The Relationship between Peer Relationship Quality and Anxiety among Late Adolescents in Surakarta City

Zalfaa Alya Fauzia[1*], Malida Fatimah[2]
[1, 2]Department of Psychology, Universitas Mercu Buana Yogyakarta, Indonesia
Email: zalfaaalyaaa@gmail.com

This study aimed to examine the relationship between peer relationship quality and anxiety among late adolescents in Surakarta City. This study employed a quantitative approach with a correlational design. The research subjects comprised 170 late adolescents aged 18–21 years who resided or were pursuing education in Surakarta City, selected using an accidental sampling technique. Data were collected using the Peer Relationship Quality Scale, developed based on the Friendship Quality Scale (FQS), and the Anxiety Scale, adapted from the State-Trait Anxiety Inventory (STAI). Data were analyzed using Pearson Product Moment correlation following the fulfillment of normality and linearity assumption tests. The results revealed a significant negative relationship between peer relationship quality and anxiety among late adolescents ($r = -0.271$; $p = 0.000$). These findings indicate that higher peer relationship quality is associated with lower levels of anxiety among late adolescents, whereas lower peer relationship quality is associated with higher levels of anxiety. The findings of this study suggest that positive peer relationships function as a protective factor in safeguarding the mental health of late adolescents. Accordingly, strengthening the quality of social relationships among peers may serve as an effective strategy for preventing and addressing anxiety among adolescents.

Keywords: peer relationship quality, anxiety, late adolescents, mental health, social support

Corresponding Author:
Zalfaa Alya Fauzia
Department of Psychology, Universitas Mercu Buana Yogyakarta, Indonesia
zalfaaalyaaa@gmail.com

1. Introduction

Anxiety among adolescents has emerged as one of the most pressing mental health concerns of the 21st century. Globally, anxiety disorders have been identified as the most common psychological condition experienced by young populations, with prevalence rates ranging from 20 to 25 percent at moderate to severe levels [1]. Epidemiological projections indicate that if the underlying risk factors are not systematically addressed, this psychological burden will continue to increase, negatively affecting productivity, quality of life, and the sustainability of human resource development across countries [2]. This condition positions adolescent anxiety not merely as an individual clinical issue but as a structural challenge requiring a comprehensive scientific and policy-based response.

The international community has responded to this urgency through various global mental health policy frameworks. The World Health Organization (WHO), through its Mental Health Action Plan 2013–2030, has established the reduction of mental disorder burdens among vulnerable groups, including adolescents, as a key priority. At the national level, Indonesia has integrated adolescent mental health into the National Medium-Term Development Plan (RPJMN) 2020–2024 and strengthened psychological services through Law Number 18 of 2014 on Mental Health. In addition, Sustainable Development Goal (SDG) 3, concerning good health and well-being, explicitly encompasses the promotion of mental health and the prevention of psychological disorders among young populations. Collectively, these policy frameworks affirm that addressing adolescent anxiety requires a robust and locally relevant empirical evidence base.

In developmental psychology, late adolescence—spanning the age range of 18 to 21 years—represents a transitional period marked by layered developmental pressures. According to Erikson's (1968) [3] psychosocial theory, individuals in this stage are situated within the identity versus role confusion phase, in which the formation of a stable identity is often accompanied by significant psychological strain. Concurrently, increasing academic demands, the expansion of social roles, and diminishing dependence on parental figures create conditions conducive to the emergence of anxiety [4], [5]. Anxiety at this developmental stage is understood as a multidimensional emotional condition encompassing cognitive, affective, physiological, and behavioral aspects [6]; if left unaddressed, it may adversely affect academic achievement, the quality of social relationships, and long-term psychological well-being [1].

Adolescent anxiety is shaped by multidimensional factors, including biological predisposition, irrational thought patterns, low self-efficacy, and social environmental dynamics [7]. Among these factors, peer relationship quality occupies an increasingly strategic role in late adolescence as dependency on parents weakens [8]. Peer relationship quality is a multidimensional construct comprising positive dimensions—such as companionship, support, togetherness, and emotional closeness—as well as a negative dimension, namely conflict [9]. High-quality peer relationships have been shown to function as a protective factor against internalizing problems, including anxiety and depression [10], [11], through mechanisms explained by the social support buffering hypothesis, whereby peer social support mitigates the adverse effects of stressors on mental health [12]. Conversely, relationships characterized by conflict, social rejection, and limited emotional support may substantially heighten adolescents' psychological vulnerability [13], [14].

A growing body of empirical research has confirmed the relationship between peer relationship quality and adolescent anxiety. Scardera et al. (2020) [15] found that peer support was negatively associated with anxiety and suicidal ideation among young adults. Richard et al. (2022) [16], in a scoping review, demonstrated that the quality of social relationships plays a significant role in reducing anxiety levels among adolescents. Wu and Lee (2022) [17] reported that high peer support was associated with lower anxiety levels and greater subjective well-being. Simmons et al. (2023) [18] confirmed, based on a systematic review, that positive social connectedness functions as a protective factor against anxiety. Nevertheless, most of these studies have been conducted in Western countries and have primarily focused on early or middle adolescence, such that existing findings cannot fully account for the conditions experienced by late adolescents in Southeast Asia, particularly Indonesia, where cultural characteristics and social ecology differ fundamentally.

Surakarta City constitutes a scientifically relevant and strategically important research locus. As one of the major educational cities in Central Java, Surakarta has a substantial concentration of late adolescents, with 14.49 percent of its population aged between 15 and 24 years [19]. The competitive academic environment, intense peer rivalry, and rapid social mobility dynamics in this region may heighten adolescents' psychological vulnerability. Empirical data indicate that anxiety prevalence among adolescents in Surakarta reaches 68.4 percent, and has been linked to the emergence of aggressive behavior [20]—a figure higher than that reported in Yogyakarta (61.8 percent) [21] and Jakarta (56.1 percent) [22]. This disparity in prevalence across regions suggests that local factors, including the quality of peer social relationships, warrant more in-depth and context-specific investigation.

Although research on the relationship between social support and anxiety continues to expand, several literature gaps remain unaddressed. First, studies that specifically integrate peer relationship quality—based on the multidimensional framework of Bukowski et al. (1994) [9], encompassing companionship, conflict, support, security, and closeness—with anxiety among late adolescents in Indonesia remain scarce. Second, most prior studies have employed qualitative approaches or examined only a single

dimension of social relationships, thereby failing to provide a comprehensive picture of the strength and direction of the relationship between variables. Third, research grounded in local conditions that could serve as a foundation for mental health interventions in Indonesia's educational cities is virtually nonexistent. These gaps constrain the capacity of policymakers and mental health practitioners to design ecologically relevant, evidence-based prevention programs.

Building on the foregoing discussion, this study aims to examine the relationship between peer relationship quality and anxiety among late adolescents in Surakarta City through a quantitative correlational approach. The instruments employed include an adaptation of the Friendship Quality Scale (FQS) developed by Bukowski et al. (1994) [9] to measure peer relationship quality multidimensionally, as well as the State-Trait Anxiety Inventory (STAI) developed by Spielberger (2010) [23] to measure anxiety levels.

This study offers several important contributions, both academically and practically. First, it broadens the understanding of the relationship between peer relationship quality and anxiety among late adolescents, a population that has received relatively limited attention in Indonesia's developmental psychology literature. Second, it generates locally grounded empirical evidence that can inform the development of adolescent mental health programs in educational cities. Third, it simultaneously evaluates the roles of all five dimensions of peer relationship quality—companionship, conflict, support, security, and closeness—in relation to anxiety, thereby yielding a more comprehensive picture than previous studies. Fourth, it employs psychometrically validated instruments, thereby producing reliable data suitable for replication and cross-regional comparison. Fifth, the findings are expected to serve as a reference for counselors, educators, and policymakers in designing strategies to strengthen peer social relationships as a means of preventing anxiety among late adolescents in Indonesia.

The findings of this study are expected to provide comprehensive information for policymakers in formulating evidence-based, locally relevant, and systematically implementable adolescent mental health intervention strategies. These findings are also expected to serve as a basis for evaluating existing guidance and counseling programs and for developing adolescent mental health policies that are more responsive to social dynamics within educational city environments. Accordingly, this study contributes to the advancement of clinical and developmental psychology while supporting the formulation of evidence-based interventions to promote the sustainable psychological well-being of Indonesian adolescents.

2. Research Methods

Research Design

This study employed a quantitative approach with a correlational design to examine the relationship between peer relationship quality and anxiety among late adolescents. A correlational design was selected because this study focused on measuring the direction and strength of the relationship between two psychological variables without administering any treatment to participants [24]. All stages of the research were conducted in accordance with the ethical principles of psychological research based on the American Psychological Association (2020) [25] guidelines, which include the provision of informed consent, protection of data confidentiality, and voluntary participation.

Participants

The study involved 170 late adolescents who resided or were pursuing education in Surakarta City. The sampling technique employed was accidental sampling (convenience sampling), namely the selection of participants based on the researcher's ease of access to individuals meeting the research criteria at the

time data collection was conducted [24]. Although this technique offers practical efficiency in accessing participants, it carries inherent limitations with respect to sample representativeness, as individuals who were not readily accessible at the time of data collection were systematically excluded. Consequently, the findings of this study should be interpreted with caution, as they may not be fully generalizable to the broader population of late adolescents in Surakarta City or comparable urban educational settings.

The sample size was deemed adequate for Pearson Product Moment correlation analysis, as it satisfied the required statistical adequacy criteria [26]. The inclusion criteria for this study were: (a) late adolescents aged 18–21 years; (b) residing or currently pursuing education in Surakarta City; (c) having active interaction with peers in daily life; and (d) willing to participate voluntarily. The demographic characteristics of the participants are presented in Table 1.

Table 1. Demographic Characteristics of Participants (N = 170)

Characteristic	Category	n	%
Sex	Male	32	18.82
	Female	138	81.18
Age	18–19 years	17	10.00
	20–21 years	153	90.00
Activity Status	Student	145	85.29
	Employed	25	14.71
Domicile	Surakarta City	170	100.00

Research Instruments

Anxiety Scale. Anxiety was measured using an adaptation of the State-Trait Anxiety Inventory (STAI) developed by Spielberger (2010) [23]. The adaptation process involved forward translation of the original English items into Indonesian by a bilingual psychologist, followed by review and refinement by a subject-matter expert in clinical psychology to verify the accuracy of psychological constructs and their appropriateness within the Indonesian cultural setting. Adjustments were made to item wording where direct translation yielded expressions that were semantically ambiguous or culturally incongruent for Indonesian respondents. The scale comprised 10 items measuring four aspects of anxiety: affective (emotional state), cognitive (cognitive anxiety), physiological (physiological response), and behavioral (behavioral response). Each item was rated on a four-point Likert scale ranging from 1 = Never to 4 = Always. Higher scores indicated higher levels of anxiety. The blueprint of the anxiety scale is presented in Table 2.

Table 2. Blueprint of the Anxiety Scale

No	Aspect	Item Number	Total
1	Affective (Emotional State)	1, 2, 3	3
2	Cognitive (Cognitive Anxiety)	4, 5, 6	3
3	Physiological (Physiological Response)	7, 8	2
4	Behavioral (Behavioral Response)	9, 10	2
Total			10

A psychometric test was conducted with 70 respondents sharing characteristics similar to those of the research sample. The validity test results indicated that all items met the validity criteria, with item-total correlation coefficients (rit) ranging from 0.612 to 0.768 ($p < 0.001$). The reliability test yielded a Cronbach's alpha of 0.880, indicating high internal consistency [24]. In the main research sample (N = 170), the Cronbach's alpha increased to 0.917, indicating excellent instrument reliability.

Peer Relationship Quality Scale. Peer relationship quality was measured using an adaptation of the Friendship Quality Scale (FQS) developed by Bukowski et al. (1994) [9]. The adaptation followed a structured procedure comprising forward translation of the original items into Indonesian by a bilingual researcher, expert review by a developmental psychologist to evaluate conceptual equivalence and cultural fit, and item-level revision to address expressions that were linguistically unfamiliar or contextually inappropriate for Indonesian adolescents. This procedure was intended to preserve construct validity while ensuring that the adapted instrument was comprehensible and culturally relevant to the target population. This scale measured five aspects of peer relationship quality: companionship, conflict, help (support), security, and closeness. In its initial form, the instrument consisted of 15 items with a four-point Likert response format, ranging from 1 = Never to 4 = Always. Higher scores indicated better peer relationship quality, except for the conflict aspect, which was reverse-scored. The blueprint of the scale following the pilot test is presented in Table 3.

Table 3. Blueprint of the Peer Relationship Quality Scale (After Pilot Testing)

No	Aspect	Item Number	Total
1	Companionship	1, 2, 3	3
2	Conflict	6	1
3	Help (Support)	7, 8, 9	3
4	Security	10, 11, 12	3
5	Closeness	13, 14, 15	3
Total			13

The psychometric test results based on 70 respondents indicated that two items (X1.4 and X1.5) failed to meet the validity criteria, with item-total correlation coefficients of 0.065 and 0.149, respectively (< 0.30), and were therefore excluded from the final instrument. The remaining thirteen items had item-total correlation coefficients ranging from 0.538 to 0.764 ($p < 0.001$). The reliability test yielded a Cronbach's alpha of 0.889 in the pilot sample and 0.857 in the main research sample (N = 170), indicating high internal consistency.

Data Collection Procedure

Data were collected online through a Google Form distributed to late adolescents in Surakarta City. Prior to completing the questionnaire, participants received an explanation of the study's objectives, assurance of data confidentiality, and a statement confirming that participation was voluntary, provided through a digital informed consent form. Data collection was conducted after all research ethics requirements had been fulfilled. Following data collection, a data screening process was carried out to examine the completeness and consistency of responses. Incomplete data or data exhibiting inconsistent response patterns were excluded from the analysis.

Data Analysis

Data were analyzed using IBM SPSS Statistics version 25. Prior to hypothesis testing, assumption tests were conducted, comprising normality and linearity tests. The normality test was performed using the Kolmogorov–Smirnov (K–S) method. Data were considered normally distributed if the significance value exceeded 0.05 [24]. The linearity test was conducted using the Test for Linearity. The relationship between variables was considered linear if the significance value for linearity was less than 0.05 and the significance value for deviation from linearity exceeded 0.05 [24].

Once all assumptions were satisfied, hypothesis testing was conducted using Pearson Product Moment correlation to determine the direction and strength of the relationship between peer relationship quality and anxiety among late adolescents. The significance level was set at $p < 0.05$. The magnitude of the

independent variable's contribution to the dependent variable was calculated using the coefficient of determination (R^2). Score categorization for each variable was performed based on hypothetical norms comprising three categories—low, moderate, and high—using the hypothetical mean (μ) and hypothetical standard deviation (σ) as guidelines, as presented in Table 4.

Table 4. Categorization Norms for Research Variables

Variable	Category	Guideline	Score Range
Peer Relationship Quality	High	$X > (\mu + 1\sigma)$	$X > 47.67$
	Moderate	$(\mu - 1\sigma) < X \leq (\mu + 1\sigma)$	$30.33 < X \leq 47.67$
	Low	$X \leq (\mu - 1\sigma)$	$X \leq 30.33$
Anxiety	High	$X > (\mu + 1\sigma)$	$X > 30.00$
	Moderate	$(\mu - 1\sigma) < X \leq (\mu + 1\sigma)$	$20.00 < X \leq 30.00$
	Low	$X \leq (\mu - 1\sigma)$	$X \leq 20.00$

Note. μ = hypothetical mean; σ = hypothetical standard deviation.

3. Results and Discussion

Descriptive Statistics

Descriptive statistics are presented to provide an overview of the score characteristics of the two research variables. A comparison between hypothetical and empirical data was used to illustrate the tendency of each variable's level among participants. The results of the analysis are presented in Table 5.

Table 5. Descriptive Statistics of Research Variables (N = 170)

Variable	N	Hypothetical				Empirical			
		Min	Max	Mean	SD	Min	Max	Mean	SD
Peer Relationship Quality	170	13	65	39.00	8.67	34	65	52.78	6.363
Anxiety	170	10	40	25.00	5.00	12	40	36.56	6.701

Note. SD = standard deviation; Min = minimum score; Max = maximum score.

As shown in Table 5, the empirical mean of peer relationship quality (M = 52.78) was higher than the hypothetical mean (M = 39.00). This finding indicates that participants' peer relationship quality tended to fall within the high category. Similarly, the empirical mean of anxiety (M = 36.56) was higher than the hypothetical mean (M = 25.00), indicating that participants' anxiety levels exceeded the theoretical average of the instrument used.

Variable Categorization

Categorization was performed to classify participants' scores into low, moderate, and high categories based on hypothetical norms. The categorization results for both variables are presented in Table 6.

Table 6. Score Categorization of Research Variables (N = 170)

Variable	Category	n	%
Peer Relationship Quality	High	132	77.60
	Moderate	38	22.40
	Low	0	0.00
Anxiety	High	62	36.50
	Moderate	70	41.20
	Low	38	22.40

Note. μ = hypothetical mean; σ = hypothetical standard deviation.

As shown in Table 6, the majority of participants exhibited high peer relationship quality (n = 132; 77.60%), with no participants falling into the low category. For the anxiety variable, participants were distributed across all three categories, with the largest proportion in the moderate category (n = 70; 41.20%), followed by the high category (n = 62; 36.50%) and the low category (n = 38; 22.40%).

These findings indicate that although the majority of participants exhibited good peer relationship quality, anxiety levels remained within the moderate-to-high range. This condition suggests that anxiety is influenced not only by peer relationship quality but also by various other factors not measured in this study.

Assumption Tests

Prior to hypothesis testing, assumption tests were conducted as prerequisites for parametric analysis, comprising normality and linearity tests.

Normality Test. The normality test was conducted using the Kolmogorov–Smirnov (K–S) method on the unstandardized residuals of the regression model between the two variables. The results are presented in Table 7.

Table 7. Kolmogorov–Smirnov Normality Test Results (N = 170)

Variable	Sig. (K–S)	α
Peer Relationship Quality	0.112	0.05
Anxiety	0.078	0.05

Note. Data are normally distributed if p > 0.05.

As shown in Table 7, the Kolmogorov–Smirnov significance value for peer relationship quality was 0.112 (p > 0.05), and for anxiety was 0.078 (p > 0.05). Both variables exhibited a normal distribution; thus, the normality assumption was satisfied, and the data were deemed suitable for analysis using parametric statistical techniques.

Linearity Test. The linearity test was conducted using the Test for Linearity to examine whether the relationship between peer relationship quality and anxiety was linear. The results are presented in Table 8.

Table 8. Linearity Test Results (N = 170)

Source of Variance	F	Sig.
Linearity	14.029	0.000
Deviation from Linearity	1.352	0.135

Note. The relationship is considered linear if the significance value for linearity is < 0.05 and the significance value for deviation from linearity is > 0.05.

As shown in Table 8, the significance value for linearity was 0.000 (p < 0.05), while the significance value for deviation from linearity was 0.135 (p > 0.05). These results indicate that the relationship between peer relationship quality and anxiety was linear. Accordingly, all assumptions for parametric analysis were satisfied, and hypothesis testing could proceed.

Hypothesis Testing

Hypothesis testing was conducted using Pearson Product Moment correlation to examine the direction and strength of the relationship between peer relationship quality and anxiety among late adolescents. The results are presented in Table 9.

Table 9. Pearson Product Moment Correlation Test Results (N = 170)

Variable	r	p
Peer Relationship Quality → Anxiety	−0.271	0.000

Note. r = Pearson correlation coefficient; p = significance value (2-tailed); significant if $p < 0.05$.

As shown in Table 9, the analysis yielded a correlation coefficient of −0.271, with a significance value of 0.000 ($p < 0.001$). This significant negative correlation indicates that higher peer relationship quality was associated with lower anxiety levels among late adolescents, whereas lower peer relationship quality was associated with higher anxiety levels.

According to the correlation coefficient interpretation criteria proposed by Azwar (2018) [24], the value of $r = -0.271$ falls within the small-to-moderate effect category. Nevertheless, this relationship remains statistically meaningful and theoretically relevant within the field of developmental psychology. Accordingly, the research hypothesis positing a negative relationship between peer relationship quality and anxiety among late adolescents was supported.

Coefficient of Determination

The coefficient of determination was calculated to determine the effective contribution of peer relationship quality to anxiety. The results are presented in Table 10.

Table 10. Coefficient of Determination of Peer Relationship Quality on Anxiety

Variable	R^2	Contribution (%)	Other Factors (%)
Peer Relationship Quality → Anxiety	0.073	7.30	92.70

As shown in Table 10, the R^2 value of 0.073 indicates that peer relationship quality made an effective contribution of 7.3% to the variance in anxiety among late adolescents in Surakarta City. Meanwhile, 92.7% of the variance in anxiety was accounted for by other factors not examined in this study, such as emotion regulation, self-efficacy, family support, academic pressure, and individual psychological characteristics.

Discussion

This study found a significant negative relationship between peer relationship quality and anxiety among late adolescents in Surakarta City ($r = -0.271$; $p < 0.001$). This finding indicates that better-quality social relationships with peers are associated with lower levels of anxiety among late adolescents, and vice versa. This result is consistent with findings from various studies conducted in other countries [15]–[18], while also providing empirical evidence specific to the late adolescent population in Surakarta City.

Theoretically, this finding can be explained through the social support buffering hypothesis proposed by Cohen and Wills (1985) [27]. This hypothesis posits that social support functions as a buffer that mitigates the adverse effects of various stressors on individuals' mental health. Within this framework, high peer relationship quality—characterized by emotional closeness, a sense of security, instrumental and emotional support, and low levels of conflict—provides psychological resources that help adolescents cope with various pressures [12]. The availability of such social resources may reduce individuals' threat appraisal of stressful situations, thereby diminishing the activation of anxiety responses [10].

From a developmental perspective, these findings can also be understood through Erikson's (1968) [3] theory of psychosocial development and Santrock's (2019) [4] account of adolescent development. During late adolescence, the peer group begins to assume roles previously fulfilled largely by parental figures. Consequently, the quality of peer relationships becomes an important factor associated with

individuals' psychological condition. Adolescents with high-quality friendships tend to demonstrate better emotion regulation skills, greater openness in expressing concerns, and a stronger capacity to develop adaptive coping strategies when facing academic or social pressures [28]. This condition contributes to a reduction in experienced anxiety levels.

The categorization results provide descriptive support for the interpretation of these findings. A total of 77.60% of participants exhibited high peer relationship quality, indicating that most late adolescents in Surakarta City have established positive social relationships with peers, characterized by companionship, emotional support, a sense of security, and interpersonal closeness. This condition aligns with Surakarta's characteristics as an educational city with a high intensity of social interaction within campus and student community settings, which fosters the formation of meaningful friendships [29].

Nevertheless, the distribution of anxiety levels showed that 36.50% of participants fell into the high category and 41.20% into the moderate category. This finding suggests that good peer relationship quality is not fully associated with lower anxiety among late adolescents. This condition can be explained from two perspectives. First, anxiety among late adolescents is a phenomenon influenced by multiple factors and is not determined solely by social aspects. Biological factors, such as genetic predisposition and neurotransmitter imbalance, as well as psychological factors, such as irrational thought patterns, perfectionism, and low self-efficacy, also contribute to the emergence of anxiety [7]. Second, the elevated anxiety levels observed among participants may reflect high academic pressure, competition for achievement, and concerns regarding career prospects after completing education. These factors may continue to influence anxiety even when peer social support is available [2].

The coefficient of determination of 7.3% ($R^2 = 0.073$) warrants careful and proportional interpretation. Statistically, this value indicates that peer relationship quality accounts for a relatively modest share of the total variance in anxiety. However, within the domain of adolescent mental health, this magnitude carries meaningful practical significance for several reasons. Anxiety is a multidetermined psychological construct shaped by the interplay of biological predispositions, neurocognitive patterns, family dynamics, academic demands, and social environmental factors [7], [30]. It is therefore theoretically implausible for any single social variable to explain a large proportion of its variance. In this regard, a contribution of 7.3% from one relational predictor is consistent with effect sizes reported in comparable studies examining single social variables in relation to internalizing symptoms among adolescents [30], [31].

More critically, the modest effect size points to a specific explanatory boundary that should not be understated. The high proportion of unexplained variance—92.7%—indicates that the psychological burden experienced by late adolescents in Surakarta City is driven by factors beyond the scope of peer relationships alone. Academic pressure and achievement-related stress in competitive educational environments, intrapersonal vulnerabilities such as low self-efficacy and maladaptive cognitive appraisal, as well as structural stressors including socioeconomic uncertainty and post-graduation employment anxiety, all constitute plausible contributors to the remaining variance [2], [7]. This finding underscores the necessity of multivariate research frameworks that capture the full range of determinants of adolescent anxiety, rather than isolating single predictors.

Despite its modest size, the observed effect retains practical relevance in the design of preventive mental health interventions. Peer relationship quality is a modifiable social factor, meaning it is amenable to targeted intervention in ways that biological or deeply ingrained cognitive factors may not be. A reduction in anxiety attributable to strengthened peer relationships—even if modest in magnitude—is clinically meaningful at the population level, particularly given the high prevalence of moderate-to-high anxiety documented among participants (77.70% combined). Psychoeducational programs that cultivate trust,

emotional reciprocity, and conflict resolution skills within peer groups can realistically produce improvements in relational quality that translate into measurable reductions in anxiety burden [16], [18].

The conflict dimension of peer relationships also warrants attention in interpreting the study's results. Prior research has shown that negative dimensions of peer relationships, such as conflict, social rejection, and relational victimization, are associated with increased social anxiety and various internalizing problems [13], [14], [32]. In the present study, although most participants exhibited high peer relationship quality, the presence of conflict within friendships remained a potential source of stress contributing to anxiety. This finding is consistent with Yetim et al. (2024) [33], who demonstrated that peer conflict is a significant predictor of anxiety even after controlling for the effects of social support.

Surakarta's characteristics as an educational city also constitute an important consideration in interpreting these results. High academic competition and the presence of students from diverse regional backgrounds create a distinctive social environment in which peer relationships develop amid substantial academic and social demands. Adolescents who relocate to pursue education in Surakarta often face greater social adjustment challenges than local adolescents, including the need to build new friendship networks, which requires time and psychological resources. In such circumstances, peer relationship quality may function both as a source of support and, when conflict or unmet relational expectations arise, as a source of stress [34]. These findings suggest that efforts to strengthen the quality of peer social relationships within campus environments may serve as an effective strategy for reducing anxiety among late adolescents in Surakarta.

The practical implications of these findings are most actionable when tied directly to evidence-based psychological and educational practices. At the individual level, late adolescents should be encouraged to build and maintain friendships grounded in trust, emotional openness, and reciprocal support. Cognitive-behavioral approaches that address maladaptive social cognitions—such as fear of rejection and negative self-evaluation in peer settings—can be integrated into individual counseling to strengthen adolescents' capacity for high-quality social engagement [18]. At the institutional level, universities in Surakarta City can implement structured peer support programs during the early stages of enrollment, when social networks are still forming and vulnerability to anxiety is heightened. Orientation programs designed around evidence-based interpersonal skills training, cooperative learning structures, and facilitated peer mentoring have demonstrated effectiveness in reducing anxiety while building durable social bonds among adolescents [16]. At the level of psychological services, group-based interventions that leverage peer relationships as a therapeutic mechanism—such as peer-assisted cognitive behavioral therapy and structured peer support groups—represent cost-effective and scalable strategies for addressing anxiety in educational settings [18]. These approaches are particularly relevant in resource-constrained environments where individual therapeutic services may be limited.

This study has several limitations that warrant consideration. First, the use of a correlational design limits the study's capacity to establish causal relationships. It therefore remains unclear whether low peer relationship quality increases anxiety or whether high anxiety instead hinders the formation of high-quality peer relationships. Longitudinal research is needed to clarify the directionality of this relationship [14]. Second, the use of self-report instruments may introduce subjectivity bias, including a tendency toward socially desirable responding. The incorporation of additional methods, such as interviews and behavioral observation, could enhance the validity of future findings. Third, the sample composition—dominated by female participants (81.18%) and students (85.29%)—limits the generalizability of the findings to male late adolescents and those who are employed. Fourth, this study included only a single predictor variable, whereas anxiety is influenced by a range of biological, psychological, and social factors. Future research should therefore incorporate additional variables, such as emotion regulation, self-

efficacy, and family support, to achieve a more comprehensive understanding of the dynamics of anxiety among late adolescents in Indonesia.

4. Conclusion

This study aimed to examine the relationship between peer relationship quality and anxiety among late adolescents in Surakarta City. Using a quantitative correlational approach with 170 participants aged 18–21 years, this study generated empirical evidence regarding the association between peer relationship quality and anxiety levels during the late adolescent developmental stage.

The results revealed a significant negative relationship between peer relationship quality and anxiety among late adolescents in Surakarta City ($r = -0.271$; $p < 0.001$). This finding indicates that late adolescents with high-quality friendships—characterized by companionship, emotional support, a sense of security, closeness, and low levels of conflict—tend to exhibit lower anxiety levels. Conversely, lower peer relationship quality is associated with higher anxiety levels.

Peer relationship quality made an effective contribution of 7.3% to the variance in anxiety, while the remaining 92.7% was accounted for by other factors not examined in this study. Descriptively, the majority of participants exhibited high peer relationship quality (77.60%). However, anxiety levels were distributed across all categories, with the largest proportions falling within the moderate (41.20%) and high (36.50%) categories. These findings suggest that high-quality peer relationships function as a protective factor against anxiety, although various psychological pressures—such as academic demands, competition, and uncertainty about the future—continue to contribute to elevated anxiety levels among late adolescents in Surakarta City.

Recommendations

Based on the findings of this study, several recommendations are proposed for various stakeholders. For late adolescents, it is recommended that they build and maintain friendships grounded in trust, emotional openness, and reciprocal support as a means of reducing anxiety. Interpersonal communication skills, conflict management abilities, and a willingness to give and receive social support should be developed as part of adolescents' psychosocial competencies.

For educational institutions, universities and educational institutions in Surakarta City are encouraged to develop programs that support the formation of high-quality social relationships, such as group-based orientation programs, interpersonal skills training, and the establishment of structured peer support networks. Such programs have been shown to be effective in reducing anxiety while enhancing adolescents' psychological well-being [16], [18].

For counselors and psychologists, it is recommended that the strengthening of peer relationship quality be integrated as a component of intervention strategies for addressing adolescent anxiety, such as through peer group approaches or social skills training tailored to Indonesian cultural characteristics.

For future researchers, the use of a longitudinal design is recommended to clarify the directionality of the relationship between peer relationship quality and anxiety. A multivariate approach incorporating additional variables, such as emotion regulation, self-efficacy, family support, and academic pressure, should be considered to achieve a more comprehensive understanding. Expanding the research setting and diversifying sample characteristics—including a more balanced proportion of sex and activity status—are also important for enhancing the generalizability of findings. In addition, the use of a mixed-methods approach combining quantitative data with in-depth interviews could enrich understanding of the

psychological mechanisms linking peer relationship quality with anxiety among late adolescents in Indonesia.

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