

Pesantren Education and Peer Grup in Shaping Santri Character: A Path Analysis with Mediation Tests

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ABSTRACT

Character formation among adolescents in Islamic boarding schools (pesantren) is shaped not only by the formal educational environment but also by the social dynamics that occur among peers. This study examines the direct and indirect effects of pesantren education on santri character formation, with peer group as a mediating variable. A quantitative associative design was employed, involving 60 santri selected through purposive sampling. Data were collected using a validated and reliable five-point Likert-scale questionnaire (10 items per variable; Cronbach's alpha of .872, .831, and .810 for pesantren education, peer group, and character formation, respectively) and were analyzed through classical assumption tests, simple and multiple linear regression, and the Sobel test. The results show that pesantren education has a significant direct effect on peer group ($\beta = .740$; $p < .001$) and on character formation ($\beta = .739$; $p < .001$), and that peer group significantly affects character formation ($\beta = .380$; $p = .003$). The Sobel test confirms a significant indirect effect of pesantren education on character formation through peer group ($z = 2.905$; $p = .004$), indicating partial mediation, with the mediated pathway accounting for approximately 38% of the total effect. These findings suggest that pesantren education shapes santri character both directly, through habituation, exemplary role models, and a controlled environment, and indirectly, by cultivating a positive peer climate that reinforces religious and social values. The study offers practical implications for pesantren administrators to design peer-based character-reinforcement programs alongside formal educational activities.

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Introduction

The phenomenon of moral degradation among Indonesian adolescents in the digital era has become an increasingly urgent concern for educators, parents, and policymakers alike. Exposure to unfiltered digital content, the erosion of face-to-face social interaction, and the weakening of traditional value-transmission mechanisms have all been associated with declining discipline, empathy, and religiosity among the younger generation (Insani & Arbarini, 2025). Within this context, the Islamic boarding school (pesantren) continues to be regarded as one of the most enduring and effective institutions for character education in Indonesia, precisely because it combines formal instruction with a total living environment in which habituation, exemplary role models (uswah hasanah), and continuous supervision converge, so that character formation proceeds in an integrated way through daily routines, religious culture, and collective dormitory life (Ghafur & Abdul, 2025; Wibowo, 2026).

Character formation in the pesantren setting, however, is rarely the product of a single

influence. Santri (pesantren students) spend the greater part of their day, and often several consecutive years, living communally with peers of a similar age. This dense and continuous peer interaction makes the peer group a powerful socialization agent that can either reinforce or undermine the values instilled by the pesantren's formal curriculum (Ahyani et al., 2025). Peer groups provide emotional support, model everyday behavior, transmit social skills, and function as informal agents of socialization; consequently, they have been shown to shape a wide range of adolescent characters, from religiosity and discipline to cooperation and, in less favorable conditions, defiance or conformity toward negative conduct (Ahyani et al., 2025; Hank & Huber, 2024).

Prior studies have examined pesantren education and character formation largely as a direct, bivariate relationship, or have treated peer influence and pesantren education as separate, competing predictors without considering how they interact. For example, a recent study at Pondok Pesantren Al Manar, Semarang found that both parental attention and pesantren education significantly and directly affect santri character formation (Insani & Arbarini, 2025), while other research on santri motivation and behavior has shown that peer interaction independently affects academic and social outcomes among santri (Subahri & Said, 2025). What remains insufficiently explored is whether pesantren education influences santri character not only directly, but also indirectly through the peer climate it helps to cultivate that is, whether a strong pesantren educational environment produces a healthier peer culture, which in turn reinforces character formation.

This study addresses that gap by testing peer group as a mediating variable in the relationship between pesantren education and santri character formation. Grounded in the view that character education is optimized when the formal curriculum and the informal peer environment work in tandem (Lickona, 1991), this research proposes that a well-structured pesantren education program not only produces character outcomes directly through habituation and exemplary modeling, but also indirectly by shaping a positive peer group dynamic among santri that further reinforces those outcomes. Four hypotheses guide the analysis: (H1) pesantren education has a significant effect on peer group; (H2) peer group has a significant effect on santri character formation; (H3) pesantren education has a significant effect on santri character formation; and (H4) peer group significantly mediates the effect of pesantren education on santri character formation. By quantifying both the direct and the mediated pathways, this study aims to provide pesantren administrators with an empirical basis for designing character-education strategies that deliberately leverage, rather than ignore, the peer environment.

Research Methods

This study employed a quantitative associative design intended to examine causal and mediating relationships among variables through path analysis (Sugiyono, 2019). The research was conducted at [name of pesantren], involving 60 santri as respondents, selected through purposive sampling based on the criteria of being enrolled santri who had resided in the pesantren for at least three years and were available at the time of data collection. This sample size is consistent with prior quantitative studies conducted on santri populations within a single pesantren (Insani & Arbarini, 2025).

Three variables were examined: pesantren education (X_1) as the independent variable, peer group (M) as the mediating variable, and santri character formation (Y) as the dependent variable. Each variable was measured using a ten-item, five-point Likert-scale questionnaire (1 = strongly disagree to 5 = strongly agree). The pesantren education instrument covered indicators of habituation, exemplary behavior, a controlled environment, and an integrated curriculum; the peer group instrument covered indicators of peer support, social modeling, and group norms; and the character formation instrument covered indicators of religious values, discipline, and social responsibility, adapted from indicator frameworks used in comparable pesantren-based and peer-environment studies (Insani & Arbarini, 2025; Silvia Ningrum & Sartono Sartono, 2025).

Instrument validity was tested using the Pearson product-moment item-total correlation,

with an item considered valid if its corrected correlation coefficient exceeded the *r*-table value of .254 ($df = n - 2 = 58$, $\alpha = 5\%$, two-tailed). Instrument reliability was tested using Cronbach's Alpha, with a coefficient of $\alpha \geq .60$ considered acceptable and $\alpha \geq .80$ considered good (Ghozali, 2018).

Data were analyzed in three stages using IBM SPSS Statistics 23 and JASP. First, classical assumption tests were performed to verify that the regression models met the requirements of ordinary least squares estimation, comprising a normality test (Kolmogorov–Smirnov and Shapiro–Wilk tests on the unstandardized residuals), a multicollinearity test (tolerance and Variance Inflation Factor, VIF), and a heteroscedasticity test (the Glejser test, regressing the absolute residuals on the predictors). Second, simple and multiple linear regression analyses were conducted to estimate three regression models corresponding to path a ($X_1 \rightarrow M$), path b and c' (X_1 and $M \rightarrow Y$ simultaneously), and path c (the total effect of $X_1 \rightarrow Y$), following the classic mediation procedure of Baron & Kenny (1986). Third, the significance of the indirect (mediated) effect of X_1 on Y through M was tested using the Sobel (1982) test, calculated as $z = ab / \sqrt{(b^2 SEa^2 + a^2 SEb^2)}$, where a and b are the unstandardized path coefficients and SEa and SEb are their respective standard errors. An indirect effect was considered statistically significant at $|z| > 1.96$ ($p < .05$).

Results and Discussion

1. Characteristics of Respondents

The 60 santri who participated in this study were predominantly aged 17 years (48 santri, 80.0%), with the remainder aged 18 years (12 santri, 20.0%). In terms of gender, the sample was fairly balanced, comprising 29 male santri (48.3%) and 31 female santri (51.7%). Regarding grade level, most respondents were in grade 12 (40 santri, 66.7%), followed by grade 11 (14 santri, 23.3%) and grade 10 (6 santri, 10.0%). Length of residence in the pesantren varied from three to six years, with the largest group having resided for three years (28 santri, 46.7%), followed by six years (14 santri, 23.3%), five years (14 santri, 23.3%), and four years (4 santri, 6.7%), indicating that the sample consisted mainly of santri with substantial exposure to the pesantren's educational and social environment.

Tabel 1. Characteristics of Respondents (N = 60)

Characteristic	Category	f	%
Age	17 years	48	80.0
	18 years	12	20.0
Gender	Male	29	48.3
	Female	31	51.7
Grade	Grade 10	6	10.0
	Grade 11	14	23.3
	Grade 12	40	66.7
Length of stay	3 years	28	46.7
	4 years	4	6.7
	5 years	14	23.3
	6 years	14	23.3

2. Instrument Validity and Reliability

Validity testing showed that all thirty items across the three variables produced item-total correlation coefficients above the *r*-table value of .254, indicating that every item was statistically valid ($p < .05$). The corrected item-total correlations ranged from .458 to .662 for

the pesantren education instrument, from .379 to .670 for the peer group instrument, and from .347 to .658 for the character formation instrument. Reliability testing using Cronbach's Alpha showed coefficients of .872 for pesantren education, .831 for peer group, and .810 for character formation; all three instruments therefore fall within the "good" reliability category ($\alpha > .80$) and were considered suitable for further analysis (Ghozali, 2018).

Tabel 2. Summary of Validity and Reliability Test Results

Variable	Items	Item-total r range	Cronbach's α	Status
X ₁ – Pesantren Education	10	.458 – .662	.872	Valid & Reliable
M – Peer Group	10	.379 – .670	.831	Valid & Reliable
Y – Character Formation	10	.347 – .658	.810	Valid & Reliable

3. Descriptive Statistics

Descriptive statistics for the three research variables, each with a possible score range of 10–50, are presented in Table 3. The mean score for pesantren education (44.20) was the highest among the three variables, followed by character formation (43.95) and peer group (42.73), suggesting that, on average, respondents perceived the pesantren's educational environment somewhat more favorably than their peer climate

Tabel 3. Summary of Validity and Reliability Test Results

Variable	Min	Max	Mean	Median	SD
X ₁ – Pesantren Education	30	50	44.20	44.00	4.376
M – Peer Group	30	50	42.73	42.50	4.092
Y – Character Formation	30	50	43.95	44.00	3.846

4. Classical Assumption Tests

The normality test on the unstandardized residuals of the full regression model (Y regressed on X₁ and M) produced a Kolmogorov–Smirnov statistic of .087 ($p = .727$) and a Shapiro–Wilk statistic of .972 ($p = .188$); because both significance values exceed .05, the residuals are normally distributed and the model satisfies the normality assumption. The multicollinearity test yielded a tolerance value of .453 and a VIF of 2.207 for both predictors, well within the acceptable thresholds of tolerance $> .10$ and VIF < 10 , indicating no multicollinearity between pesantren education and peer group. The Glejser heteroscedasticity test, which regresses the absolute residuals on the predictors, produced non-significant coefficients for both X₁ ($t = -.351$, $p = .727$) and M ($t = .425$, $p = .673$), confirming that the variance of the residuals is homoscedastic. Taken together, these results indicate that the regression models meet the classical assumptions required for valid ordinary least squares estimation.

5. Path Analysis and Hypothesis Testing

Three regression models were estimated to test the four hypotheses, following the mediation procedure of Baron & Kenny (1986). Model 1 tests path a, the effect of pesantren education on peer group. Model 2 simultaneously tests path b (the effect of peer group on character formation, controlling for pesantren education) and path c' (the direct effect of pesantren education on character formation, controlling for peer group). Model 3 tests path c, the total effect of pesantren education on character formation without controlling for peer group.

Tabel 4. Regression Results for Path a: Peer Group (M) Regressed on Pesantren Education (X₁)

Predictor	B	SE	Beta (β)	t	Sig.
(Constant)	12.166	3.670	–	3.315	.002

Predictor	B	SE	Beta (β)	t	Sig.
X ₁ – Pesantren Education	.692	.083	.740	8.368	< .001

$R = .740$; $R^2 = .547$; Adjusted $R^2 = .539$; $F(1,58) = 70.03$; $p < .001$

Tabel 5. Regression Results for Paths b and c': Character Formation (Y) Regressed on Peer Group (M) and Pesantren Education (X₁)

Predictor	B	SE	Beta (β)	t	Sig.
(Constant)	10.899	3.516	–	3.100	.003
X ₁ – Pesantren Education (c')	.402	.108	.458	3.731	< .001
M – Peer Group (b)	.357	.115	.380	3.097	.003

$R = .782$; $R^2 = .611$; Adjusted $R^2 = .598$; $F(2,57) = 44.81$; $p < .001$; Tolerance = .453; VIF = 2.207

Tabel 6. Regression Results for Path c: Character Formation (Y) Regressed on Pesantren Education (X₁), Total Effect

Predictor	B	SE	Beta (β)	t	Sig.
(Constant)	15.245	3.455	–	4.413	< .001
X ₁ – Pesantren Education	.649	.078	.739	8.349	< .001

$R = .739$; $R^2 = .546$; Adjusted $R^2 = .538$; $F(1,58) = 69.70$; $p < .001$

The bivariate correlations among the three variables were likewise all positive and significant: pesantren education correlated with peer group at $r = .740$ ($p < .001$), pesantren education correlated with character formation at $r = .739$ ($p < .001$), and peer group correlated with character formation at $r = .719$ ($p < .001$).

Based on Table 4, pesantren education has a significant positive effect on peer group ($\beta = .740$; $t = 8.368$; $p < .001$), with an R^2 of .547, meaning pesantren education explains 54.7% of the variance in peer group. This finding supports H1 and indicates that a stronger pesantren educational environment characterized by consistent habituation, exemplary role models, and a controlled communal setting is associated with a more positive peer climate among santri.

Based on Table 5, peer group has a significant positive effect on character formation when controlling for pesantren education ($\beta = .380$; $t = 3.097$; $p = .003$), supporting H2. This confirms that beyond the direct influence of the pesantren's formal educational environment, the day-to-day social dynamics among santri themselves meaningfully shape character outcomes, consistent with recent findings that peer groups act as informal socialization agents which transmit religiosity, discipline, and cooperative norms among students in Islamic educational settings (Densius, 2024).

Pesantren education also retains a significant direct effect on character formation after controlling for peer group ($\beta = .458$; $t = 3.731$; $p < .001$), supporting H3, while the total, unmediated effect of pesantren education on character formation (Table 6) is $\beta = .739$ ($t = 8.349$; $p < .001$), with an R^2 of .546. Together, Models 2 and 3 show that the direct effect of pesantren education on character formation decreases only moderately once peer group is included in the model (from $\beta = .739$ to $\beta = .458$), while remaining highly significant, which is the pattern expected under partial rather than full mediation.

6. Mediation Test (Sobel Test)

The indirect effect of pesantren education on character formation through peer group was calculated as the product of the unstandardized path a and path b coefficients: $ab = .692 \times .357 = .247$. The Sobel test produced a standard error of .085 and a z-value of 2.905 ($p = .004$), which exceeds the critical threshold of 1.96 at $\alpha = .05$. This confirms H4: peer group significantly mediates the relationship between pesantren education and santri character formation. Because the direct effect of pesantren education on character formation remains statistically significant after peer group is included in the model, the mediation is classified as partial rather

than full. Comparing the indirect effect to the total effect indicates that peer group accounts for approximately 38.0% of the total effect of pesantren education on character formation (Variance Accounted For, $VAF = ab / c = .247 / .649 \approx 38.0\%$), while the remaining 62.0% represents the direct pathway.

Table 7. Summary of the Sobel Mediation Test

Path	Coefficient	SE	z	Sig.	Conclusion
a ($X_1 \rightarrow M$)	.692	.083	-	< .001	Significant
b ($M \rightarrow Y$)	.357	.115	-	.003	Significant
Indirect effect ($a \times b$)	.247	.085	2.905	.004	Significant – Partial mediation

These results are conceptually consistent with prior findings that pesantren education directly and significantly shapes santri character (Insani & Arbarini, 2025) but extend that literature by demonstrating that part of this influence operates indirectly, through the peer environment the pesantren education process itself helps to cultivate. This is theoretically coherent with Lickona (1991) view that effective character education requires alignment between the formal curriculum and the surrounding social ecology, and with recent evidence that peers in Islamic and general educational settings function as agents of socialization, sources of social support, and behavioral models for one another, whose influence can be deliberately directed toward positive character outcomes (Khairunnisa et al., 2024; Marbun & Anifah, 2026). Practically, the partial-mediation pattern suggests that pesantren administrators should not treat formal educational programming and peer-group dynamics as separate concerns: strengthening habituation and exemplary modeling in the formal curriculum appears to simultaneously improve the peer climate, which then further reinforces character outcomes, creating a mutually reinforcing cycle between institutional education and peer socialization.

Conclusion

This study demonstrates that pesantren education significantly shapes santri character formation both directly and indirectly through peer group. Pesantren education significantly and positively affects peer group ($\beta = .740$; $p < .001$) and santri character formation ($\beta = .739$ total effect; $p < .001$), while peer group itself significantly affects character formation ($\beta = .380$; $p = .003$). The Sobel test confirmed a significant indirect effect ($z = 2.905$; $p = .004$), establishing peer group as a partial mediator that accounts for approximately 38% of the total effect of pesantren education on character formation. These findings underscore that the informal social ecology of the pesantren not only its formal curriculum is an integral pathway through which character is formed, implying that pesantren administrators and educators should deliberately design peer-based reinforcement activities (such as peer mentoring, small study or worship groups, and structured peer accountability systems) alongside habituation and exemplary-modeling programs to maximize character outcomes. This study is limited by its cross-sectional design and single-site sample of 60 santri, which restrict causal inference and generalizability; future research is encouraged to employ longitudinal designs, larger and more diverse samples across multiple pesantren, and to examine additional mediating or moderating variables such as self-control, kyai leadership style, or family involvement to build a more complete model of santri character formation.

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