From Seeking Death to Seeking Life: Development of an Adolescent Life Protective Factors Questionnaire

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Abstract

To further examine protective factors that prevent the evolution of suicidal ideation, the Adolescent Life Protective Factors Questionnaire was developed. Based on preliminary interviews, three sub-questionnaires were constructed: Connection, Rationality, and Suicide Negation. Item analysis, exploratory factor analysis (N=1187) and exploratory factor analysis (N=1057) were conducted to examine the dimensional structure of the questionnaire and test its reliability and validity. The results showed that the internal consistency reliability, split-half reliability, and test-retest reliability coefficients of the three sub-questionnaires of the Adolescent Life Protective Factors ranged between 0.71 and 0.97, with good construct validity, criterion validity, and discriminant validity, and met strong measurement invariance across groups. Therefore, the Adolescent Life Protective Factors Questionnaire can be used for suicide prevention screening in adolescents.

Full Text

From Death to Life: Development of the Adolescent Life Protection Factor Questionnaire

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Abstract

To further investigate protective factors that prevent the evolution of suicidal ideation, we developed the Adolescent Life Protection Factor Questionnaire

(ALPFQ). Based on preliminary interviews, three subscales were initially constructed: connectedness, rationality, and denial of suicide. Item analysis, exploratory factor analysis (N = 1,187), and confirmatory factor analysis (N = 1,057) were conducted to examine the dimensional structure and test reliability and validity. Results indicated that the internal consistency, split-half, and test-retest reliability coefficients for the three ALPFQ subscales ranged from 0.71 to 0.97. The questionnaire demonstrated good structural validity, criterion-related validity, and discriminant validity, and satisfied the requirement of strong measurement invariance across groups. Therefore, the ALPFQ can be used as a screening tool for adolescent suicide prevention.

Keywords: adolescents, life protection factors, questionnaire development, reliability, validity

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Suicide has long been a critical public health issue worldwide, causing tremendous losses (Fang et al., 2024). Data show that more than 700,000 people die by suicide each year globally, making it the third leading cause of death among youth aged 15–24 (WHO, 2024; Hu et al., 2024). In recent years, suicide mortality rates among Chinese adolescents aged 10–24 have shown an upward trend (Xiong et al., 2023). The detection rates of suicidal ideation are 28.0% among middle school students and 25.0% among high school students (Zhang, Jin, & Yu, 2022; Yu, Zhang, & Yu, 2022), while the rate among college students is 16.95% (Zhang, 2024). Notably, suicide accounts for the largest proportion of unnatural deaths among college students, reaching 47.2% (Yang & Li, 2015). Therefore, preventing adolescent suicide is of paramount importance.

With the rise of positive psychology, an increasing number of scholars advocate for suicide prevention approaches that strengthen protective factors and promote proactive prevention (Wang et al., 2015). Suicide prevention relies on early identification and treatment of at-risk individuals (Yang, Hou, & Liu, 2021). However, a significant challenge is that many people who die by suicide are not identified early due to inappropriate assessment and screening methods (Posner et al., 2014). Existing suicide screening tools can be categorized in various ways based on target population, application context, and response format (Xu et al., 2019). Most focus on risk factors, which can lead to stigmatization and social desirability effects in self-report measures. An ideal suicide screening tool should have high sensitivity to identify potentially suicidal individuals and high specificity to accurately assess suicide risk. In suicide risk assessment, balancing risk and protective factors is crucial for obtaining key information (Eileen & Maria, 2020). Traditional risk factor-focused assessments may miss critical information and should not only focus on pathological or risk factors but also on individuals' positive resources and psychological characteristics. Assessments must evaluate both factors that prompt individuals to end their lives and those positive factors that support their will to live (Nie et al., 2013). Therefore, developing screening tools based on protective factors and monitoring and strengthening these factors may be an effective breakthrough

for reducing suicidal ideation and suicide rates among adolescents (Wang et al., 2015).

In summary, developing protective factor-based screening tools can help practitioners understand individuals' protective resources in suicide crisis intervention, enabling timely identification of high-risk individuals with fewer protective factors and implementation of appropriate interventions. This approach transforms passive prevention into proactive response, fundamentally preventing suicide crises. The present study aims to develop a reliable and valid Adolescent Life Protection Factor Questionnaire from a positive prevention perspective, providing a dependable and effective screening tool for adolescent suicide prevention. Previous research has identified connectedness, rationality, and denial of suicide as three important protective factors that block the evolution of suicidal ideation (Xu & Meng, 2023). Accordingly, this study developed three subscales based on these protective factors and examined their reliability and validity.

Method

Participants

Using convenience sampling, questionnaires were distributed to four samples in colleges and universities as needed. Samples 1, 2, and 3 were used for item analysis and exploratory factor analysis of the connectedness, rationality, and denial of suicide subscales, respectively, while Sample 4 was used for confirmatory factor analysis and reliability and validity testing. Details of questionnaire distribution across the four samples are presented in .

Questionnaire Development

Based on preliminary one-on-one interviews with 19 college students, we identified three protective factors—connectedness, rationality, and denial of suicide —through qualitative research and literature review. This process yielded 97 statements about connectedness, 58 about rationality, and 46 about denial of suicide. Two psychometric experts and two psychology graduate students reviewed and revised the items, followed by four college students (two male, two female; two undergraduates, two master' s students) who read and modified each item. Finally, thorough discussions with one psychology expert and two original interview participants ensured content validity. The initial connectedness subscale retained 46 items, the rationality subscale retained 41 items, and the denial of suicide subscale retained 32 items. All items used a 5-point Likert scale ranging from 1 (very uncharacteristic of me) to 5 (very characteristic of me). Subscale scores were calculated by summing item responses, with higher scores indicating stronger protective factors.

Criterion Measures

Connectedness subscale criterion. We used the Chinese version of the Social Connectedness Scale revised by Wu et al. (2022). This 9-item scale uses a 6-point scoring system, with higher scores indicating stronger social connectedness. In this study, the scale' s Cronbach' s α coefficient was 0.904.

Rationality subscale criterion. We employed the positive coping dimension from Xie Yaning' s (1998) Simplified Coping Style Questionnaire, which comprises 12 items using a 4-point scoring system. Higher scores indicate more positive coping strategies. In this study, the Cronbach' s α coefficient was 0.876.

Denial of suicide subscale criterion. We used two dimensions from the Chinese version of the Reasons for Living Scale revised by Deng et al. (2012): fear of suicide and fear of social disapproval, totaling 10 items with 6-point scoring. Higher scores indicate greater fear. In this study, the questionnaire' s Cronbach' s α coefficient was 0.924.

Suicide Risk Assessment

We used the first item of the Suicide Behaviors Questionnaire-Revised (SBQ-R) to assess previous suicide history. Participants reporting previous suicide history were classified as the suicide risk group, while those without such history formed the normal group.

Statistical Analysis

We used SPSS 27.0 for item analysis, exploratory factor analysis, and reliability and validity analysis, and Mplus 8.0 for confirmatory factor analysis and measurement invariance testing.

Results

Item Analysis

Item analysis for the three subscales employed extreme group comparison, item-total correlation, reliability testing, communality, and factor loading. Results indicated that only Item 44 of the connectedness subscale was deleted due to an item-total correlation coefficient below 0.4 and low homogeneity with other items and the overall scale, retaining 45 items. All items in the rationality subscale demonstrated good discrimination and were retained. Item 25 of the denial of suicide subscale was deleted due to low homogeneity with other items and the overall scale.

Exploratory Factor Analysis

We conducted exploratory factor analysis using principal component analysis for factor extraction and varimax orthogonal rotation for factor structure. Items were deleted based on the following criteria: (1) communality less than 0.4; (2)

fewer than three items per factor; (3) maximum factor loading less than 0.45; (4) cross-loadings with absolute values greater than 0.45; and (5) inappropriate item 归属. Only one item was deleted at a time, with factor analysis repeated after each deletion to ensure that the percentage of variance explained by each factor did not change substantially (Jia, Fan, & He, 2022; Wang et al., 2025). The number of factors was determined based on: (1) eigenvalues greater than 1; and (2) extracted factors explaining at least 2% of total variance before rotation.

Exploratory factor analysis was conducted separately for each subscale. Initial results showed KMO coefficients above 0.9 for all three subscales, with significant Bartlett' s test of sphericity ($p < 0.05$). For the connectedness subscale, Items 22, 31, 3, 2, 8, 35, 25, 6, 20, 19, 27, 34, 4, 17, 15, 16, and 21 were sequentially deleted. The final subscale comprised 28 items loading on three factors: family connectedness, self-connectedness, and social connectedness, with a cumulative variance contribution rate of 66.00%. For the rationality subscale, Items 15, 11, 6, 28, 37, 38, 7, 25, 10, 35, 36, 32, and 30 were sequentially deleted, resulting in a final subscale with 28 items loading on four factors: rational cognition, emotion regulation, life primacy, and courage/optimism. For the denial of suicide subscale, Items 17, 1, 13, 12, 20, 7, 9, and 3 were sequentially deleted, yielding a final subscale with 23 items loading on four factors: denial of suicidal behavior, denial of suicide consequences, denial of suicidal emotions, and denial of suicide conditions, with a cumulative variance contribution rate of 71.96%.

Confirmatory Factor Analysis

We used Harman' s single-factor test to assess common method bias in Sample 4. Results indicated 16 factors with eigenvalues greater than 1 before rotation, with the first factor explaining 34.70% of total variance, which did not exceed the 40% threshold. Therefore, no serious common method bias was present (Zhou & Long, 2004).

As shown in , all three subscales demonstrated good model fit: ^{2}/df values were less than 5, RMSEA values were less than 0.08, CFI and TLI values exceeded 0.90, and SRMR values were less than 0.08 (Kline, 2015).

Measurement Invariance Across Groups

We used multi-group confirmatory factor analysis to test measurement invariance of the three subscales across normal and suicide risk groups. We evaluated measurement invariance using ΔTLI, ΔCFI, and ΔRMSEA. When ΔTLI $<$ 0.01, ΔCFI $<$ 0.01, and ΔRMSEA $<$ 0.015 are all satisfied, the invariance model is considered acceptable (Cheung & Rensvold, 2002).

As shown in , , and , the connectedness, rationality, and denial of suicide subscales all demonstrated good fit across groups. Configural, weak, and strong invariance models all satisfied psychometric requirements. Comparisons between weak and configural invariance models and between strong and weak invariance models showed ΔCFI $<$ 0.01, ΔTLI $<$ 0.01, and ΔRMSEA $<$ 0.015, indicating

that strong invariance was supported. Strong invariance is an important condition for comparing means across groups, suggesting that the three subscales can be used for mean difference comparisons.

Reliability Analysis

From Sample 4, we randomly selected 120 college students for test-retest reliability assessment. After two weeks, we administered the questionnaire again to these students, excluding three lost to follow-up, resulting in 117 valid retest participants. The internal consistency coefficients for the three subscales were 0.96, 0.97, and 0.95; split-half reliability coefficients were 0.88, 0.93, and 0.88; and test-retest reliability coefficients were 0.78, 0.78, and 0.71, respectively.

Validity Analysis

Correlations among dimensions within each subscale ranged from 0.61 to 0.74 for connectedness, 0.72 to 0.85 for rationality, and 0.51 to 0.63 for denial of suicide. Correlations between dimensions and total subscale scores ranged from 0.86 to 0.90 for connectedness, 0.90 to 0.96 for rationality, and 0.79 to 0.91 for denial of suicide. All correlations were highly significant, indicating good structural validity.

Connectedness and its dimensions showed significant positive correlations with social connectedness ($r = 0.31$–0.43, $p < 0.01$). Rationality and its dimensions showed significant positive correlations with positive coping ($r = 0.59$–0.69, $p < 0.01$). Denial of suicide and its dimensions showed significant positive correlations with fear of suicide and social disapproval ($r = 0.24$–0.50, $p < 0.01$). These results demonstrate good criterion-related validity.

Additionally, we collected 30 suicide ideators and 30 suicide attempters matched through counseling channels on gender (10 male, 20 female), left-behind status (15 left-behind, 15 non-left-behind), and only-child status (15 only-child, 15 non-only-child). Both groups completed all three subscales. Results showed that suicide ideators scored significantly higher than suicide attempters on connectedness, rationality, and denial of suicide, with effect sizes (d) ranging from 1.51 to 1.53, indicating good discriminant validity.

Discussion

To address limitations of traditional suicide risk assessment, this study adopted a positive development perspective to develop a Life Protection Factor Questionnaire through item analysis, exploratory factor analysis, and confirmatory factor analysis. The resulting questionnaire demonstrates good reliability and validity, with satisfactory model fit that meets psychometric standards.

Previous research has identified connectedness, rationality, and denial of suicide as three important protective factors that block the evolution of suicidal ideation (Xu & Meng, 2023). Connectedness constitutes the first and most important

protective factor in preventing the escalation of suicidal ideation. Rationality and denial of suicide serve as the second and third protective factors, forming "three lines of defense" against the progression from suicidal ideation to suicide attempts.

Connectedness represents the first line of defense throughout the blocking process and is the most crucial protective factor for life preservation. Therefore, in the first stage, the connectedness subscale can be used alongside general mental health screening for comprehensive psychological assessment, establishing the first line of defense for student life protection. If the first line is breached—that is, if students exhibit suicidal ideation that cannot be avoided—the rationality subscale can be administered in the second stage to rescreen students identified in the first stage, activating the second line of defense. If the second line is breached and students fail to cope with suicidal impulses, the denial of suicide subscale can be used in the third stage to evaluate students who have failed to cope, activating the third line of defense. Of course, the effects of connectedness, rationality, and denial of suicide may coexist and interact. Therefore, if conditions permit or in urgent situations, all three subscales can be administered simultaneously to predict the evolution of students' suicidal ideation, promptly block suicidal thoughts, provide timely attention and protection, and create a supportive environment for life growth, thereby reducing the incidence of suicide attempts. This approach can also help schools quickly identify high-risk students requiring psychological crisis intervention, reducing the burden on mental health professionals (Posner et al., 2014).

This study is the first to develop a Life Protection Factor Questionnaire that assesses from a positive perspective whether suicidal ideation may progress to suicide attempts. Connectedness, rationality, and denial of suicide can serve as effective measures of protective factors. The three subscales address gaps in the field by providing comprehensive and integrated measures of protective factors. The subscales can be used individually, simultaneously, or in combination with risk factor scales to provide more comprehensive assessment of the transition from suicidal ideation to suicide attempts. Additionally, using this questionnaire in assessment can help reduce stigma and potential retraumatization associated with risk factor-only assessments (Allen et al., 2021), reduce response distortion due to social desirability bias, highlight personal strengths and resources, and assist crisis interveners in enhancing self-worth and crisis coping abilities. This positive development-based assessment approach is also more compatible with Chinese cultural contexts.

This study developed the Adolescent Life Protection Factor Questionnaire, comprising three subscales: connectedness, rationality, and denial of suicide. The questionnaire demonstrates good reliability and validity, meeting psychometric requirements, and can be used for screening suicidal ideation among college students, providing a reliable and effective tool for college suicide prevention.

References

Allen, J., Rasmus, S. M., Ting Fok, C. C., et al. (2021). Strengths-based assessment for suicide prevention: Reasons for life as a protective factor from Yup' ik Alaska Native youth suicide. *Assessment, 28*, 709-723.

Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling, 9*(2), 233-253.

Deng, Y., Xiong, Y., & Lin, Y. (2012). Application of the Reasons for Living Scale in Chinese college students. *Chinese Journal of Clinical Psychology, 20*(3), 332-335.

Eileen, P., & Maria, A. (2020). Suicide risk assessment and prevention: Challenges and opportunities. *Focus, 18*(2), 88-99.

Fang, S., Zhou, W., Xu, J., Wu, X., & Wang, X. (2024). Reliability and validity analysis of the Suicide Status Form in Chinese clinical samples. *Chinese Journal of Clinical Psychology, 32*(4), 870-874.

Hu, J., He, K., Yin, J., Zhou, D., & Xu, H. (2024). Prediction bias for cooperative movement in depressed adolescents. *Applied Psychology, 30*(06), 503-511.

Jia, X., Fan, F., & He, J. (2022). Development of the Group Counseling Cohesion Questionnaire. *Chinese Journal of Clinical Psychology, 30*(1), 236-240.

Kline, R. (2015). *Principles and practice of structural equation modeling*. Guilford Publications.

Nie, J., Huang, Y., Tong, J., & Wang, Y. (2013). Development of the Chinese College Students' Beliefs About Life Questionnaire. *China Journal of Health Psychology, 21*(5), 4.

Posner, K., Buchanan, J., Amira, L., et al. (2014). *Identification and screening of suicide risk: A concise guide to understanding suicide*. Cambridge, UK: Cambridge University Press.

Wang, L., Xian, Y., Che, D., & Bai, Y. (2025). Development of the Civil Aviation Pilot Risk Attitude Scale. *Applied Psychology*, 1-17. http://kns.cnki.net/kcms/detail/33.1012.B.20240926.1340.005.html

Wang, W., Zhao, J., Yin, Y., Zhang, D., Liu, W., Li, L., & Wu, X. (2015). Development and psychometric testing of the Military Suicide Protective Factors Rating Scale. *China Journal of Health Psychology, 23*(6), 920-924.

World Health Organization. (2024). *Suicide*. https://www.who.int/en/news-room/fact-sheets/detail/suicide/

Wu, C., Wang, T., Duan, W., Wang, W., & Sun, Q. (2022). Reliability and validity of the Chinese version of the Social Connectedness Scale. *Journal of Xi'an Jiaotong University (Medical Sciences), 43*(4), 496-502.

Xie, Y. (1998). A preliminary study on the reliability and validity of the Simplified Coping Style Questionnaire. *Chinese Journal of Clinical Psychology,* (2).

Xiong, Y., Wang, H., Guan, Y., Lu, D., Gesang, Q., Yuan, L., Wang, W., Yan, H., & Yu, B. (2023). Trends in suicide mortality among Chinese population aged 10–24 from 2005 to 2020: An age-period-cohort model analysis. *Journal of Guangxi Medical University, 40*(4), 676-681.

Xu, K., Hu, D., Tan, R., Ding, X., Teng, F., Zhou, Y., & Wang, S. (2019). Research progress on suicide risk screening and assessment in patients. *Chinese Journal of Nursing, 54*(3), 467-471.

Xu, S., & Meng, Y. (2023). From death to life: Protective factors blocking the evolution from suicidal ideation to suicide attempts. *Psychological Science, 46*(4), 991-998.

Yang, L., & Li, Y. (2015). Analysis of unnatural death among college students. *Psychology and Behavior, 13*(5).

Yang, L., Hou, X., & Liu, H. (2021). Development and psychometric testing of the Suicide Behavior Screening Questionnaire. *Chinese Journal of Clinical Psychology, 29*(6), 1175-1181.

Yu, X., Zhang, Y., & Yu, G. (2022). A meta-analysis of mental health problem detection rates among Chinese mainland high school students from 2010 to 2020. *Advances in Psychological Science, 30*(5), 978-990.

Zhang, P., Wang, P., Zhang, W., Zhang, L., & Zhang, D. (2024). Relationships among suicidal ideation, parent-child attachment, peer attachment, and meaning in life among college students. *Chinese Mental Health Journal, 38*(7), 618-624.

Zhang, Y. (2024). The relationship between college students' suicidal ideation and parent-child attachment, peer attachment, and sense of life meaning. *Chinese Mental Health Journal, 38*(7), 618-624.

Zhang, Y., Jin, J., & Yu, G. (2022). A meta-analysis of mental health problem detection rates among Chinese mainland middle school students from 2010 to 2020. *Advances in Psychological Science, 30*(5), 965-977.

Zhou, H., & Long, L. (2004). Statistical test and control methods for common method biases. *Advances in Psychological Science,* (6).

Note: Figure translations are in progress. See original paper for figures.