



Existential isolation and suicidal ideation among college students: The mediating effect of entrapment and the moderating effect of authenticity

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Abstract: Objective: To examine the influence of existential isolation on suicidal ideation among college students, as well as the mediating effect of entrapment and the moderating effect of authenticity. **Method:** A total of 1694 Chinese college students (67.06% female; mean age = 20.01 ± 1.37 years) were recruited as participants. Data were collected using the Existential Isolation Scale, Suicide Behavior Screening Questionnaire (SBSQ), Entrapment Scale and Authenticity Scale. With demographic covariates such as gender and age held constant, the bias-corrected bootstrap method was adopted to test the mediating and moderating effects. **Results:** (1) Existential isolation was a significant positive predictor of suicidal ideation among college students. (2) Entrapment had a significant mediating effect linking existential isolation to suicidal ideation. (3) Authenticity exerted a significant moderating effect on the relationships between existential isolation and suicidal ideation, existential isolation and entrapment, as well as entrapment and suicidal ideation. **Conclusions:** Existential isolation has both a direct impact on suicidal ideation and an indirect impact through entrapment. Higher levels of existential isolation are associated with stronger entrapment among college students, which in turn increases their suicidal ideation. High authenticity can not only weaken the effects of existential isolation on entrapment and suicidal ideation, but also reduce the adverse impact of entrapment on suicidal ideation.

Keywords: existential isolation; suicidal ideation; entrapment; authenticity

Introduction

College students are exactly within this high-risk age group for suicide, often with suicidal ideation. Suicidal ideation describes a person's mental ruminations, whether active or passive, about taking their own life (Kremeike et al., 2021; Nock et al., 2008; Livengood & Parris, 1992). Such thoughts are generally regarded as an early warning signal of suicidal behavior and a key indicator for predicting suicidal attempts and suicide fatalities (Stanley et al., 2018). College students go through a vital developmental phase where they step out of their families' shelter and shift toward autonomous daily life. The unfamiliar and complex external environment, as well as the restructuring of novel social relationships, may all exacerbate their experience of existential isolation (Zhang et al., 2018). Therefore, a systematic analysis that explores risk and protective factors connected to the emergence of suicidal ideation carries substantial practical value for the precise detection of suicidal behaviors and the delivery of timely preventive support among college students.

Existential isolation and suicidal ideation

Existential psychology posits that loneliness is one of the core propositions concerning the fundamental nature of human existence (Cunha et al., 2024). Prior empirical research has largely centered on the impact of interpersonal loneliness on suicide risk. For example, in their empirically expanded version of the interpersonal theory of suicide, Tucker et al. (2017) classified interpersonal loneliness as a core suicide risk component under "thwarted belongingness". Beyond interpersonal loneliness, however, individuals may also go through a more

profound type of "existential isolation". This construct defines the subjective perception that one's inner emotional experiences, personal feelings, and life events cannot be shared with other individuals or genuinely understood by them (Brown et al., 2021). In studies examining the characteristics and psychological consequences of loneliness, it has been conceptualized as an "insurmountable barrier between human beings" (Long et al., 2021). Existing research has demonstrated that existential isolation holds a notable inverse link to self-esteem and subjective well-being, and exhibits a significant positive correlation with depressive and anxious symptoms (Mazurek, 2013; Zhu et al., 2022). Multiple empirical investigations have also identified a strong associative bond linking existential isolation to suicidal ideation (Lamis et al., 2014; McClelland et al., 2020). Nevertheless, the specific underlying mechanism through which existential isolation influences suicidal ideation, along with how it interacts with other risk and protective factors linked to suicide, remains to be systematically and thoroughly explored. This constitutes one of the core focuses of the current investigation.

The mediating effect of entrapment

Existing studies based on the Integrated Motivation-Volitional Model clearly suggest that entrapment significantly predicts suicidal ideation (De Beurs et al., 2019). Entrapment is a complex cognitive-affective state, referring to the psychological experience in which individuals urgently wish to escape from adverse external circumstances and negative internal states, yet subjectively feel unable to break free or find a way out (Briggs & Fronek, 2019; Cramer et al., 2019). The core feature of



existential isolation is exactly the non-shareability of one's inner experience.

The moderating effect of authenticity

The formation of suicidal ideation represents a multi-layered progression shaped by the mutual interaction of diverse psychosocial factors. Not all individuals with high levels of existential isolation will develop entrapment or even suicidal ideation. Identifying and examining the protective factors involved is of critical value for the precise identification and targeted prevention of suicidal ideation. In recent years, authenticity, as a key safeguard that sustains physical and psychological well-being, has attracted extensive attention in academic circles (Boyd et al., 2025; Baker et al., 2017; Sutton, 2019). It is widely characterized as the extent to which an individual's overt behaviors correspond to their inner convictions, core value systems, intrinsic drives, as well as stable personality dispositions (Jongman-Serenio & Leary, 2020). Existing research has demonstrated that authenticity displays a prominent positive correlation with problem-oriented coping tactics, alongside a marked inverse correlation with emotion-oriented coping and maladaptive coping styles (e.g., emotional catharsis, blame-shifting, passive denial, etc.) (Kernis & Goldman, 2006). The above evidence indicates that individuals with high authenticity can establish a stable connection with their true self, face current difficulties and challenges directly, and actively seek solutions rather than falling into irrational emotional reactions.

Theoretical basis

Consistent with the State-Trait Existential Isolation Model, when individuals realize that their experiences are essentially isolated and cannot be communicated or shared with others, they are highly prone to feelings of helplessness and hopelessness, accompanied by behavioral withdrawal and other responses (Arvidsson et al., 2015). Empirical evidence also shows that existential isolation can further amplify and exacerbate individuals' negative psychological distress (Sharp et al., 2022; Morr et al., 2022).

The Self-Enhancement Framework of Authenticity (Guenther et al., 2023) states that authenticity can activate an individual's self-enhancement effect and encourage them to view and evaluate themselves from a more positive perspective. Prior empirical investigations have proven that authenticity is capable of alleviating the adverse influences of interpersonal loneliness on depression, anxiety, and somatic symptoms (Borawski, 2019; Bryan et al., 2015). As a more profound form of loneliness, whether the negative influence of existential isolation on individual mental health is similarly buffered by authenticity remains unclear in the current literature. This also constitutes an issue that the present study aims to explore. Drawing on self-determination theory (Ryan & Deci, 2020), relatedness stands as one of humans' fundamental psychological requirements; people possess an inherent inclination to establish emotional connections with other people, and existential isolation may indicate that this psychological need is not effectively met (McKenna-Plumley et al., 2023).

The China context

Suicide has become the leading trigger of non-natural fatalities for Chinese college students (Fang et al., 2019). For instance, a meta-analytic review also documented that the prevalence of suicidal ideation among Chinese undergraduates reached 10.72% (Li et al., 2014). When discussing mental health status within Chinese universities, contemporary college students are confronted with multifaceted accumulated psychological stress originating from academic competition, further education and employment pressure, interpersonal conflicts and confusion over self-identity, which collectively exacerbate their psychological vulnerability (Zhang et al., 2025). Consequently, suicide-related risks have become an important concern of university mental health prevention and intervention (Liang et al., 2022; Chu et al., 2021). Compared with other adolescent groups, college students are more likely to live apart from their family support systems and cope with life and psychological difficulties independently. Long-term cumulative negative emotions are likely to trigger adverse psychological experiences, which create practical conditions for the onset of suicidal ideation and render students a critical population for suicide risk management.

Existing empirical studies on college student suicide mostly focus on common risk factors such as depression and interpersonal alienation (Yao et al., 2023; Li et al., 2022; Shi et al., 2020). Empirical investigations targeting deep-seated implicit psychological distress represented by existential isolation remain relatively scarce. Conventional mental health interventions at Chinese universities primarily focus on the relief of overt emotional problems (Caldarelli et al., 2024), yet overlook existential psychological predicaments in which individuals fail to receive external empathy and achieve intrapersonal reconciliation. The specific manifestations and intervention routes of relevant psychological mechanisms within the Chinese cultural context remain to be systematically clarified. Accordingly, based on the growth environment and psychological traits of Chinese college students, exploring the internal pathways via which existential isolation leads to suicidal ideation and identifying the modifiable mediating factor of entrapment and the protective factor of authenticity can meet the practical requirements of precise suicide risk prevention at Chinese universities and provide novel empirical evidence and actionable guidance for mental health interventions among students.

The present study

The present study utilized a moderated mediation model to test the effect of existential isolation on suicidal ideation among undergraduates, as well as the mediating effect of entrapment and the moderating effect of authenticity. Specific research hypotheses were proposed as follows (see Figure 1 for conceptual model):

Hypothesis 1: Existential isolation correlates positively with higher suicidal ideation among college students.

Hypothesis 2: Entrapment plays a mediating role between existential isolation and suicidal ideation, such that higher levels of entrapment resulting from existential isolation predict increased suicidal ideation risk.

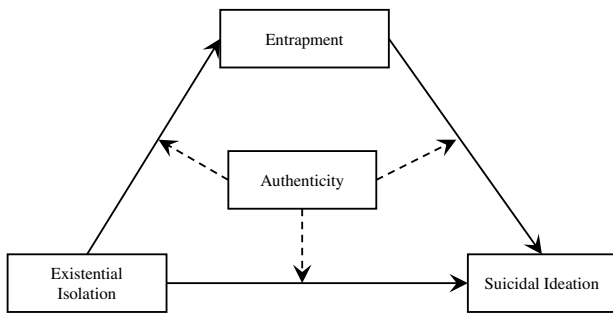


Figure 1. Hypothesized model

Hypothesis 3: Authenticity moderates the relationships between existential isolation and suicidal ideation, existential isolation and entrapment, as well as entrapment and suicidal ideation. Specifically, higher levels of authenticity will attenuate the positive predictive effects of existential isolation on entrapment, existential isolation on suicidal ideation, and entrapment on suicidal ideation among college students.

Methods

Participants and setting

This study recruited 1694 undergraduates across four universities in Shanghai and Shaanxi Province. All enrolled participants were aged 17 to 30 years, with a mean age of 20.01 ± 1.37 years. Within this sample pool, 558 were male (32.94%) and 1136 were female (67.06%).

Measures

Existential isolation

Existential isolation was measured via the Chinese version of the Existential Isolation Scale (EIS), originally developed by Pinel et al. (2016) and revised to fit Chinese cultural backgrounds by Yin et al. (2024). This scale comprises 6 items rated on a 10-point Likert scale extending from 1 (strongly disagree) to 10 (strongly agree). Higher total scores stand for more severe existential isolation. Example items include: “I often feel that no one truly understands my inner experiences” and “My personal experiences are unique and cannot be shared with others”. The confirmatory factor analysis (CFA) produced these model fit statistics: TLI = 0.918; CFI = 0.942; SRMR = 0.037; RMSEA = 0.059. Furthermore, the Cronbach’s α coefficient of the EIS within this study reached 0.805.

Entrapment

Entrapment was evaluated using the 4-item brief Chinese Entrapment Scale, which Gong et al. (2019) verified for applicability among Chinese samples. This measure adopts a 5-point Likert scale with scores ranging from 0 (not at all) to 4 (very much). Elevated total scores indicate stronger feelings of entrapment. Example items include: “I feel trapped in my current situation” and “I can see no way out of my difficulties”. The confirmatory factor analysis (CFA) outputs showed adequate goodness-of-fit for the measurement model, delivering these fit statistics: TLI = 0.925; CFI = 0.936; SRMR = 0.067;

RMSEA = 0.055. Additionally, the Cronbach’s α coefficient of this scale within the investigation reached 0.851.

Authenticity

Authenticity was assessed with the Chinese adaptation of the Authenticity Scale (AS), originally developed by Wood et al. (2008) and translated into Chinese by Song et al. (2020). This 12-item scale comprises three dimensions: authentic living, self-alienation, and accepting external influence. Every statement is rated on a 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree); higher total scores stand for higher levels of authenticity. Example items include: “I live in accordance with my values and beliefs” and “My true self is different from how I appear to other people”. The results from the confirmatory factor analysis (CFA) showed satisfactory model fit, with these fit statistics: TLI = 0.947; CFI = 0.965; SRMR = 0.041; RMSEA = 0.053. Furthermore, the Cronbach’s α coefficient reached 0.846 for the full scale, while the three subscales obtained coefficients of 0.792, 0.768, and 0.751, respectively.

Suicidal ideation

Suicidal ideation was measured with the Suicide Behavior Screening Questionnaire (SBSQ), which Yang et al. (2021) designed and verified for application within Chinese cultural settings. Consistent with the original validation research, only the first two items of the SBSQ were used to measure suicidal ideation. Every single statement is rated on an 8-point Likert scale spanning 0 (never) to 7 (every day); higher aggregate scores signal more severe suicidal ideation. Example items include: “In the past month, have you had thoughts of ending your life?” and “In the past month, have you made any plans to commit suicide?”. The confirmatory factor analysis (CFA) outputs yielded satisfactory goodness-of-fit for the suicidal ideation subscale, delivering these fit statistics: TLI = 0.941; CFI = 0.955; SRMR = 0.039; RMSEA = 0.061. Furthermore, the Cronbach’s α coefficient of this suicidal ideation subscale within this research reached 0.862.

Procedure

This research was approved by the Ethics Committee of Shaanxi Normal University (No. HR2025-11-03). All participants provided informed consent, and strict confidentiality was ensured throughout the study. Taking part in this survey was optional; data were gathered anonymously via an online questionnaire system, and respondents reserved the right to quit the survey at any moment with no negative repercussions.

Data analysis

For data analysis, SPSS 27.0 was utilized to conduct common method bias test, descriptive statistics, and correlation analysis. Mediating and moderating pathways were tested through the PROCESS macro v4.2 developed for SPSS (Hayes, 2022). Prior to constructing interaction terms, all independent and moderating variables underwent mean centering automatically within PROCESS to minimize multicollinearity and ensure the interpretability of interaction coefficients. The significance of all effects

Table 1. Descriptive statistics and correlation analysis results (N = 1694)

No.	Variables	<i>M</i>	<i>SD</i>	1	2	3	4
1	Existential isolation	19.83	4.97	—			
2	Entrapment	3.05	3.82	0.42***	—		
3	Authenticity	58.42	9.68	−0.27***	−0.52***	—	
4	Suicidal ideation	1.47	1.93	0.32***	0.41***	−0.27***	—

Note. *** $p < 0.001$.

was evaluated via the bias-corrected bootstrap technique using 5000 resamples, and 95% bias-corrected confidence intervals (CIs) were computed and reported. In addition, 95% percentile confidence intervals were also tested. The significance conclusions for all effects were completely consistent across the two types of confidence intervals. Therefore, the results of bias-corrected CIs were finally reported to obtain more robust statistical inferences.

Common method bias test

Since all data were gathered via participants' self-reported questionnaires, latent common method variance may distort the research outcomes. Therefore, Harman's single-factor test was adopted to detect common method bias. According to the classical criterion proposed by Podsakoff et al. (2003), such bias will not be regarded as severe when the explanatory variance of the initial unrotated exploratory factor stays below 40%. All scale items in this study were included for unrotated principal component analysis. The findings revealed that six common factors with eigenvalues exceeding 1 were extracted. The primary factor only explained 27.35% of overall variance, a value far beneath the 40% cut-off standard. This result illustrated no serious common method bias emerged within the present research. Such analytical outcomes indicate that common method bias is not a prominent concern for the investigation and is unlikely to distort the observed relationships between variables or compromise the validity of our core conclusions.

First, Model 4 of the PROCESS macro v4.2 for SPSS (Hayes, 2022) was adopted to examine the mediating pathway of entrapment linking existential isolation to suicidal ideation, with gender and age entered as control variables. To comprehensively present model effects, this study reported both unstandardized coefficients (*B*) and standardized coefficients (β). Next, Model 59 of the PROCESS macro v4.2 for SPSS (Hayes, 2022) was utilized to examine the moderating role of authenticity in the model, with gender and age taken as control variables.

Results

Descriptive statistics and correlation analysis

Correlation analyses revealed the patterns of associations among variables: Existential isolation displayed prominent positive correlations with entrapment and suicidal ideation, while holding a marked inverse link to authenticity. Authenticity was significantly negatively associated with entrapment and suicidal ideation, respectively. In addition, entrapment exhibited a strong positive correlation with suicidal ideation. Detailed results are presented in Table 1.

Test of the moderated mediation model

Existential isolation effects on suicidal ideation

As presented in Table 2, existential isolation exerted a notable positive total predictive impact on suicidal ideation ($B = 0.28$, $SE = 0.02$, $t = 14.01$, $p < 0.001$, 95% CI [0.25, 0.32], $\beta = 0.32$). This illustrates that elevated existential isolation corresponds to more intense suicidal ideation among college students. Therefore, Hypothesis 1 was supported.

Entrapment mediation

After incorporating entrapment as the mediating variable, existential isolation significantly and positively predicted entrapment ($B = 0.32$, $SE = 0.02$, $t = 15.98$, $p < 0.001$, 95% CI [0.29, 0.35], $\beta = 0.42$) as well as suicidal ideation ($B = 0.16$, $SE = 0.02$, $t = 7.96$, $p < 0.001$, 95% CI [0.12, 0.20], $\beta = 0.19$). Moreover, entrapment significantly and positively predicted suicidal ideation ($B = 0.37$, $SE = 0.03$, $t = 12.33$, $p < 0.001$, 95% CI [0.32, 0.42], $\beta = 0.33$). Results from the bias-corrected bootstrap test using 5000 resamples uncovered a meaningful indirect effect of entrapment ($B = 0.12$, $SE = 0.01$, 95% CI [0.10, 0.14], $\beta = 0.13$). Consistent with the above findings, the direct effect was also statistically significant ($B = 0.16$, $SE = 0.02$, 95% CI [0.12, 0.20], $\beta = 0.19$). This mediating pathway accounted for 40.63% of the overall standardized total effect. This finding indicated that nearly two-fifths (40.63%) of the total effect of existential isolation on college students' suicidal ideation was realized via the indirect path of existential isolation $\rightarrow$ entrapment $\rightarrow$ suicidal ideation, and the remaining effect was reflected via the direct influence of existential isolation. Thus, Hypothesis 2 was supported.

Authenticity moderation

The corresponding results are shown in Table 3. Authenticity had a significant negative predictive effect on suicidal ideation ($B = -0.03$, $SE = 0.01$, $t = -2.77$, $p < 0.01$, 95% CI [−0.05, −0.01], $\beta = -0.14$). The interaction term between existential isolation and authenticity exerted a notable predictive effect on suicidal ideation ($B = -0.005$, $SE = 0.002$, $t = -2.58$, $p < 0.01$, 95% CI [−0.009, −0.002], $\beta = -0.14$). Similarly, the interaction term between entrapment and authenticity also significantly predicted suicidal ideation ($B = -0.005$, $SE = 0.002$, $t = -2.59$, $p < 0.01$, 95% CI [−0.009, −0.001], $\beta = -0.11$). Authenticity significantly and negatively predicted entrapment ($B = -0.17$, $SE = 0.01$, $t = -16.99$, $p < 0.001$, 95% CI [−0.19, −0.15], $\beta = -0.43$), and the

Table 2. Results of mediating effect test

Path	B	SE	t	95%CI	β
Existential Isolation $\rightarrow$ Entrapment	0.32	0.02	15.98***	[0.29, 0.35]	0.42
Entrapment $\rightarrow$ Suicidal Ideation	0.37	0.03	12.33***	[0.32, 0.42]	0.33
Total effect: Existential Isolation $\rightarrow$ Suicidal Ideation	0.28	0.02	14.01***	[0.25, 0.32]	0.32
Direct effect: Existential Isolation $\rightarrow$ Suicidal Ideation	0.16	0.02	7.96***	[0.12, 0.20]	0.19
Indirect effect: Existential Isolation $\rightarrow$ Entrapment $\rightarrow$ Suicidal Ideation	0.12	0.01	—	[0.10, 0.14]	0.13

Note. $n = 1694$; B = unstandardized coefficient, β = standardized coefficient. The indirect effect was tested via the bias-corrected Bootstrap method (5000 resamples), with t-values and p-values not reported; *** $p < 0.001$.

Table 3. Results of the moderated mediation model

Predictor	Eq. (1): Entrapment					Eq. (2): Suicidal Ideation				
	B	SE	t	95% CI	β	B	SE	t	95% CI	β
Gender	0.24	0.43	0.57	[−0.59, 1.08]	0.03	0.25	0.37	0.66	[−0.49, 0.98]	0.06
Age	0.11	0.04	2.69**	[0.03, 0.19]	0.04	−0.04	0.06	−0.74	[−0.15, 0.07]	−0.03
Existential Isolation	0.25	0.02	12.49***	[0.22, 0.28]	0.32	0.18	0.02	8.98***	[0.13, 0.22]	0.20
Authenticity	−0.17	0.01	−16.99***	[−0.19, −0.15]	−0.43	−0.03	0.01	−2.77**	[−0.05, −0.01]	−0.14
Existential Isolation $\times$ Authenticity	−0.007	0.001	−7.01***	[−0.009, −0.005]	−0.09	−0.005	0.002	−2.58**	[−0.009, −0.002]	−0.14
Entrapment						0.31	0.03	10.33***	[0.26, 0.37]	0.30
Entrapment $\times$ Authenticity						−0.005	0.002	−2.59**	[−0.009, −0.001]	−0.11
R ²	0.38					0.22				
F	219.47***					73.58***				

Note. $N = 1694$; ** $p < 0.01$, *** $p < 0.001$. B = unstandardized coefficient, β = standardized coefficient.

interaction term between existential isolation and authenticity significantly predicted entrapment ($B = -0.007$, $SE = 0.001$, $t = -7.01$, $p < 0.001$, 95% CI $[-0.009, -0.005]$, $\beta = -0.09$). These results suggested that authenticity exerted a significant moderating effect not only on the direct pathway from existential isolation to suicidal ideation, but also on the relationships between existential isolation and entrapment (the first half of the mediating path) and between entrapment and suicidal ideation (the second half of the mediating path).

These regression findings verified the proposed moderated mediation model of this study. To intuitively demonstrate the relationships among all variables, the standardized path coefficients derived from statistical tests were summarized in Figure 2.

Finally, simple slope analysis was adopted to further interpret the three significant interaction effects. Following the conventional grouping criteria adopted in relevant studies, participants were categorized into high and low groups using the mean $\pm$ one standard deviation of scores on the authenticity scale. In the present investigation, the average score of authenticity was $M = 58.42$ and $SD = 9.68$. Accordingly, the critical value for the low authenticity group was 48.74 ($M - 1SD$), and that for the high authenticity group was 68.10 ($M + 1SD$).

To clearly illustrate the mathematical relationships between interaction coefficients and simple slopes, strict derivations were conducted based on regression equations. For the multiple regression model containing the independent variable X , moderator variable M and interaction term

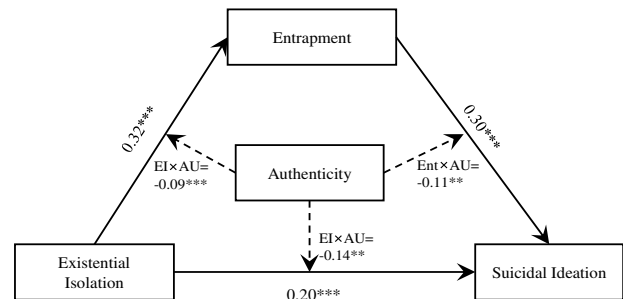


Figure 2. Tested moderated mediation model with standardized coefficients. Note. Solid lines indicate significant direct and mediating paths, while dashed lines represent significant moderating effects. EI = Existential Isolation, AU = Authenticity, Ent = Entrapment. Values on the paths are standardized β coefficients. All corresponding unstandardized coefficients (B), standard errors (SE), t-values, and 95% confidence intervals (CIs) are fully reported in Table 3. ** $p < 0.01$, *** $p < 0.001$.

$X \times M$, the unstandardized regression equation was written as: $Y = b_0 + b_1X + b_2M + b_3X \times M + \sum b_kC_k + \varepsilon$. In this equation, b_0 is the intercept, b_1 represents the main effect coefficient of X , b_2 is the main effect coefficient of M , b_3 refers to the coefficient of the $X \times M$ interaction term, C_k denotes control variables, and ε stands for the residual term. The equation was rearranged with X as the core independent variable: $Y = (b_0 + b_2M + \sum b_kC_k) + (b_1 + b_3M)X$. When the moderator variable M was assigned a fixed value M_0 , the unstandardized simple slope of X predicting Y was defined as: $B_{simple} = b_1 + b_3 \times M_0$.

Relevant calculation rules are specified as follows. Firstly, in the calculation of unstandardized simple slopes, centralized values of M_0 (i.e., $M_0 = M_{raw} - M$) should be used. All main variables in this study were pre-centered, so the mean value of authenticity (AU) was zero. The corresponding centralized values for groups at $M \pm 1SD$ were $M_{0,low} = -SD_{AU} = -9.68$ and $M_{0,high} = +SD_{AU} = +9.68$. Secondly, for standardized simple slopes, all variables were transformed to Z-scores that hold a zero mean and a unit standard deviation, so no extra centering was needed. The M_0 values corresponding to high and low groups were directly set as +1 and -1. Under this circumstance, the standardized simple slope was calculated by the formula: $\beta_{simple} = \beta_1 + \beta_3 \times M_0$, in which β_1 is the standardized main effect coefficient of X and β_3 is the standardized coefficient of the $X \times M$ interaction term. Based on the above formulas, simple slopes of the three moderating paths were calculated separately. Their statistical significance was verified via standard errors (SE) and 95% bias-corrected confidence intervals (CIs) derived from the PROCESS macro v4.2 for SPSS (Hayes, 2022). The specific analytical outputs are shown below.

For the path from existential isolation to entrapment, authenticity exerted moderating effects, and the specific calculations are presented below. Unstandardized calculation: $B_{simple} = 0.25 + (-0.007) \times (-9.68) = 0.318$ for the low authenticity group; $B_{simple} = 0.25 + (-0.007) \times 9.68 = 0.182$ for the high authenticity group. Standardized calculation: $\beta_{simple} = 0.32 + (-0.09) \times (-1) = 0.41$ for the low authenticity group; $\beta_{simple} = 0.32 + (-0.09) \times 1 = 0.23$ for the high authenticity group. Verification: The group difference in slope $\Delta B = 0.136$, which is exactly equal to the interaction term coefficient multiplied by two standard deviations ($2 \times 9.68 \times |-0.007| = 0.136$), confirming accurate calculation results.

For the path from entrapment to suicidal ideation, authenticity exerted moderating effects, and the specific calculations are presented below. Unstandardized calculation: $B_{simple} = 0.31 + (-0.005) \times (-9.68) = 0.358$ for the low authenticity group; $B_{simple} = 0.31 + (-0.005) \times 9.68 = 0.262$ for the high authenticity group. Standardized calculation: $\beta_{simple} = 0.30 + (-0.11) \times (-1) = 0.41$ for the low authenticity group; $\beta_{simple} = 0.30 + (-0.11) \times 1 = 0.19$ for the high authenticity group. Verification: The group difference in slope $\Delta B = 0.096$ was fully consistent with the value obtained by multiplying the interaction term coefficient by two standard deviations ($2 \times 9.68 \times |-0.005| = 0.096$).

For the direct path from existential isolation to suicidal ideation, authenticity exerted moderating effects, and the specific calculations are presented below. Unstandardized calculation: $B_{simple} = 0.18 + (-0.005) \times (-9.68) = 0.228$ for the low authenticity group; $B_{simple} = 0.18 + (-0.005) \times 9.68 = 0.132$ for the high authenticity group. Standardized calculation: $\beta_{simple} = 0.20 + (-0.14) \times (-1) = 0.34$ for the low authenticity group; $\beta_{simple} = 0.20 + (-0.14) \times 1 = 0.06$ for the high authenticity group. Verification: The group difference in slope $\Delta B = 0.096$ was also in line with the above calculation result.

Detailed statistical results of all simple slopes and group differences are presented in Table 4. The results illustrated that the simple slopes of both high and low groups were significantly positive across the three paths ($p < 0.001$). Additionally, none of the 95% CI of all group differences contained zero, which further verified the statistical significance of the moderating effect of authenticity. Overall, higher levels of authenticity among college students could weaken the predictive influence of existential isolation on entrapment and suicidal ideation, alongside the predictive impact of entrapment on suicidal ideation. Such findings were consistent with the research hypotheses.

The specific predictive effects are presented according to the actual levels of the high and low authenticity subgroups. (1) At low authenticity levels, existential isolation significantly and positively predicted suicidal ideation ($B = 0.228$, $SE = 0.029$, 95% CI [0.171, 0.285], $\beta_{simple} = 0.34$, $t = 7.86$, $p < 0.001$). At high authenticity levels, such predictive effect of existential isolation on suicidal ideation diminished substantially ($B = 0.132$, $SE = 0.027$, 95% CI [0.079, 0.185], $\beta_{simple} = 0.06$, $t = 4.89$, $p < 0.001$). (2) At low authenticity levels, entrapment had a significant positive predictive effect on suicidal ideation ($B = 0.358$, $SE = 0.035$, 95% CI [0.289, 0.427], $\beta_{simple} = 0.41$, $t = 10.23$, $p < 0.001$). When authenticity levels were high, the predictive influence of entrapment on suicidal ideation decreased remarkably ($B = 0.262$, $SE = 0.032$, 95% CI [0.199, 0.325], $\beta_{simple} = 0.19$, $t = 8.19$, $p < 0.001$). (3) At low authenticity levels, existential isolation significantly and positively predicted entrapment ($B = 0.318$, $SE = 0.021$, 95% CI [0.277, 0.359], $\beta_{simple} = 0.41$, $t = 15.14$, $p < 0.001$). At high authenticity levels, the predictive power of existential isolation on entrapment was obviously attenuated ($B = 0.182$, $SE = 0.018$, 95% CI [0.147, 0.217], $\beta_{simple} = 0.23$, $t = 10.11$, $p < 0.001$). Taken together, these findings supported Hypothesis 3.

Discussion

First, findings from the current investigation indicated that existential isolation had a substantial positive predictive influence on suicidal ideation, thereby supporting Hypothesis 1. This result aligns with prior related research (Zhu et al., 2022; McClelland et al., 2020), further enriches the psychological theory of suicide, and confirms that existential isolation is a key predictor of suicidal ideation among students. As a profound experience of loneliness, existential isolation stems from individuals' perception of their unique and irreplaceable personal life experiences. Existing research has shown that the activation of existential isolation perception significantly increases individuals' accessibility to death-related cognitions (Helm et al., 2018). Such psychological processes can contribute to the emergence of suicidal ideation.

Second, the findings of this research showed that entrapment exerted a mediating effect between existential isolation and suicidal ideation. Existential isolation can intensify suicidal ideation by inducing individuals' sense of entrapment. People suffering from severe existential isolation tend to view their experiences as difficult for others

Table 4. Results of simple slope and group difference tests for each moderating path

Moderating path	Authenticity level	B	SE	95% CI	β	t	p
Existential Isolation → Entrapment	Low (M – 1SD)	0.318	0.021	[0.277, 0.359]	0.41	15.14	<0.001
	High (M + 1SD)	0.182	0.018	[0.147, 0.217]	0.23	10.11	<0.001
	Group difference	0.136	0.019	[0.099, 0.173]	–	7.16	<0.001
Entrapment → Suicidal Ideation	Low (M – 1SD)	0.358	0.035	[0.289, 0.427]	0.41	10.23	<0.001
	High (M + 1SD)	0.262	0.032	[0.199, 0.325]	0.19	8.19	<0.001
	Group difference	0.096	0.038	[0.021, 0.171]	–	2.53	0.011
Existential Isolation → Suicidal Ideation	Low (M – 1SD)	0.228	0.029	[0.171, 0.285]	0.34	7.86	<0.001
	High (M + 1SD)	0.132	0.027	[0.079, 0.185]	0.06	4.89	<0.001
	Group difference	0.096	0.037	[0.023, 0.169]	–	2.59	0.010

Note. B = unstandardized coefficient, β = standardized coefficient. The group difference was calculated as the slope of the low authenticity group minus the slope of the high authenticity group. All confidence intervals were 95% bias-corrected CIs generated by the bootstrap method with 5000 resamples.

to understand and have no one to confide in, leaving them in a state of psychological isolation. When confronted with stressful events, such individuals are more likely to fall into self-isolation, lack effective coping strategies, and thus feel trapped in dilemmas with no feasible solutions. These findings are in line with the Integrated Motivation-Volitional Model (O'Connor & Kirtley, 2018), which conceptualizes suicide as the only way to escape from current predicaments. Meanwhile, this investigation found that the mediating pathway via entrapment accounted for 40.63% of the total effect. This relatively high proportion fully demonstrates that entrapment is a critical intermediate link in the transformation of existential isolation into suicidal ideation. This indicates that existential isolation itself does not inevitably lead to suicidal ideation. Suicide risk will only increase significantly when individuals translate this experience of incomprehensible loneliness into the feeling of entrapment characterized by “having no way out and being unable to break free”. This finding also theoretically supports the proposition in the Integrated Motivation-Volitional Model that “entrapment is an important predictor of suicidal ideation”, and reveals the key psychological mechanism underlying the transformation of existential isolation into suicidal ideation. At the practical level, this result suggests that interventions targeting only existential isolation may only partially reduce suicide risk. By placing equal emphasis on alleviating entrapment, we can more effectively block the transformation process from existential isolation to suicidal ideation.

Finally, this study also found that authenticity served as a moderating effect on the direct path, the first half path, and the second half path of the mediating model in which existential isolation exacerbates suicidal ideation via entrapment. On the one hand, authenticity effectively buffers the impacts of existential isolation on entrapment and suicidal ideation (the first half path and the direct path). Specifically, individuals with high authenticity tend to adopt positive coping strategies (Kernis & Goldman, 2006) and maintain an optimistic attitude (Zhang et al., 2019) when facing life dilemmas, making them less likely to fall into psychological entrapment. Meanwhile, authenticity can promote individuals' self-enhancement effect (Guenther et al., 2023; Kim et al., 2020), encouraging them to perceive themselves and interpersonal alienation

from a more positive perspective, which to a certain extent reduces the suicide risk induced by existential isolation. On the other hand, authenticity also buffers the linkage connecting entrapment and suicidal ideation. As emphasized by the Integrated Motivation-Volitional Model, the transformation from entrapment toward suicidal ideation is shaped by motivational variables (Souza et al., 2024). Individuals with high levels of authenticity maintain a closer connection with their inner true self; even in dilemmas that cannot be escaped immediately, they are less prone to being entirely consumed by negative affective states, which lowers the odds of developing suicidal ideation.

Implications for practice

The results obtained from this research offer valuable practical insights for college mental health education, psychological counseling services, and suicide prevention interventions.

First, given the significant positive predictive effect of existential isolation on college students' suicidal ideation, college counselors and mental health practitioners should incorporate the assessment of existential isolation into routine suicide risk screening for college students. In addition to focusing on traditional indicators such as interpersonal loneliness, more attention should be paid to students' profound experiences of existential isolation to timely identify high-risk groups for suicide. Meanwhile, universities can launch interventions targeting existential isolation and design activities to promote “I-sharing” (i.e., individuals perceiving that they share consistent subjective experiences with others at a given moment) (Pinel et al., 2015), foster emotional connection and social support among students, and strengthen intimate bonds between individuals and others, thereby reducing the risk of suicidal ideation triggered by existential isolation (Pinel et al., 2017).

Second, as entrapment serves as a vital mediating pathway linking existential isolation to suicidal ideation, clinical interventions should focus on alleviating students' experiences of entrapment. Mental health practitioners should strengthen the assessment of entrapment among high-risk individuals, and work with them to develop practical alternative solutions based on their actual situations,

helping them find positive ways to cope with dilemmas and avoid viewing suicide as the only means to escape distress.

Third, given that authenticity can effectively buffer the adverse effects of existential isolation and entrapment, psychological counseling should integrate strategies to enhance students' level of authenticity. Mental health practitioners can improve individuals' self-awareness and promote the expression and externalization of the true self through approaches such as mindfulness meditation (Marchand, 2013) and self-affirmation training (Cohen & Sherman, 2014). This process helps strengthen individuals' connection with their inner world, enhance their psychological resilience in coping with stressful events, and ultimately reduce suicide risk.

Limitations and future research directions

The research also presents several limitations. First, this investigation utilized a cross-sectional design, which only revealed the concurrent relationships among variables and could not yield firm causal conclusions. Subsequent scholarly works can adopt longitudinal or experimental approaches to further verify the temporal order and causal pathways of variables in the present moderated mediation model.

Second, this study recruited college students from four universities in Shanghai and Shaanxi Provinces via convenience sampling, and the sample had an unbalanced gender distribution, which may restrict the external validity and generalizability of the findings. Subsequent investigations could adopt stratified random sampling to recruit gender-balanced and more representative samples of college students.

Third, the investigation used self-report data, which may still be susceptible to social desirability and response distortions, even though the common method bias test did not indicate severe bias. Future research could adopt multi-informant or multi-method assessment to improve the objectivity of measurement.

Fourth, this study only controlled for two demographic covariates, gender and age. Psychosocial variables closely linked to suicidal ideation, such as depression, anxiety and recent life stress, were not included in data collection, so covariate sensitivity analysis could not be performed. Future research may incorporate these key confounding variables to more accurately isolate the independent net effect of existential isolation on suicidal ideation and further validate the stability of this proposed model.

Finally, this model focused on the mediating pathway of entrapment and the moderating effect of authenticity. Subsequent investigations may further expand the research framework by incorporating other potential underlying mechanisms and protective factors, and explore whether the observed effects differ across dimensions of authenticity and levels of existential isolation.

Conclusion

Existential isolation has both a direct influence on suicidal ideation and an indirect impact through entrapment. High authenticity not only buffers the impacts of existential isolation on entrapment and suicidal ideation, but also weakens the adverse effect of entrapment on suicidal

ideation. The current research built and validated a moderated mediation model explaining the correlational link between existential isolation and suicidal ideation using a sample of Chinese college students. It clarifies the critical psychological pathways through which existential isolation induces suicidal ideation and expands the scope of the protective role of authenticity in research linking existential isolation to suicide risk. These findings provide empirical evidence for targeted suicide prevention among college students. For university mental health practitioners, interventions should not only focus on conventional interpersonal loneliness and affective disturbances but also attach importance to deep-seated experiences of existential isolation and resultant entrapment; cultivating authenticity helps strengthen students' psychological protection.

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