

Emotional Awareness and Friendship in Relation to Problem-Solving Skills Among Muslim Students

 Alif Muarifah¹,  Rohmatus Naini^{1*},  Diki Herdiansyah¹,  Bagus Gilang Pratama²,  Rizqullah Bayhaqil Hakim¹

¹ Department of Guidance and Counseling, Faculty of Teacher Training and Education, Universitas Ahmad Dahlan, Indonesia

² Department of Electrical Engineering, Faculty of Engineering and Planning, Institut Teknologi Nasional Yogyakarta, Indonesia

 rohmatus.naini@uad.ac.id*

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Abstract

Adolescents' social-emotional functioning is closely linked to how they manage academic and interpersonal demands in school settings. However, limited evidence exists on how emotional awareness and friendship quality are simultaneously associated with problem-solving skills among Muslim high school students. This study examines the associations among emotional awareness, friendship quality, and problem-solving skills in adolescents. A quantitative cross-sectional correlational design was employed using Structural Equation Modeling (SEM). A total of 186 high school students aged 15–18 years in Yogyakarta, Indonesia participated in the study. Emotional awareness-related regulation, friendship quality, and problem-solving skills were measured using validated self-report instruments. Confirmatory factor analysis (CFA) was conducted prior to SEM analysis using AMOS version 20. The findings indicated that emotional awareness and friendship quality were significantly associated with adolescents' problem-solving skills. These findings suggest significant associations between emotional awareness, friendship quality, and problem-solving skills in adolescents. The results are based on cross-sectional data and should not be interpreted as causal relationships.

INTRODUCTION

Problem-solving skills are a core developmental and educational capability in adolescence, as they support academic functioning, social decision-making, and self-regulation during a period marked by increasing cognitive and social demands. Adolescents are required to manage complex academic tasks, navigate peer relationships, and make decisions with long-term consequences, all of which rely on effective problem-solving abilities (Puspita et al., 2020; Astuti et al., 2021). Research indicates that by mid-adolescence, particularly around the age of 15, individuals demonstrate growing competence in problem-solving and decision-making; however, substantial individual differences remain, influencing adolescents' adjustment, academic performance, and psychosocial well-being (Nurvithasary et al., 2025).

Problem-solving skills involve more than cognitive reasoning alone. They encompass the ability to identify and analyze problems, regulate emotions under stress, consider alternative solutions, and anticipate potential outcomes. Adolescents with limited problem-solving skills are more vulnerable to maladaptive coping, emotional distress, and engagement in risky behaviors, including depression, anxiety, and self-harm (Lutfauziah et al., 2020; Tosun et al., 2025). Consequently, identifying psychosocial factors associated with adolescents' problem-solving skills is an important concern in both educational and developmental research.

One psychosocial factor theoretically linked to problem-solving skills is emotional awareness, a central component of emotional intelligence. Emotional awareness refers to the ability to recognize, understand, and label one's own emotions as well as the emotions of others

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(Hessler & Katz, 2010). From a self-regulation perspective, emotional awareness enables adolescents to interpret emotional signals accurately, manage emotional responses, and select adaptive strategies when facing challenging situations. Previous studies have shown that higher levels of emotional awareness are associated with better emotional regulation, more adaptive coping strategies, and more effective problem-solving in both academic and interpersonal contexts (Kırıcı Tekeli & Özkoç, 2022; Suryani et al., 2023).

In addition to intrapersonal factors, interpersonal contexts particularly friendship quality are closely associated with adolescents' social and emotional functioning. High-quality friendships are characterized by trust, emotional intimacy, and supportive communication, and they provide an important social context for practicing problem-solving, perspective-taking, and emotional regulation (Simpkins et al., 2013). Empirical evidence suggests that adolescents who experience supportive peer relationships tend to demonstrate better emotional regulation and more adaptive problem-solving strategies, whereas poor-quality friendships are associated with emotional distress and maladaptive coping (Khichi & Teotia, 2023; Martínez-González et al., 2021).

A key factor in the development of problem-solving skills is emotional awareness, a central component of emotional intelligence. Emotional awareness allows adolescents to recognize and understand their own emotions and the emotions of others, which enhances their ability to regulate emotions and make sound decisions (Suryani et al., 2023). Adolescents with higher emotional intelligence are better equipped to navigate challenges, including academic problems and interpersonal conflicts, by managing their emotions in healthy ways. Studies show that emotional intelligence can mediate the effects of perfectionism and other personality traits on problem-solving abilities, helping adolescents avoid maladaptive coping strategies and improve their overall resilience (Kırıcı Tekeli & Özkoç, 2022). Furthermore, emotional awareness has been linked to improved coping with stress, which enhances adolescents' ability to address problems constructively and effectively. Emotional awareness was emphasized in the present study because it represents a foundational emotional process that precedes higher-order emotional regulation and interpersonal emotional competencies.

Friendship plays a vital role in shaping both emotional awareness and problem-solving skills in adolescents. Positive friendships provide emotional support, promote empathy, and create a safe environment for adolescents to express their emotions (Mak et al., 2023). These friendships also serve as a platform for adolescents to practice emotional regulation, empathy, and communication, which are key components of emotional intelligence. Research shows that supportive friendships are associated with better emotional regulation and problem-solving abilities, as they offer a space for adolescents to receive feedback and gain perspective from peers. Moreover, the quality of friendships can be a buffer against stress, providing a protective mechanism that helps adolescents manage challenges effectively (Rahmawati et al., 2020; Dias & Barroso, 2020). However, while previous studies have explored emotional awareness and friendships separately, the interplay between these factors in enhancing problem-solving skills has not been extensively studied. This research aims to address this gap by examining how emotional awareness and the quality of friendships together influence the development of problem-solving skills, offering valuable insights into how these factors contribute to adolescent well-being and adaptive functioning.

Emotional awareness has been shown to support adolescents' emotional regulation and their ability to understand and respond to problem situations (Ciarrochi et al., 2011). Similarly, friendship quality contributes to adolescents' psychosocial adjustment by providing emotional support, feedback, and opportunities to develop interpersonal problem-solving skills (Schaefer et al., 2011; Green et al., 2019). These findings suggest that both emotional and social factors play important roles in adolescents' problem-solving development.

However, these two constructs have generally been examined in separate lines of research, and their combined contribution to adolescents' problem-solving skills within an integrated framework remains insufficiently understood. Therefore, examining the joint role of emotional awareness and friendship quality is necessary to better explain adolescents' adaptive functioning, particularly in culturally and religiously shaped contexts.

Previous studies have examined emotional awareness as an intrapersonal factor related to adolescents' emotional regulation and problem-solving abilities (Kırcı Tekeli & Özkoç, 2022), while friendship quality has been studied as an interpersonal factor associated with social competence and adaptive coping (Schaefer et al., 2011). However, these two research streams have largely developed independently, and it remains unclear how emotional awareness and friendship quality jointly contribute to adolescents' problem-solving skills within a single analytical model. Therefore, this study examines the relationships among emotional awareness, friendship quality, and problem-solving skills among Muslim adolescents.

Understanding how emotional awareness and the quality of friendship contribute to problem-solving skills is important, particularly in the context of increasingly complex academic and social demands. These factors may play a significant role in helping students manage challenges more effectively and develop adaptive solutions in everyday life. This study aims to investigate the relationships among emotional awareness, friendship, and problem-solving skills among Muslim students. Specifically, it examines how emotional awareness and friendship are associated with students' ability to solve problems effectively in academic and social contexts.

METHODS

Design

This study employed a quantitative, cross-sectional correlational design to examine the associations among emotional awareness-related regulation, friendship quality, and problem-solving skills in adolescents. This design was appropriate for examining the relationships among the study variables at a single point in time, with Confirmatory Factor Analysis (CFA) conducted prior to Structural Equation Modeling (SEM).

Participants

This study involved 186 adolescents currently attending senior high schools in Yogyakarta, Indonesia. Participants were recruited using a cluster-based convenience sampling approach from multiple schools to capture variability in social and academic backgrounds. Inclusion criteria were ages between 15 and 18 years and voluntary participation in the study. The sample size of 186 met the minimum requirements for Structural Equation Modeling (SEM) based on recommended sample-to-parameter ratios (Hair et al., 2018).

Instruments

Three self-report scales adapted from *The Wellness Evaluation of Lifestyle Inventory* (Myers & Sweeney), culturally and linguistically adapted by Isnaini et al. (2014), were used. Construct validity was assessed using confirmatory factor analysis (CFA), and internal consistency reliability was evaluated using Cronbach's alpha for each scale. Factor loadings were interpreted with caution, acknowledging that loadings above .50 are generally preferred for SEM, while items with loadings between .40 and .49 were retained only when theoretically justified.

Problem-Solving Skills Scale

This scale assesses reflective and self-regulatory aspects of problem-solving. Factor loadings ranged from .54 to .65, with a Cronbach's alpha of .68. An example item is "I always

think before acting”, which reflects reflective decision-making relevant to problem-solving processes.

Emotional Awareness-Related Regulation Scale

This scale reflects awareness-based emotional regulation tendencies rather than discrete coping behaviors. Factor loadings ranged from .45 to .77, with a Cronbach’s alpha of .70. An example item is “I was able to manage my anger”.

Friendship Quality Scale

This scale measures perceived emotional support and assistance from peers. Factor loadings ranged from .47 to .82, with a Cronbach’s alpha of .78. An example item is “I have friends who help me when I need help”.

Procedure

Data collection was conducted in coordination with school administrators and teachers at the selected senior high schools in Yogyakarta. Participants were invited to join the study through classroom announcements. Prior to data collection, informed consent was obtained from all participants. The self-report surveys were administered in person. Before completing the questionnaires, participants were briefed on the research objectives and provided with clear instructions. The study adhered to key ethical guidelines by ensuring that participation was entirely voluntary, and participants could withdraw at any time without penalty. No financial compensation was provided. Furthermore, data confidentiality was strictly maintained by anonymizing all responses. Following data collection, the responses were compiled and securely stored for the subsequent CFA and SEM analyses.

Data Analysis

In this study, structural equation modeling (SEM) was used with AMOS v20 software to test the validity of the theoretical model and the relationship between variables. The model fit is assessed based on the Goodness of Fit Index (GFI), where $GFI = 1.00$ indicates perfect fit and $GFI > .9$ indicates good fit, Adjusted GFI (AGFI), where AGFI close to 1.00 indicates good fit, Root Mean Square Error of Approximation (RMSEA), where RMSEA $\leq .05$ indicates good fit, Normed Fit Index (NFI) ($NFI \geq .90$), Comparative Fit Index (CFI) ($CFI \geq .90$), and Tucker-Lewis Index (TLI) ($TLI > .90$). A study should report at least three match indices to get a good or perfect model (Hair et al., 2018).

Table 1. Results of descriptive analysis

Variable	F	(%)
<i>Age</i>		
14th	2	1.08%
15th	87	46.77%
16th	76	40.86%
17th	19	10.22%
18th	2	1.08%
<i>Sex</i>		
Male	80	43.01%
Female	106	56.99%

RESULTS

A total of 186 Muslim students participated in this study, which included 80 male students and 106 female students with ages ranging from 14-18 years ($M = 15.63$; $SD = 0.72$). The results of the descriptive analysis found that the majority of participants were in the sufficient

category of problem-solving and creativity, friendship, and Emotional awareness and coping. On the other hand, as many as 26%-30% of participants are in the low category in each variable. The results of the descriptive analysis can be seen in Table 1.

Results of the research model test

The goodness of fit (GoF) is used to validate the research model. Figure 2 presents the final model path and the hypothetical model shows the accepted goodness of fit assumptions because more than 3 Goodness of Fit index assessments meet the cut-off value. The results explain that the theoretical model can describe the overall role of exogenous variables on mediating variables and endogenous variables. The overall results of the Goodness of Fit Index are shown in Table 2.

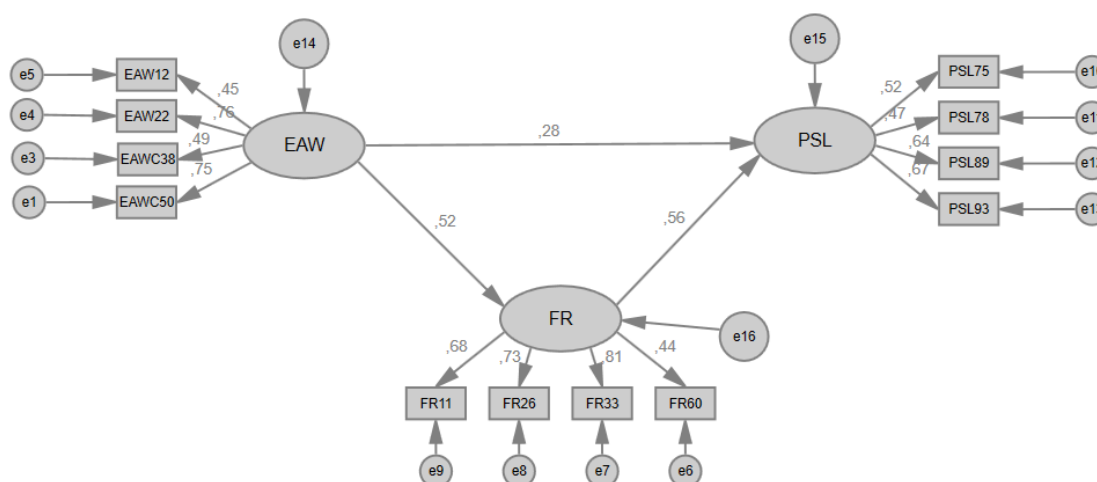


Table 2. The goodness of fit index

Goodness of fit index	Cut-off value	Result	Conclusion
Sig. Probability	≥ 0.05	0.000	Good Fit
CMIN/DF	≥ 2.0	88.631/51	Good Fit
RMSEA	≤ 0.08	0.063	Good Fit
GFI	≥ 0.90	0.933	Good Fit
NFI	≥ 0.90	0.857	Good Fit
CFI	≥ 0.90	0.932	Good Fit
IFI	≥ 0.90	0.934	Good Fit
TLI	≥ 0.90	0.912	Close Fit

Table 3. Hypothesis test results

Path	Coefficient (β)	P value
<i>Direct effect</i>		
Emotional awareness --> Friendship	0.522	0.001
Friendship --> Problem-solving	0.556	
Emotional awareness --> Problem-solving	0.282	0.001
<i>Indirect effect</i>		
Emotional awareness --> Friendship --> Problem-solving	0.201	0.001
<i>Total effect</i>		
Emotional awareness --> Problem-solving	0.572	0.001

The results of the hypothesis test showed that the direct effect of emotional awareness had a significant positive role in friendship ($p = .001 < .05$; $\beta = .522$) and problem-solving ($p = .001 < .05$; $\beta = .282$). In addition, friendship also has a significant positive role in problem-solving and creativity ($p = .001 < .05$; $\beta = .556$). Testing the indirect effects of emotional awareness and coping with problem-solving and creativity through friendship found a

significant contribution ($p = .001 < .05$; $\beta = .201$). The results illustrate that friendship has a partial mediator role in the relationship between emotional awareness and coping with problem-solving and creativity as shown by an increase in coefficient ($p = .001 < .05$; $\beta = .2$). The results of the hypothesis test can be seen in Table 3.

DISCUSSION

This study aims to bridge the gap in the literature by examining the relationship between emotional awareness, friendship quality, and problem-solving skills in Muslim adolescents, a population that has received relatively little attention in developmental psychology research. Specifically, this study focuses on how intrapersonal resources (emotional awareness and coping) and interpersonal resources (quality of friendship) are related to adolescents' ability to face and solve everyday challenges. The results of the analysis show that emotional awareness and coping as well as friendship quality are significantly related to problem-solving skills, both independently and simultaneously, thus supporting the proposed theoretical model.

These findings can be understood through the framework of Emotional Intelligence Theory, which views emotional awareness as a basic ability to recognize, understand, and manage one's emotions. Adolescents with higher levels of emotional awareness tend to be able to interpret challenging situations more adaptively, manage their affective responses, and consider various alternative solutions more flexibly (Hessler & Katz, 2010; Riley et al., 2019). Conversely, low emotional awareness is associated with vulnerability to mental health problems such as depression and anxiety, as individuals experience difficulty interpreting emotional experiences and responding to challenges adaptively (Kranzler et al., 2016; Weissman et al., 2020). In this context, emotional awareness does not act as a direct cause of problem-solving skills, but as a psychological resource that enables adolescents to approach problems with more effective emotional regulation and clearer cognitive processing.

In addition to intrapersonal factors, the quality of friendships also shows a meaningful relationship with adolescents' problem-solving skills. These findings are in line with Social Learning Theory and Ecological Systems Theory, which emphasize that cognitive and emotional skills develop through repeated and meaningful social interactions. Friendships provide emotional and social support that contributes to better mental health and social adjustment. Previous research shows that positive friendships promote empathy, emotional regulation, and prosocial behaviour, while low-quality friendships can increase the risk of loneliness and low self-esteem (Dou et al., 2023; Öztürk & Sumbas, 2023). Thus, positive friendships can be understood as a social arena that facilitates the development of problem-solving skills, without implying a one-way causal relationship.

These findings are consistent with previous studies showing that adolescents with better problem-solving skills tend to be more resilient and less involved in negative behaviours such as bullying (Ersoy, 2016; Viola et al., 2018). Emotional awareness enables adolescents to understand their affective responses when facing problems, while friendship quality provides a social context for discussing and evaluating various alternative solutions. The combination of these two factors is associated with adolescents' ability to manage stress and challenges more adaptively, and contributes to a reduced risk of mental health problems such as depression and anxiety (Suryani et al., 2023). Furthermore, problem-solving skills in the context of friendship play an important role in maintaining relationship satisfaction and emotional well-being, as effective conflict resolution can strengthen social bonds (Morry, 2005; Van Doorn et al., 2011).

When considered in the context of Muslim adolescents in Yogyakarta, these findings take on additional meaning. Islamic values and social norms that emphasize social harmony, self-control (*sabr*), empathy, and collective responsibility (*ukhuwah*) (Handayani et al., 2025; Nuroniah et al., 2025) can shape the way adolescents express emotions, form friendships, and deal with problems. In this context, emotional awareness is expressed through more internalized

emotional regulation, while problem solving is often done through collective discussion and consideration of social impact. Therefore, the relationship between emotional awareness, friendship, and problem-solving skills needs to be understood as a process embedded in a specific cultural and religious framework, rather than as individual characteristics detached from the social context.

Overall, the findings of this study emphasize the importance of considering intrapersonal and interpersonal factors simultaneously in understanding problem-solving skills in adolescents. Using a correlational approach, this study not only concludes causal relationships but also offers a theoretical understanding of how emotional awareness and friendship quality function as interrelated psychosocial resources. Programs that emphasize emotion regulation and problem solving have shown potential in improving adolescents' emotional well-being and adaptive abilities (Hill-Briggs & Gemmell, 2007; Wade et al., 2015). Furthermore, health approaches emphasizing emotional awareness and adaptive coping strategies can support adolescents' long-term well-being and the quality of their social interactions (Myers et al., 2000; Roscoe, 2009). The implications of these findings suggest that interventions focused on strengthening emotional awareness and the quality of peer relationships, particularly those sensitive to cultural and religious contexts, have the potential to support the development of problem-solving skills and adolescent well-being more broadly.

Implications

The findings of this study could have important implications for guidance and counseling practices in senior high schools, particularly in supporting Muslim students. By highlighting the role of emotional awareness and friendship in fostering problem-solving skills, counselors can develop targeted interventions that promote emotional intelligence and healthy peer relationships. Integrating emotional awareness training into the counseling process can help students improve self-regulation, decision-making, and coping strategies, which are essential for handling academic and personal challenges. Additionally, understanding the cultural and religious context of Muslim students allows counselors to offer more personalized guidance, aligning with their values and experiences, ultimately enhancing the effectiveness of counseling interventions.

Limitations and Future Directions

The limitations of this study include limited generalizability due to its focus on specific schools, potentially affecting its applicability to a broader adolescent population. Self-report bias is another concern, as data was collected through questionnaires, which may lead to socially desirable responses. The study's cross-sectional design prevents causal inferences, as it only provides a snapshot of the variables at one point in time. Additionally, the measurement of emotional awareness and friendship quality may not fully capture individual nuances, and confounding factors like family support and mental health were not controlled for, which could affect the results' validity.

Future research could benefit from a longitudinal design to explore causal relationships and from including participants from diverse cultural and socio-economic backgrounds to improve generalizability. Controlling for confounding variables such as family dynamics and mental health would provide clearer insights. Finally, using qualitative methods like interviews could enhance the understanding of adolescents' experiences, providing context to the quantitative findings.

CONCLUSION

This study found significant associations between friendship quality, emotional awareness, and problem-solving skills among adolescents. Adolescents who reported higher

levels of supportive friendship and emotional awareness tended to demonstrate stronger problem-solving skills. These findings suggest that peer relationships and emotional awareness are meaningfully related to adolescents' problem-solving processes within the studied context. However, due to the cross-sectional correlational design, the results should be interpreted as relational rather than causal. The findings contribute to the literature by highlighting the joint relevance of emotional awareness and friendship quality in understanding adolescents' problem-solving skills, particularly within a school-based adolescent population.

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AUTHOR CONTRIBUTION STATEMENT

AM led the study, designing the research and overseeing its execution. RN played a central role in data collection, analysis, and methodology, and also contributed significantly to the interpretation of results and the writing of key sections of the manuscript. DH assisted with data analysis and writing the discussion and results. Bagus Gilang Pratama BGP contributed to data collection and manuscript review. RBH helped with the literature review and final manuscript revision.

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