to generating a baseline empirical picture that can serve as the basis for further longitudinal or experimental studies [23].

Table 1. Summary of Research Design

Component	Category	Description
Research Approach	Method	Quantitative
Research Design	Design	Cross-sectional survey
Independent Variable	Study Variable	Types of extracurricular activities (sports, arts, science, religion, English, scouting)
Dependent Variable	Study Variable	Student resilience level (low/moderate/high)
Unit of Analysis	Subject	Grade IV–VI elementary school students
Statistical Software	Tools	SPSS v. 26; R v. 4.3.2

Table 1 summarises the methodological blueprint of this study. Full justification for each design decision is provided in the sub-sections below. All design choices are grounded in established research methodology literature [21], [22], [23].

The overall research procedure was carried out in five sequential phases, as illustrated in Figure 1 below. Each phase is described in detail in the sub-sections that follow. This chronological structure ensures transparency and replicability of the research process [24].

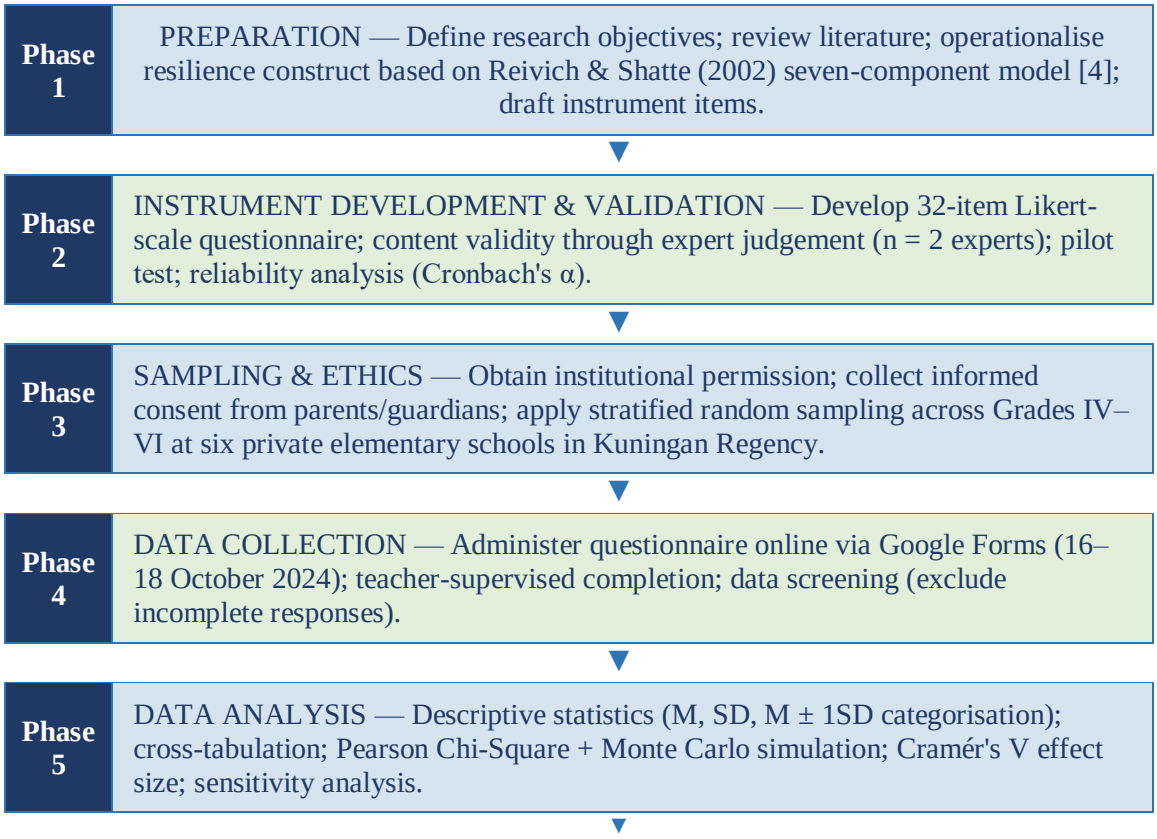

Figure 1. Chronological research procedure across five phases

The target population consisted of all fourth-, fifth-, and sixth-grade students who were actively participating in extracurricular activities at private elementary schools in Kuningan Regency. Upper-grade students were selected because they possess the cognitive and socio-emotional maturity necessary to understand the self-report instrument items and have accumulated at least one year of extracurricular experience [25]. Sampling was conducted using stratified random sampling, with grade level (IV, V, VI) as the stratification variable. This technique ensures proportional representation of each grade and reduces age-related developmental bias [26]

Recruitment was conducted at six private elementary schools that provided written institutional approval. The initial cohort consisted of 117 respondents. After data screening (defined as excluding questionnaires with more than 10% missing item responses), three protocols were removed, resulting in a final analytic sample of N = 114 (response retention rate: 97.4%). Table 2 presents the distribution of participants by extracurricular activity type.

Table 2. Distribution of Participants by Extracurricular Activity Type (N = 114)

Extracurricular Activity	n	%	Note
Sports	71	62.3	Largest group; robust for inferential analysis
Arts	14	12.3	Adequate for cross-tabulation
Religion	12	10.5	Adequate for cross-tabulation
Science	11	9.6	Adequate for cross-tabulation
English	4	3.5	Small n; descriptive analysis only
Scouts	2	1.8	Very small n; descriptive analysis only
Total	114	100.0	—

Group sizes that are not equal to 82.9% of the contingency table cells have expected frequencies < 5, which require a robust inferential approachescribed in Section 3.5 [27].

Data were collected using a student resilience questionnaire developed based on Reivich and Shatte's [4] seven-component framework: (1) emotional regulation, (2) impulse control, (3) optimism, (4) empathy, (5) causal analysis, (6) self-efficacy, and (7) reaching out. These components are operationalised across 14 indicators and 32 Likert-scale items (1 = strongly disagree to 4 = strongly agree), producing a theoretical score range of 32–128.

The total resilience score (R) for each respondent is computed as the sum of all item scores:

$$R = \Sigma X_i, \quad i = 1, 2, \ldots, 32$$

where X_i denotes the score on item i, scores were then transformed to a per-item average (range 1–4) to facilitate proportional comparison across respondents [28].

Content validity was established through expert judgement by two specialists in educational psychology and guidance and counselling, following standard validation procedures [29]. Internal consistency reliability was estimated using Cronbach's α:

$$\alpha = [k / (k - 1)] \cdot [1 - (\Sigma\sigma^2_i / \sigma^2_t)]$$

where k = number of items, σ^2_i = variance of item i, and σ^2_t = total score variance. The obtained coefficient ($\alpha = 0.97$) indicates very high internal consistency ($\alpha > 0.90$) [30], confirming the instrument's suitability for group-level comparative analyses.

Statistical analyses were conducted using SPSS v. 26 and R v. 4.3.2. The complete analytical pipeline is formalised as Algorithm 1 (pseudocode) below, followed by a narrative justification of each step [31].

Algorithm 1. Pseudocode — Analytical Pipeline for Resilience Level Comparison

```
INPUT  : raw item scores X[i,j]   (i = respondent 1..114, j = item 1..32)
         extracurricular group label G[i]  ∈ {Sports, Arts, Science,
                                              Religion, English, Scouts}

// STEP 1 — Score Computation
FOR each respondent i:
    R[i] ← Σ X[i,j]  for j = 1..32          // total resilience score
    R_avg[i] ← R[i] / 32                     // per-item average (range 1–4)

// STEP 2 — Descriptive Statistics
μ ← (Σ R_avg[i]) / n                         // grand mean
σ ← √( Σ(R_avg[i] − μ)² / (n−1) )            // standard deviation

// STEP 3 — Resilience Categorisation  (M ± 1SD rule)
FOR each respondent i:
    IF   R_avg[i] < (μ − σ)  THEN  CAT[i] ← 'Low'
    ELIF R_avg[i] > (μ + σ)  THEN  CAT[i] ← 'High'
    ELSE                           CAT[i] ← 'Moderate'

// STEP 4 — Assumption Check
Compute expected frequencies E[ij] for 6×3 contingency table
IF proportion of cells with E[ij] < 5  >  20%  THEN
    flag ← 'Chi-Square assumption violated → use Monte Carlo'

// STEP 5 — Inferential Test
χ² ← Σ Σ (O[ij] − E[ij])² / E[ij]            // Pearson Chi-Square
p_mc ← Monte_Carlo_pvalue(χ², replications=10000, CI=0.99)
LR  ← Likelihood_Ratio_test(O, E)            // confirmatory test

// STEP 6 — Effect Size
V ← √( χ² / (n · (k − 1)) )                  // Cramér's V
   where k = min(rows, columns) = 3

// STEP 7 — Sensitivity Analysis
Rerun Steps 4–6 excluding English (n=4) and Scouts (n=2)

OUTPUT : descriptive table, cross-tabulation table,
         χ², p_mc, LR, V, sensitivity-analysis results
```

Algorithm 1. Pseudocode of the complete statistical analysis pipeline

Step 1–2 (Descriptive Statistics). The mean (μ) and standard deviation (σ) were calculated for all valid responses. These summary statistics served as the basis for the categorisation threshold in Step 3.

Step 3 (Categorisation). Resilience levels were classified into three ordinal categories (low, moderate, and high) using the M ± 1SD convention, a widely used approach in educational psychology for grouping continuous construct scores [28].

Step 4–5 (Chi-Square and Monte Carlo Simulation). Pearson's Chi-Square statistic was computed to test the null hypothesis that resilience-level distributions do not differ across extracurricular types. Because 82.9% of cells in the 6 × 3 contingency table had expected frequencies below five, violating the conventional χ^2 assumption, a Monte Carlo simulation (10,000 replications, 99% confidence interval) was applied to generate robust p-

values [27]. The Likelihood Ratio statistic was additionally computed as a confirmatory test [29]

Step 6 (Effect Size). Cramér's V was computed as:

$$V = \sqrt{[\ \chi^2 / (n \cdot (k - 1))\ ]}$$

where n is the total sample size and k is the smaller of the number of rows and columns (k = 3). Values of $V \geq 0.30$ are interpreted as medium-to-large effect sizes in social science research [30].

Step 7 (Sensitivity Analysis). To assess the robustness of the findings, Steps 4–6 were repeated after excluding the two groups with very small sample sizes (English: n = 4; Scouts: n = 2). Convergence between main and sensitivity analyses was used as evidence of result stability [31].

3. RESULTS AND DISCUSSION

This section presents findings from quantitative analyses of differences in resilience levels among elementary school students across extracurricular activity types. Section 3.1 (Results) reports descriptive statistics, cross-tabulation outcomes, and inferential test statistics supported by numbered equations, tables, and figures. Section 3.2 (Discussion) interprets these findings across four thematic sub-sections referenced against the literature [29], [32].

3.1. Results

3.1.1 Overall Student Resilience Profile

Prior to inferential analysis, the raw total score (sum of 32 Likert items; theoretical range 32–128) was transformed to a per-item average to enable proportional comparison across respondents. The average resilience score $\bar{R}$ for each student was computed as:

$$\bar{R} = R / k \tag{1}$$

where R is the total resilience score (Equation 2) and k = 32 is the number of instrument items. The total resilience score R is defined as:

$$R = \Sigma X_i, \quad i = 1, 2, \ldots, 32 \tag{2}$$

where X_i is the score on item i, with each item scored on a four-point Likert scale (1 = strongly disagree, 4 = strongly agree).

Resilience levels were categorised into three ordinal groups using the mean (M) ± one standard deviation (SD) criterion, calculated as:

$$M = (\Sigma \bar{R}_i) / n \tag{3}$$

where n = 114 is the total number of valid respondents, and $\bar{R}_i$ is the per-item average resilience score for respondent i.

$$SD = \sqrt{[\ \Sigma(\bar{R}_i - M)^2 / (n - 1)\ ]} \tag{4}$$

where M is the grand mean defined in Equation (3), students scoring below M − SD are classified as low resilience; those above M + SD as high; and the remainder as moderate resilience.

Analysis of the 114 valid responses yields M = 24.93, SD = 2.874, with scores ranging from 15 to 31. The resulting category thresholds are: low: $\bar{R} < 22.06$; moderate: $22.06 \leq \bar{R} \leq 27.80$; high: $\bar{R} > 27.80$. Table 3 and Figure 2 present the frequency distribution.

Table 3. Overall Resilience Level Distribution (N = 114)

Resilience Category	Score Range ($\bar{R}$)	Frequency (n)	Percentage (%)
Low	< 22.06	15	13.2
Moderate	22.06 – 27.80	78	68.4
High	> 27.80	21	18.4
Total	—	114	100.0

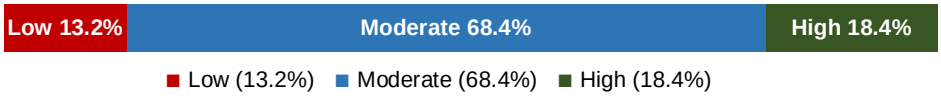

Figure 2. Stacked bar chart of overall resilience level distribution (N = 114)

As shown in Table 3 and Figure 2, the majority of students (68.4%) fall in the moderate resilience category. Only 18.4% reach the high category, while 13.2% are classified as low.

3.1.2 Resilience Distribution by Extracurricular Activity Type

Cross-tabulation of resilience categories against extracurricular activity type reveals notable distributional variation. Table 4 and Figure 3 present the results.

Table 4. Resilience Level Distribution by Extracurricular Activity Type

Activity Type	n	Low n (%)	Moderate n (%)	High n (%)
Science	11	0 (0.0)	8 (72.7)	3 (27.3)
Sports	71	8 (11.3)	49 (69.0)	14 (19.7)
Arts	14	3 (21.4)	9 (64.3)	2 (14.3)
Religion	12	3 (25.0)	7 (58.3)	2 (16.7)
English†	4	1 (25.0)	3 (75.0)	0 (0.0)
Scouts†	2	0 (0.0)	1 (50.0)	1 (50.0)
Total	114	15 (13.2)	77 (67.5)	22 (19.3)

English (n = 4) and Scouts (n = 2): reported descriptively only; excluded from inferential analysis due to very small sample sizes [29].

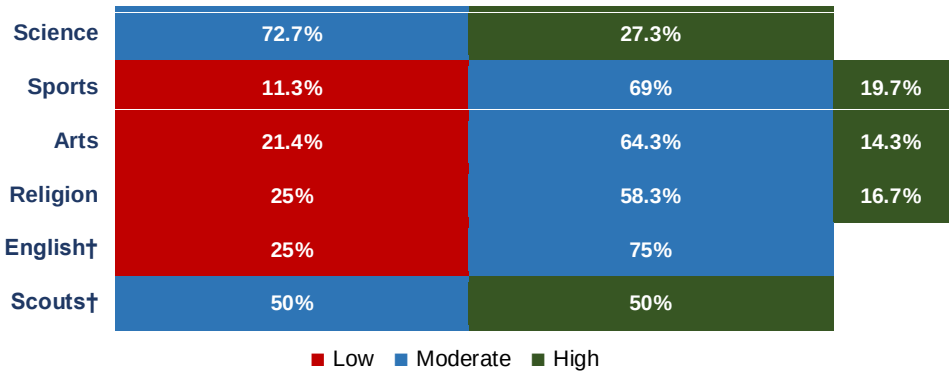

Figure 3. Stacked horizontal bar chart of resilience distribution by extracurricular activity type

As shown in Table 4 and Figure 3, science shows the most favourable profile (27.3% high; 0% low), followed by Sports (19.7% high; 11.3% low). Religion and Arts exhibit higher proportions of low resilience (25.0% and 21.4%, respectively). English and Scouts are interpreted descriptively only due to sample size constraints.

3.1.3 Inferential Statistical Test Results

Pearson's Chi-Square statistic was computed to test the null hypothesis H_0 that resilience-level distributions do not differ across extracurricular types. The test statistic is:

$$\chi^2 = \Sigma_i \Sigma_j (O_{ij} - E_{ij})^2 / E_{ij} \quad (5)$$

where O_{ij} is the observed frequency, and E_{ij} is the expected frequency in cell (i, j) of the contingency table.

Diagnostic checks showed that 82.9% of cells had $E_{ij} < 5$ (minimum E = 0.01), violating the conventional χ^2 assumption [29]. Monte Carlo simulation (10,000 replications; 99% confidence level) was therefore applied. The effect size was quantified using Cramér's V:

$$V = \sqrt{[\chi^2 / (n \cdot (k - 1))]} \quad (6)$$

where n = 114 is the sample size and k = min(rows, columns) = 3 is the smaller dimension of the contingency table. V values of 0.30–0.50 indicate a medium-to-large effect [33]

Table 5 summarises all test statistics. Both tests confirm statistical significance at $p < 0.05$. Cramér's V = 0.416 indicates a medium-to-large effect size. A sensitivity analysis excluding English and Scouts yielded p = 0.0042 (Monte Carlo) and V = 0.382, confirming robustness of the result.

Table 5. Summary of Inferential Statistical Test Results

Statistical Test	Statistic	df	p-value (Monte Carlo)	99% CI	Effect / Interpretation
Pearson Chi-Square	239.929	24	0.0018	[0.0012, 0.0024]	Significant ($p < 0.05$)
Likelihood Ratio	39.340	24	0.0156	[0.0128, 0.0184]	Significant ($p < 0.05$)
Cramér's V	0.416	—	—	—	Medium–large effect
Sensitivity (χ^2)	—	—	0.0042	—	Consistent; V = 0.382

3.2. Discussion

3.2.1 General Resilience Pattern and the PYD Framework

Ref [6] demonstrated that resilience in late childhood develops gradually along a continuum shaped by accumulated environmental interactions. The predominance of moderate resilience (68.4%) in this study is consistent with this view: most students possess an adequate asset foundation within the Positive Youth Development (PYD) framework [12], yet have not accumulated sufficient structured challenge to transition to the high-resilience category. The 13.2% low-resilience group represents a population segment at elevated risk for psychosocial and academic difficulties, consistent with findings reported in [10]

Ref [3] argued that resilience is no longer understood as a static, innate trait but as a dynamic capacity forged through ongoing person–environment transactions. This study operationalises that theoretical position empirically: the significant association between extracurricular type and resilience level (Cramér's V = 0.416; see Table 3) demonstrates that the type of structured activity students engage in — not merely their participation — shapes adaptive capacity within the school microsystem as defined by Bronfenbrenner [34].

3.2.2 Science and Sports: Mechanisms Driving Higher Resilience

Science activities produced the most favourable resilience profile in this sample (27.3% high; 0% low). Ref [20] reported, through meta-analysis, that cognitive flexibility and causal analysis ability — both cultivated intensively in science experimentation — show strong positive correlations with psychological resilience. The iterative trial-and-error structure of science tasks directly rehearses two components of Reivich and Shatte's [4] seven-factor model: self-efficacy (sustained effort yields improvement) and optimism (setbacks are interpreted as informative rather than terminal). The collaborative format of most science sessions also develops empathy and social communication — additional resilience components within the same framework.

Sports ranked second (19.7% high; 11.3% low). In [16], structured physical activity was shown to improve emotional regulation and sense of belonging in school-aged children — both documented protective factors for resilience. The win–loss dynamic intrinsic to competitive sports provides an ecologically valid arena for practising impulse control and adaptive emotion management [4]. Ref [17] reported that a sport-based PYD programme produced significant gains in self-efficacy and belonging. The presence of 11.3% low-resilience students within the sports group, however, signals that activity type alone is insufficient: coaching quality, competitive climate, and psychosocial support are important moderators [17].

3.2.3 Arts, Religion, and English: Implementation as a Key Moderator

Arts (21.4% low; 14.3% high) and religion (25.0% low; 16.7% high) both show higher proportions of low resilience than Science and Sports. This does not imply these activities are inherently less beneficial. In [18], character education integrated into arts extracurricular programmes at the elementary level was shown to contribute positively to students' social-emotional development. Similarly, [19] found that attachment to values and sense of life purpose — dimensions central to religious activities — function as long-term protective factors. The lower resilience profiles observed here likely reflect implementation gaps: arts sessions that remain performance-oriented without reflective components, and religious instruction dominated by rote memorisation rather than value-reflective dialogue, may underutilise the theoretical potential of both activity types.

English activities (n = 4) produced no high-resilience students. Ref [20] suggests that foreign language learning can support resilience when implemented through communicative, interactive, and experiential approaches rather than cognitively passive ones. Given the very small sample (n = 4), however, no generalisable inference is possible for this group.

3.2.5 Effect Size, Theoretical Contribution, and Study Limitations

The medium-to-large effect size (Cramér's V = 0.416) is the study's central theoretical contribution. Ref [12] positioned structured activity as a uniform construct within the PYD framework. The present findings nuance that view: not all structured extracurricular activities function equivalently as resilience-building protective factors. Activity type — specifically the degree to which an activity affords trial-and-error problem-solving, win–loss emotional regulation, and collaborative social interaction — is a substantively meaningful differentiator of student adaptive capacity, independent of participation per se [34].

The use of Monte Carlo simulation to address violated Chi-Square assumptions, and the reporting of Cramér's V as a standardised effect-size index, constitute methodological contributions that improve replicability relative to prior descriptive or qualitative studies in this domain [29]

Four limitations must be acknowledged. First, the cross-sectional design precludes causal inference; a self-selection effect — students with higher baseline resilience choosing science or sports — cannot be ruled out. Second, unequal group sizes (English n = 4; Scouts n = 2) limit generalisability for these groups. Third, self-report data from primary school students are inherently biased. Fourth, implementation quality variables (mentor competence, session frequency, pedagogical approach) were not measured but emerge from this discussion as the key proximal moderators of activity effectiveness. Longitudinal or mixed-method designs are recommended for future work to establish causal mechanisms [32]

4. CONCLUSION

This study was designed to address a critical gap in the resilience literature: the lack of comparative quantitative evidence on differences in elementary school students' resilience levels by extracurricular activity type, particularly in the Indonesian educational context. The primary objective of this study — to examine whether and to what extent resilience levels differ across extracurricular activity types among elementary school students — has been achieved. The findings confirm that extracurricular activity type is significantly associated with differences in student resilience, and that this association carries a practically meaningful effect size [31]

Three specific findings directly answer the research questions posed in the Introduction. First, the overall resilience profile of the sample was predominantly moderate, with only a small proportion reaching the high category and an at-risk low-resilience group warranting attention. This pattern aligns with developmental models that position resilience as a capacity built gradually through the quality of structured experiences within the school environment [3], [7]. Second, science- and sports-based activities were associated with more favourable resilience profiles than arts, religious, and English-language activities, with scouting groups too small to infer. Third, not all extracurricular activities function as equivalent resilience-building contexts—a nuance identified as a research gap in the Introduction and now empirically established through this comparative quantitative investigation.

Theoretically, these findings advance the Positive Youth Development (PYD) framework [12] by demonstrating empirically that structured extracurricular participation does not constitute a homogeneous protective factor. Rather, activity type — specifically the degree to which an activity affords iterative trial-and-error problem-solving, win–loss emotional regulation practice, and collaborative peer interaction — functions as a substantive differentiator of adaptive capacity development. This positions extracurricular activity type as a theoretically meaningful variable within Bronfenbrenner's developmental ecology model [34], enriching the conceptualization of the school microsystem beyond a monolithic construct. Methodologically, the application of Monte Carlo simulation to address sparse contingency tables and the reporting of Cramér's V as a standardized effect-size index represent contributions to the rigor of resilience research in Indonesian elementary education contexts [29]

In practice, the findings provide an evidence base for school administrators and policymakers in designing extracurricular programs. Rather than treating all extracurricular activities as interchangeable, schools should consciously design programs around empirically validated mechanisms: structured trial-and-error challenge (as observed in Science activities), managed emotional experiences involving success and setback (as in Sports), and collaborative peer interaction (present in both high-performing activity types). Arts and Religion activities carry strong theoretical potential for resilience development [18], [19] yet the lower resilience profiles observed suggest that current implementations — particularly those dominated by performance-oriented or rote-memorization approaches — may not fully leverage this potential. Schools are therefore encouraged to integrate reflective and social-emotional learning components systematically into these programs, consistent with PYD principles [12].

Several boundaries of this study must be acknowledged in interpreting its findings. First, the cross-sectional design establishes association rather than causation; the possibility that students with higher baseline resilience self-select into particular activity types, rather than those activities producing resilience gains, cannot be ruled out. Second, the sample is drawn exclusively from private elementary schools in Kuningan Regency, limiting the generalisability of findings to public schools, urban settings, and other regional contexts in Indonesia. Third, two activity groups — English (n = 4) and scouting (n = 2) — had sample sizes too small for reliable inferential analysis, meaning conclusions about these groups remain descriptive only. Fourth, the study relied on student self-report data, which carries inherent risks of social desirability bias, particularly among primary school-aged respondents. Fifth, key implementation variables — including the quality of programme facilitation, mentor competence, and session frequency — were not measured, yet are theoretically important moderators of the relationship between activity type and resilience outcomes. These limitations delimit the scope of the conclusions and underscore the need for the extended research designs described below.

Five directions for future research are recommended. First, longitudinal studies tracking the same cohort across multiple academic years are essential to determine whether extracurricular participation causally affects resilience or whether higher-resilience students self-select into particular activities. Second, future investigations should incorporate

implementation quality variables — including mentor competence, session frequency, pedagogical approach, and program fidelity — as potential mediators or moderators, as the present findings suggest these are proximal determinants of activity effectiveness beyond activity type alone. Third, mixed-method designs combining quantitative resilience measurement with qualitative investigation of students' lived experiences within each activity type would illuminate the mechanisms driving observed differences. Fourth, replication studies with larger and more balanced samples across all activity types — particularly Science, English, and Scouting — are necessary to improve statistical power and generalizability. Fifth, future research should examine resilience sub-dimensions (emotional regulation, impulse control, optimism, empathy, causal analysis, self-efficacy, and reaching out) separately across activity types, as the composite score employed in this study may mask differential effects on specific adaptive capacities [4]

In summary, this study confirms that the type of extracurricular activity constitutes a substantively meaningful factor in resilience development at the elementary school level. By providing the first comparative quantitative evidence of this relationship in the Indonesian primary education context, this investigation contributes both empirically and methodologically to the development of evidence-based, resilience-oriented school programs that support students' long-term adaptive capacity and psychological well-being. For the broader public, this research carries a practical message: the extracurricular programmes schools offer are not merely academic supplements or time-fillers — they are developmental environments with measurable consequences for children’s psychological resilience. Parents, communities, and education stakeholders can use these findings as a basis for more informed conversations about which school activities genuinely support children’s ability to face life’s challenges, and to advocate for programme designs that consciously integrate social-emotional skill development rather than focusing narrowly on performance or competition outcomes.

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REFERENCES

[1] D. C. Dese, A. Huwae, and P. A. P. Nugraha, "Effect of physical activity based on traditional games on the psychological well-being of elementary school children," *Jurnal Maenpo: Jurnal Pendidikan Jasmani Kesehatan dan Rekreasi*, vol. 13, no. 1, pp. 36–46, 2023.

[2] Z. Wang, M. S. Nistor, and S. W. Pickl, "Analysis of the Definitions of Resilience," *IFAC-PapersOnLine*, vol. 50, no. 1, pp. 10649–10657, 2017, doi: 10.1016/j.ifacol.2017.08.1756.

[3] A. S. Masten, "Global perspectives on resilience in children and youth," *Child Dev.*, 2014, doi: 10.1111/cdev.12205.

[4] A. Reivich, K & Shatte, *The Resilience Factor; 7 Essential Skill For Overcoming Life's Inevitable Obstacle*. New York: Broadway Books, 2002.

[5] X. Zhang, Y. Wang, and L. Chen, "The impact of physical activity and social-emotional learning on psychological well-being and resilience in school-age children: A systematic review.," *Journal of School Health*, vol. 95, no. 2, pp. 156–168, 2025.

[6] S. M. Zolkoski and L. M. Bullock, "Resilience in children and youth: A review," *Child. Youth Serv. Rev.*, vol. 34, no. 12, pp. 2295–2303, 2012.

[7] U. Bronfenbrenner, *The ecology of human development: Experiments by nature and design*. Harvard University Press, 1979.

[8] M. Raniti, D. Rakesh, G. C. Patton, and S. M. Sawyer, "The role of school connectedness in the prevention of youth depression and anxiety: a systematic review with youth consultation," *BMC Public Health*, vol. 22, no. 1, Dec. 2022, doi: 10.1186/s12889-022-14364-6.

[9] D. Diggs, E. Deniz, and U. Toseeb, "School connectedness as a protective factor between childhood adversity and adolescent mental health outcomes," *Dev. Psychopathol.*, vol. 37, no. 3, pp. 1355–1373, Aug. 2025, doi: 10.1017/S0954579424001184.

[10] J. Fritz, A. M. De Graaff, H. Caisley, and ..., "A systematic review of amenable resilience factors that moderate and/or mediate the relationship between childhood adversity and mental health in young …," 2018, *frontiersin.org*. doi: 10.3389/fpsyt.2018.00230.

[11] K. B. Artati and E. Wahyuni, "Gambaran Kesejahteraan Psikologis Siswa Kelas Besar Sekolah Dasar dan Implikasinya Terhadap Program," vol. 9, no. 2, pp. 953–970, 2025, doi: 10.31316/g-couns.v9i2.7044.

[12] R. F. Catalano, M. L. Berglund, J. A. M. Ryan, H. S. Lonczak, and J. D. Hawkins, "Positive youth development in the United States: Research findings on evaluations of positive youth development programs," *Ann. Am. Acad. Pol. Soc. Sci.*, vol. 591, no. 1, pp. 98–124, 2004.

[13] U.S. Department of Health & Human Services., "Positive youth development." Accessed: Jan. 23, 2026. [Online]. Available: https://youth.gov/youth-topics/positive-youth-development

[14] K. Opstoel *et al.*, "Personal and social development in physical education and sports: A review study.," *Eur. Phy. Educ. Rev.*, vol. 26, no. 4, pp. 797–813, 2020.

[15] Search Institute., "Developmental assets framework," https://searchinstitute.org/developmental-assets/.

[16] K. A. Madsen, K. A. Hicks, and H. Thompson, "Physical activity and positive youth development: Impact of a school-based program," *Journal of School Health*, vol. 81, no. 8, pp. 462–470, 2011.

[17] B. P. Godor, "Cultivating Resilience in Youth: Assessing the Psychological Benefits of Sport-Based Development Programs Original Research," 2025. [Online]. Available: www.jsfd.org

[18] A. Rahmanto, "Pendidikan Karakter dalam Kegiatan Ekstrakurikuler di Sekolah Dasar. SENDIKA: Seminar Pendidikan, II, 214–219. http://seminar.uad.ac.id/index.php/sendika/article/view/1129tan Ekstrakurikuler di Sekolah D," *SENDIKA: Seminar Pendidikan*, vol. II, pp. 214–219, 2020, [Online]. Available: http://seminar.uad.ac.id/index.php/sendika/article/view/1129

[19] P. D. Rasmussen, O. J. Storebø, and ..., "Attachment as a core feature of resilience: A systematic review and meta-analysis," *Psychological …*, 2019, doi: 10.1177/0033294118785577.

[20] T. Hu, D. Zhang, and J. Wang, "A meta-analysis of the trait resilience and mental health," *Pers. Individ. Dif.*, vol. 76, no. April, pp. 18–27, 2015, doi: 10.1016/j.paid.2014.11.039.

[21] J. W. Creswell and J. D. Creswell, *Research design: Qualitative, quantitative, and mixed methods approaches*, 5th ed. SAGE Publications, 2018.

[22] A. Field, *Discovering statistics using IBM SPSS Statistics*, 5th ed. SAGE Publications, 2018.

[23] D. R. Cooper and P. S. Schindler, *Business Research Methods*, 12th ed. New York: McGraw-Hill/Irwin, 2014.

[24] K. Cohen, L., Manion, L.; Morrison, *Research methods in education*, 8th ed. Routledge, 2018.

[25] L. E. Berk, *Development Through the Lifespan*, 8th ed. Boston: Pearson, 2022.

[26] W. G. Cochran, *Sampling Techniques*, 3rd ed. New York, NY, USA: Wiley, 1977.

[27] R. L. Berger and G. Casella, *Statistical Inference*, 2nd ed. Pacific Grove, CA, USA: Duxbury, 2002.

[28] N. R. Hinkle, W. Wiersma, and S. G. Jurs, *Applied Statistics for the Behavioral Sciences*, 5th ed. Boston, MA, USA: Houghton Mifflin, 2003.
[29] B. Agresti, *Categorical Data Analysis*, 3rd ed. Hoboken, NJ, USA: Wiley, 2013.
[30] L. J. Cronbach, "'Coefficient alpha and the internal structure of tests,'" *Psychometrika*, vol. 16, no. 3, pp. 297–334, 1951.
[31] J. Cohen, *Statistical Power Analysis for the Behavioral Sciences*, 2nd ed. Hillsdale, NJ, USA: Erlbaum, 1988.
[32] American Psychological Association, *Publication Manual of the American Psychological Association*, 7th ed. Washington, DC: American Psychological Association, 2020.
[33] J. Cohen, *Statistical power analysis for the behavioral sciences*, 2nd ed. Lawrence Erlbaum Associates., 1988.
[34] U. Bronfenbrenner, *The ecology of human development: Experiments by nature and design*. Harvard University Press, 1979.