

Risk and protective configurations for adjustment difficulties among university freshmen

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Abstract: University entry is a psychologically demanding transition. Adjustment difficulties are a leading mental health concern among Chinese freshmen. This study examined psychological configurations associated with adjustment difficulties among university freshmen. Participants were 356 first-year students (50.6% female; aged 18–20) who completed measures of self-identity exploration, sense of belonging, psychological resilience, neuroticism, extraversion, and adjustment difficulties. Fuzzy-set qualitative comparative analysis and Necessary Condition Analysis identified configurations. Three risk configurations emerged: resource depletion combining absent identity exploration, absent resilience, and absent extraversion; relational deficit combining absent identity exploration, absent belonging, and resilience; and emotional vulnerability combining absent identity exploration, absent resilience, and neuroticism. Absent identity exploration was consistent across all risk configurations. Protection involved fewer resource combinations than risk, suggesting asymmetric causal pathways. Findings support Conservation of Resources Theory: resource constellations determine adjustment outcomes, co-occurring losses amplify risk, and protective resources substitute for one another. Interventions should prioritize identity development and relational resource building.

Keywords: adjustment difficulties; self-identity exploration; sense of belonging; psychological resilience; fuzzy-set qualitative comparative analysis

Introduction

Entering university is one of the most demanding transitions in early adulthood. They leave familiar social environments, adapt to new academic expectations, and rebuild social networks without established support (Li & Lee, 2025). Unlike upper-year students who have already developed coping strategies, freshmen face these challenges when their psychological resources are still forming. It is therefore unsurprising that first- and second-year students consistently report higher depression and anxiety risk than their upper-year peers (Han et al., 2025). Adjustment difficulties have emerged as a central mental health concern for this group. They refer to the challenges students face when adapting to new demands across academic, social, emotional, and daily-life domains. When left unaddressed, these difficulties lead to academic disengagement, dropout, and long-term psychological distress (Trusty et al., 2025). Yet the psychological conditions that combine to produce or protect against maladjustment remain poorly understood. Most studies examine these factors independently (Deng et al., 2021; Griffin et al., 2025; Luo et al., 2023). They rely on regression or structural equation modeling. These methods cannot capture how conditions combine to produce an outcome. Moreover, protective configurations have received far less attention than risk factors (Kahn, 2016). Among Chinese university freshmen, configurational pathways to adjustment difficulties remain unexamined.

Risk and protective factors entering university

Research has identified several psychological and social factors that consistently predict university adjustment outcomes. Among protective factors, sense of belonging has

received robust empirical support. Students who feel connected and valued on campus report lower psychological distress and better academic outcomes (van Kessel et al., 2025). Psychological resilience is equally well-established. Higher academic resilience is positively associated with student well-being and engagement (Bagdžiūnienė et al., 2025). Identity development also shapes adjustment. Students who form clear identity commitments show better adjustment outcomes during university transition. Those who remain in ruminative exploration show poorer psychological adjustment (Luyckx et al., 2008).

Among risk factors, neuroticism is the most consistently implicated personality trait. It predicts emotional reactivity, stress sensitivity, and vulnerability to anxiety and depression (Luo et al., 2023). Extraversion, by contrast, is associated with better social integration and more proactive coping (Costa & McCrae, 1992).

Despite this body of evidence, an important gap remains. Most studies have been conducted in Western university populations. Whether these patterns hold for Chinese university freshmen remains unclear. Cultural values and institutional structures differ substantially (Markus & Kitayama, 1991; Xu, 2021). Culturally situated evidence is needed.

Adjustment difficulties

Five psychological conditions are examined in the present study. Self-identity exploration refers to the active investigation of one's values, beliefs, and future directions. It is a central developmental task of early adulthood. Students who engage in active exploration and form clear commitments show better adjustment outcomes (Luyckx et al., 2008). Sense of belonging refers to the

perceived connectedness to one's university community. It is consistently associated with positive adjustment and reduced distress (van Kessel et al., 2025). Psychological resilience is the capacity to recover from adversity under stress. It is widely recognized as a key protective resource during major life transitions (Bagdžiūnienė et al., 2025). At the personality level, neuroticism is associated with emotional reactivity and stress vulnerability (Luo et al., 2023). Extraversion, in contrast, facilitates new social connections and active environmental engagement (Costa & McCrae, 1992). Emotional processes such as anxiety and disengagement have similarly been shown to shape learners' psychological outcomes in educational contexts (Wang, 2026).

However, two gaps remain. First, most studies examine these factors independently using regression or structural equation modeling. These methods assume variables operate in isolation and cannot capture how conditions combine to produce an outcome. Yet adjustment difficulties rarely stem from a single factor. They emerge from specific configurations of co-occurring conditions. Second, the field has focused mainly on risk factors for maladjustment. Far less attention has been paid to combinations that protect against adjustment difficulties. Both risk and protective profiles are needed for effective and targeted intervention (Kahn, 2016).

Theoretical basis. Conservation of Resources Theory (Hobfoll, 1989) provides the theoretical foundation. COR Theory proposes that stress arises when individuals lack the resources needed to meet environmental demands. Within this framework, sense of belonging constitutes a condition resource. It provides relational security and institutional anchorage during the university transition. Self-identity exploration and psychological resilience both constitute personal characteristic resources. Self-identity exploration directs goal pursuit and motivates adaptive behavior in unfamiliar environments. Psychological resilience enables sustained coping under adversity and supports resource recovery. Neuroticism and extraversion, as personality characteristics, shape the rate at which these resources are acquired, depleted, and replenished. When multiple resources are absent simultaneously, adjustment difficulties increase. When resources co-occur in sufficient combinations, they buffer against maladjustment.

The Chinese context

Chinese university freshmen are a psychologically vulnerable group. For most, university entry marks the first time living away from home. They must simultaneously adapt to new academic demands, rebuild social networks, and navigate identity changes. First-year undergraduates are particularly vulnerable to these multidimensional stressors (Liu et al., 2023). A systematic review and meta-analysis of 113 studies involving 185,787 Chinese university students found an overall depression prevalence of 28.4% (Gao et al., 2020). A recent national survey of 49,717 students from 106 Chinese universities further reported anxiety and depression detection rates of 15.5% and 9.8%, respectively (Han et al., 2025). In response, China's Ministry of Education and sixteen other departments jointly

Table 1. Demographic characteristics of the sample

Variable	Category	N	%
Gender	Male	176	49.4
	Female	180	50.6
Age (years)	18	112	31.5
	19	130	36.5
	20	114	32.0
Home Location	Urban	216	60.7
	Rural	140	39.3

issued a national action plan in 2023 to strengthen mental health services in higher education (Yuan et al., 2024).

The present study

This study utilized a two-stage analytical approach to examine the relative importance of conditions associated with university adjustment difficulties.

Two research questions guided the study:

RQ1: Which psychological characteristics are associated with college entry adjustment difficulties among university freshmen?

RQ2: What is the relative weighting of psychological characteristics in college entry adjustment difficulties?

To address these questions, two analytical methods were used. First, Necessary Condition Analysis (NCA) examined whether any single psychological characteristic is individually necessary for adjustment difficulties. Second, fuzzy-set Qualitative Comparative Analysis (fsQCA) identified sufficient combinations of conditions that produce high or low adjustment difficulties. Together, these methods advance understanding of how psychological resource configurations shape university adjustment among Chinese freshmen.

Method

Participants and setting

A total of 356 Chinese college students (females = 50.6%; age range 18 to 20 years, $M = 19.01$, $SD = 0.80$) were participants. In terms of age distribution, 31.5% were 18 years old, 36.5% were 19 years old, and 32.0% were 20 years old. Regarding home location, the majority of participants came from urban areas (60.7%), with the remaining 39.3% from rural areas. The data were obtained from a publicly available dataset (<https://doi.org/10.57760/sciencedb.35811>). Since this study was based solely on secondary analysis of anonymized and publicly accessible data, no additional ethical approval was required. Detailed demographic characteristics are presented in Table 1.

Measures

All scales were adapted from established instruments with demonstrated reliability and validity in Chinese student populations. Table 2 presents the number of items per scale.

Self-Identity Exploration (SIE). Self-identity exploration was assessed using the 10-item Ego-Identity Status Scale, revised for Chinese populations by Zhang (2000). The scale covers three dimensions: current self-investment

Table 2. Scale reliability: item counts and comparison with prior Chinese college student samples

Scale	Items	Current α	Prior α	Source
Self-identity exploration	10	0.965	0.96	Zhang and He (2026)
Psychological resilience	20	0.979	0.93	Dong et al. (2021)
Sense of belonging	10	0.962	0.995	Wu et al. (2024)
Adjustment difficulties	20	0.975	0.93	Fang et al. (2005)
Neuroticism	8	0.957	0.887	Li (2026)
Extraversion	8	0.938	0.864	

(3 items; e.g., “I know what kind of person I am and what I hope to pursue”) past crisis experience (3 items; e.g., “I have seriously reflected on what kind of person I am and what I should do”), and aspiration for future self-investment (4 items; e.g., “I am actively exploring things I can commit to”). The items are rated on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). Higher scores indicate more active self-identity exploration. The scale demonstrated good internal consistency in the current sample ($\alpha = 0.965$).

Psychological Resilience (RES). Psychological resilience was measured using the Chinese version of the Connor-Davidson Resilience Scale (CD-RISC), revised by Yu and Zhang (2007). The CD-RISC is one of the most widely used resilience measures across clinical and non-clinical populations. The Chinese version covers three dimensions: hardiness (e.g., “I am able to adapt when changes occur”), strength (e.g., “I tend to bounce back after illness or hardship”), and optimism (e.g., “I can achieve goals despite obstacles”). Twenty items are rated on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). Higher scores indicate greater psychological resilience. The scale demonstrated good internal consistency in the current sample ($\alpha = 0.979$).

Sense of Belonging (SOB). Sense of belonging was assessed using the Psychological Sense of School Membership (PSSM) scale, translated and revised into Chinese by Cheung and Hui (2003). Ten items were selected from the original 18-item scale, covering two dimensions: school belonging (e.g., “I feel like a real part of this school”) and feeling of rejection (e.g., “Sometimes I feel as if I don’t belong here”). Items are rated on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). Higher scores indicate a stronger sense of school belonging. Internal consistency was excellent ($\alpha = 0.962$).

Adjustment Difficulties (AD). Adjustment difficulties were measured using the Chinese College Student Adjustment Scale (CCSAS), developed by Fang et al. (2005) specifically for Chinese college student populations. Four subscales were selected: academic adjustment (e.g., “I find it difficult to keep up with the academic demands of university”), social adjustment (e.g., “I have difficulty making friends in my new environment”), emotional adjustment (e.g., “I often feel anxious or stressed about university life”), and daily-life adjustment (e.g., “I struggle to manage my daily routines independently.”), with 5 items each (20 items total). Items are rated on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). Higher scores indicate greater adjustment difficulties. The internal consistency coefficient was 0.975 in the present study.

Neuroticism (NEU). Neuroticism was assessed using the neuroticism subscale of the Chinese Big Five Personality Inventory Brief Version (CBF-PI-B), developed by Wang et al. (2010) specifically for Chinese populations. The subscale assesses emotional instability, anxiety, and mood fluctuation (e.g., “I often feel nervous and uneasy”; “I sometimes feel downhearted and blue”). Eight items are rated on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). Higher scores indicate higher neuroticism. Cronbach’s α for the current sample was 0.957.

Extraversion (EXT). Extraversion was assessed using the extraversion subscale of the CBF-PI-B (Wang et al., 2010). The subscale measures sociability, assertiveness, and positive affect (e.g., “I enjoy meeting and talking with people”; “I like to be where the action is”). Eight items are rated on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). Higher scores indicate higher extraversion. The scale showed high reliability in the present sample (Cronbach’s $\alpha = 0.938$).

Statistical analysis

This study employed a two-stage approach combining Necessary Condition Analysis (NCA) and fuzzy-set Qualitative Comparative Analysis (fsQCA) to examine the antecedent conditions of adjustment difficulties among Chinese university freshmen. To assess common method bias arising from self-report data, Harman’s single-factor test was conducted on all 76 items. The first factor accounted for 38.15% of the total variance, well below the 50% threshold, indicating that common method bias was not a primary concern (Podsakoff et al., 2003).

NCA was conducted using the NCA package in R to address RQ1. NCA examines whether a condition is individually necessary for an outcome, meaning its absence guarantees the absence of the outcome (Dul, 2016a). The Ceiling Regression-Free Disposal Hull (CR-FDH) technique was applied to estimate the ceiling line. Effect size ($d \geq 0.1$) was used to determine whether a necessary condition is meaningful, and significance was assessed via permutation tests with 10,000 iterations.

fsQCA was conducted using fsQCA 3.0 to address RQ2. It identifies combinations of conditions sufficient to produce an outcome, accommodating causal complexity through conjunction, equifinality, and asymmetry (Ragin, 2008). Prior to analysis, all conditions and the outcome were calibrated into fuzzy sets. Given that all measures used 5-point Likert scales, calibration anchors were set at 5 (full membership), 3.5 (crossover point), and 1 (full non-membership). On agreement-type Likert scales, a score

Table 3. Descriptive statistics

Variable	Mean	SD
Self-identity exploration	3.50	0.87
Sense of belonging	3.69	0.83
Psychological resilience	3.35	0.80
Neuroticism	3.29	0.91
Extraversion	3.38	0.77
Adjustment difficulties	3.30	0.72

of 3 reflects neutrality rather than maximum ambiguity regarding set membership. A crossover point of 3.5 better represents the threshold between non-belonging and belonging to the set, consistent with fsQCA practice in psychological research (Ragin, 2008; Schneider & Wagemann, 2012).

The analysis proceeded in three steps. First, single necessary conditions were examined within fsQCA using a consistency threshold of 0.90. Second, a truth table was constructed, and configurations with fewer than 3 cases were excluded. A consistency threshold of 0.80 was applied to identify sufficient configurations. Third, the Standard Analysis procedure was used to derive parsimonious, intermediate, and complex solutions. Both high adjustment difficulties (risk profiles) and low adjustment difficulties (protective profiles) were analyzed separately to capture asymmetric causal relationships.

Results

Descriptive statistics

Descriptive statistics for all study variables are presented in Table 3. Sense of belonging had the highest mean ($M = 3.69$, $SD = 0.83$), while neuroticism ($M = 3.29$, $SD = 0.91$) and adjustment difficulties ($M = 3.30$, $SD = 0.72$) showed comparatively lower scores.

Necessary condition for adjustment difficulties

Necessary condition analysis was used to assess whether any single condition is necessary for adjustment difficulties. A condition is considered necessary when the effect size exceeds 0.1, and the p -value is significant (Dul, 2016b). Table 4 presents the results for all five conditions based on the CR-FDH ceiling technique.

As shown in Table 4, none of the conditions meet the necessary condition threshold. Effect sizes ranged from 0.000 to 0.025, all below 0.1, and no p -value reached significance. The NCA plots (Figure 1) further support these findings. The ceiling lines for self-identity exploration and sense of belonging are flat at the top of the scope, indicating no meaningful constraint on the outcome. For psychological resilience and neuroticism, small ceiling zones appear in the upper-left region of the plots, but the effect sizes remain negligible. For extraversion, the ceiling line is nearly horizontal, with data points spread across the full range of the outcome.

Overall, none of the five conditions constitutes a necessary condition for adjustment difficulties among Chinese university freshmen. This finding suggests that adjustment difficulties result from combinations of conditions

rather than any single factor, supporting the need for configurational analysis.

Configurational pathways to adjustment difficulties

The consistency threshold was set at 0.80, and the frequency threshold at 3. Both high and low adjustment difficulties were analyzed separately. The complex, parsimonious, and intermediate solutions were obtained. Following established practice, the intermediate solution is used as the primary basis for interpretation, with the parsimonious solution used to identify core conditions. In the present analysis, the intermediate and parsimonious solutions were identical, indicating that all conditions in the identified configurations are core conditions. The results are presented in Table 5.

Analysis of High Adjustment Difficulties (Risk Profiles). Three configurational paths were identified for high adjustment difficulties. Each path has a consistency above 0.80. The overall solution consistency is 0.940, and solution coverage is 0.783, meaning these three paths explain 78.3% of cases with high adjustment difficulties.

Configuration H1 (absent self-identity exploration * absent psychological resilience * absent extraversion) can be characterized as a “multi-resource deficit risk configuration”. It indicates that the simultaneous absence of self-identity exploration, psychological resilience, and extraversion is sufficient to produce high adjustment difficulties. This configuration has a raw coverage of 0.650, explaining 65.0% of cases. Freshmen who have not developed a clear sense of self are less able to set goals and make meaning of their university experience. Without resilience, they struggle to recover from setbacks. Combined with introversion, they are less likely to seek social support or engage proactively with their new environment, making successful adjustment difficult. From a COR perspective, the simultaneous absence of three resources across personal, psychological, and social domains triggers a resource loss spiral (Hobfoll, 1989), in which the lack of one resource accelerates the depletion of others, collectively rendering successful adjustment unlikely.

Configuration H2 (absent self-identity exploration * absent sense of belonging * psychological resilience) represents an “identity-belonging resource deficit risk configuration”. It shows that when self-identity exploration and sense of belonging are both absent, high adjustment difficulties occur even when psychological resilience is present. This configuration has a raw coverage of 0.523, explaining 52.3% of cases. This finding suggests that resilience alone is insufficient to protect against adjustment difficulties. Without a clear sense of self and a feeling of connectedness to the university, freshmen may lack the motivational foundation needed to engage with academic and social demands, regardless of their coping capacity. This pattern reflects resource insufficiency (Hobfoll, 1989). A single resource cannot compensate for the simultaneous absence of identity and belonging resources, highlighting the boundary conditions of resilience as a protective factor.

Configuration H3 (absent self-identity exploration * absent psychological resilience * neuroticism) reflects

Table 4. Necessary condition analysis results

Condition	Precision	Ceiling zone	Scope	Effect size (d)	<i>p</i> -value
Self-identity exploration	100%	0.000	0.81	0.000	1.000
Sense of belonging	100%	0.000	0.81	0.000	0.992
Psychological resilience	98.0%	0.020	0.81	0.025	0.808
Neuroticism	99.2%	0.019	0.79	0.024	0.699
Extraversion	99.7%	0.015	0.79	0.019	0.861

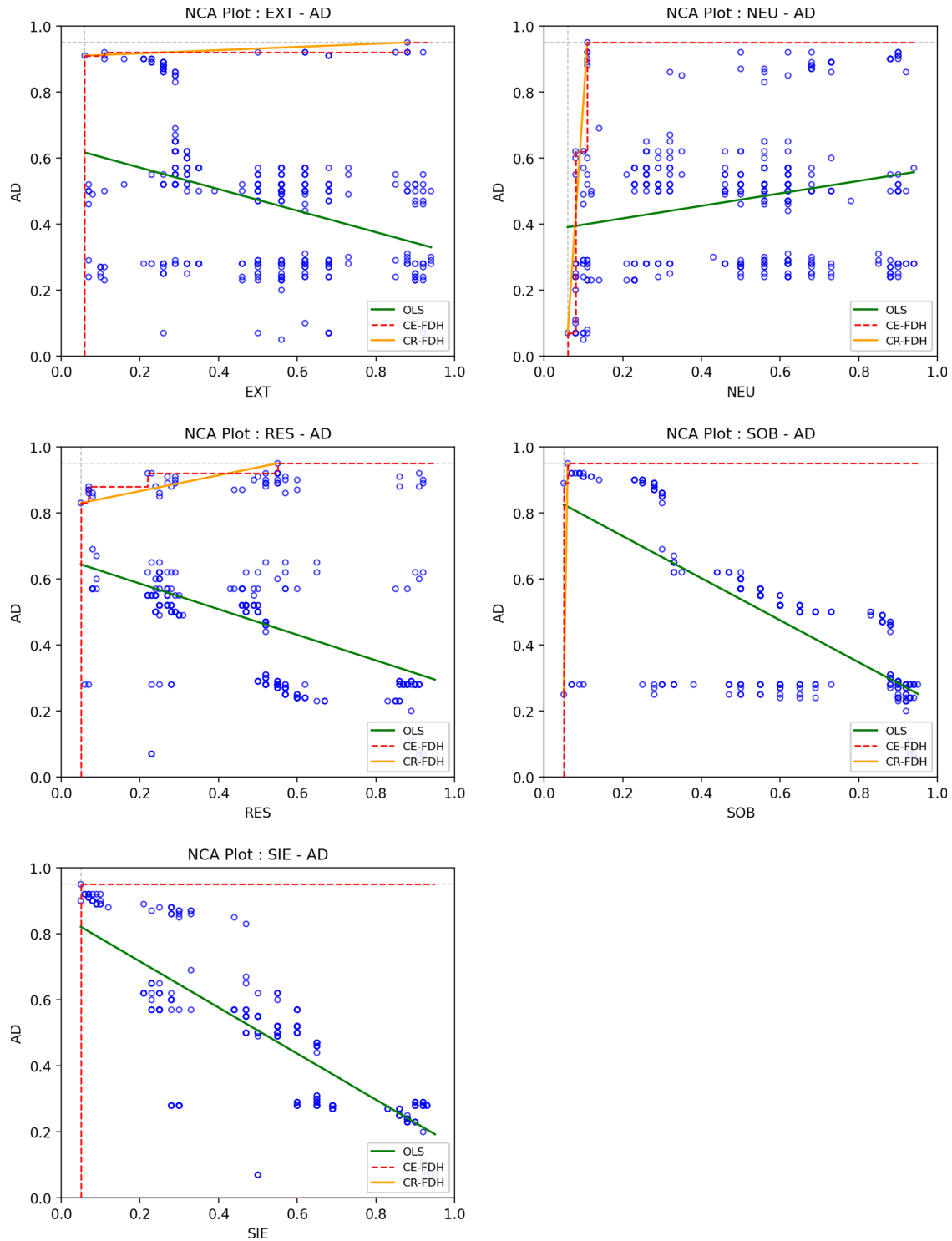
**Figure 1.** NCA plots

Table 5. Configurations of high and low adjustment difficulties

Conditions	High adjustment difficulties (risk profiles)			Low adjustment difficulties (protective profiles)		
	H1	H2	H3	L1	L2	L3
Self-Identity Exploration (SIE)	⊗	⊗	⊗	•	•	
Sense of Belonging (SOB)		⊗		•		•
Psychological Resilience (RES)	⊗	•	⊗		•	•
Neuroticism (NEU)			•			⊗
Extraversion (EXT)	⊗					•
Raw Coverage	0.650	0.523	0.634	0.857	0.750	0.541
Unique Coverage	0.064	0.062	0.046	0.139	0.032	0.016
Consistency	0.946	0.971	0.964	0.897	0.950	0.971
Solution Coverage		0.783			0.905	
Solution Consistency		0.940			0.887	

Note. • = condition present; ⊗ = condition absent; blank = condition not relevant to the configuration. Core conditions are identified from the parsimonious solution.

a “resource deficit and emotional vulnerability risk configuration”. It combines the absence of self-identity exploration and psychological resilience with the presence of neuroticism. This configuration has a raw coverage of 0.634, explaining 63.4% of cases. When freshmen lack both identity clarity and resilience, emotional instability further compounds their difficulties. Neurotic individuals tend to interpret ambiguous situations negatively and experience stronger emotional reactions to stressors. In the context of university transition, where uncertainty is high, this pattern is particularly likely to produce adjustment difficulties. Within the COR framework, the co-absence of identity and resilience resources, combined with elevated neuroticism, creates a compounded loss spiral (Hobfoll, 1989) in which emotional vulnerability both results from and further accelerates resource depletion.

The absence of self-identity exploration appears as a shared element across all three risk configurations. This suggests its particular relevance to high adjustment difficulties among Chinese university freshmen.

Analysis of Low Adjustment Difficulties (Protective Profiles). Three configurational paths were identified for low adjustment difficulties. The overall solution consistency is 0.887, and solution coverage is 0.905. This means these three paths explain 90.5% of cases with low adjustment difficulties.

Configuration L1 (self-identity exploration * sense of belonging) represents an “identity-belonging resource synergy protective configuration”. It indicates that the co-presence of self-identity exploration and sense of belonging is sufficient to protect freshmen from adjustment difficulties. This configuration has the highest raw coverage of 0.857, explaining 85.7% of cases. Freshmen who have a clear sense of who they are and feel accepted within their university community are better equipped to navigate academic and social challenges. The sense of belonging provides a stable social base, while identity clarity provides direction and purpose. From a COR perspective, the combination of an internal resource (identity clarity) and an external resource (school belonging) generates a resource gain spiral (Hobfoll, 1989), in which

each resource reinforces the other, collectively producing a robust protective effect.

Configuration L2 (self-identity exploration * psychological resilience) reflects an “identity-resilience resource synergy protective configuration”. The presence of self-identity exploration combined with psychological resilience forms a sufficient protective pathway. This configuration has a raw coverage of 0.750, explaining 75.0% of cases. Identity clarity helps freshmen set meaningful goals, while resilience enables them to persist through difficulties. Together, these two resources allow freshmen to adapt effectively to the demands of university life without needing strong social support. Within the COR framework, the conjunction of two personal characteristic resources allows them to substitute for the absence of relational resources, consistent with the principle of resource substitutability (Hobfoll, 2011).

Configuration L3 (sense of belonging * psychological resilience * absent neuroticism * extraversion) represents a “relational-emotional resource substitution protective configuration”. It combines a sense of belonging, psychological resilience, and extraversion with the absence of neuroticism. This configuration has a raw coverage of 0.541, explaining 54.1% of cases. This pattern suggests that social engagement and emotional stability can together compensate for the absence of strong identity exploration. Extraverted, emotionally stable, and resilient freshmen are able to draw on their interpersonal and personal resources to facilitate adjustment, even when their sense of self is not yet well-developed. This configuration illustrates resource substitutability (Hobfoll, 1989). Relational and emotional resources collectively substitute for the absence of identity resources, demonstrating that multiple pathways to successful adjustment exist.

Self-identity exploration appears in two of the three protective configurations. This reinforces its consistent presence across the majority of protective pathways. These results also demonstrate equifinality. Different combinations of conditions can lead to the same outcome of low adjustment difficulties.

Robustness Test. To examine the robustness of the fsQCA results, two tests were conducted. First, the consistency threshold was raised from 0.80 to 0.85. The configurations identified under the higher threshold were compared with the original results. The risk profiles and protective profiles remained stable. No new configurations emerged and no original configurations disappeared.

Second, a sensitivity analysis was conducted to examine whether the results varied with different calibration anchor selections. The crossover point was adjusted from 3.5 to 3.0 and 4.0. The full membership anchor (5) and full non-membership anchor (1) were kept unchanged. Under a crossover of 3.0, all three risk configurations remained consistent ($H1 = 0.993$, $H2 = 0.998$, $H3 = 0.994$). The consistency of the protective configurations was reduced, as lower crossover values widen set boundaries and admit more cases into the self-identity exploration and sense of belonging sets, reducing configuration purity. Under a crossover of 4.0, two risk configurations remained stable ($H2 = 0.944$, $H3 = 0.906$), while $H1$ fell marginally below the threshold (0.777). This is because higher crossover values raise the membership standard for absence conditions, reducing the number of cases that simultaneously qualify for absent self-identity exploration, absent psychological resilience, and absent extraversion. All three protective configurations exceeded 0.80 ($L1 = 0.986$, $L2 = 0.989$, $L3 = 0.996$). Across both alternative crossover settings, the absence of self-identity exploration remained a consistent element in the risk configurations. The consistent relevance of self-identity exploration was preserved in the majority of protective pathways. The principal findings are therefore not an artifact of the specific calibration anchor selected.

Discussion

This study employed NCA and fsQCA to examine the configurational antecedents of adjustment difficulties among Chinese university freshmen. Maladjustment during university transition is neither attributable to any single necessary condition nor adequately captured by additive models. Rather, it emerges from specific conjunctural combinations of psychological conditions. The causal pathways leading to high and low adjustment difficulties are pronouncedly asymmetric.

The absence of necessary conditions across all five variables merits theoretical attention. Prior variable-oriented research has identified these conditions as significant predictors of adjustment outcomes (Deng et al., 2021; Griffin et al., 2025; Luo et al., 2023). However, statistical association and logical necessity are analytically distinct. A condition may reliably co-vary with an outcome without being indispensable to its occurrence. No single resource deficit therefore constitutes a universal prerequisite for maladjustment. Adjustment difficulties are instead produced through specific conjunctural pathways. This is consistent with COR Theory's emphasis on resource constellations rather than isolated resource states (Hobfoll, 1989), and provides methodological justification for the configurational approach adopted here.

Among the risk profiles, the invariant presence of absent self-identity exploration across all three configurations is theoretically consequential. Variable-oriented studies have examined self-identity exploration as one predictor among several (Hardy et al., 2013; Potterton et al., 2022). The present results suggest a more fundamental role. The absence of identity exploration appears as a consistent configurational ingredient across qualitatively distinct risk pathways. Within the COR framework (Hobfoll, 1989), identity exploration may function as a generative resource. Its absence compromises the acquisition and deployment of other psychological resources, including social connectedness and adaptive coping. Low identity exploration may therefore structurally condition the risk-generating potential of other resource deficits.

Configuration H2 represents the most theoretically significant finding among the risk profiles. A substantial body of research has positioned resilience as a transcontextual protective resource (Masten et al., 2021). The present data qualify this claim. In the conjunctural absence of self-identity exploration and sense of belonging, resilience is insufficient to prevent high adjustment difficulties. Its protective value is contingent upon the broader resource environment in which it is embedded. This aligns with Hobfoll's resource caravan passageways model (Hobfoll, 2011). A freshman who possesses coping capacity but lacks both identity clarity and institutional belonging may endure transition-related demands without possessing the motivational or relational foundations necessary to resolve them. This distinction between psychological endurance and adaptive adjustment is one that variable-oriented research has rarely been positioned to detect.

Configuration H3 illuminates a distinct mechanism through which emotional vulnerability compounds pre-existing resource deficits. Neuroticism does not emerge as an independent risk factor. It amplifies adjustment difficulties generated by the concurrent absence of identity exploration and resilience. This is consistent with the stress-sensitization hypothesis, which posits that emotionally vulnerable individuals are disproportionately susceptible to adverse outcomes when protective resources are insufficient (Monroe & Simons, 1991; Ormel et al., 2013). This pattern is further supported by evidence that emotional states and resilience interact to shape learning engagement and psychological well-being among Chinese student populations (Wang et al., 2024). Interventions targeting neuroticism in isolation are unlikely to yield meaningful adjustment benefits unless accompanied by efforts to strengthen identity development and resilience.

The protective profiles offer complementary insights. Configuration L1 exhibits the highest raw coverage at 0.857. The conjunction of self-identity exploration and sense of belonging constitutes the most broadly applicable protective pathway. Prior research has established independent associations between identity clarity and adjustment (Griffin et al., 2025; Luyckx et al., 2008) and between school belonging and well-being (Gopalan & Brady, 2020; King et al., 2024). The present findings suggest that their conjunction may be qualitatively distinct from the sum of their individual contributions. Within COR Theory (Hobfoll, 1989), the co-presence of an internal

resource (identity clarity) and an external resource (school belonging) generates a resource gain spiral. Each resource amplifies the protective value of the other. Identity clarity provides motivational direction. Sense of belonging provides relational anchorage.

Configuration L2 delineates an alternative protective pathway in which social belonging is not required. The conjunction of identity clarity and resilience appears sufficient for successful adjustment even without strong institutional connectedness. This is particularly noteworthy in the Chinese higher education context, where large freshman cohorts may render a strong sense of belonging less readily accessible (Xu, 2021). Under these conditions, identity-based and resilience-based resources may substitute for relational resources. This represents a form of compensatory resource allocation consistent with COR Theory's principle of resource substitutability (Hobfoll, 2011).

Configuration L3 is theoretically significant because it represents a protective pathway that does not implicate self-identity exploration. Social engagement, emotional stability, resilience, and institutional connectedness together produce successful adjustment even without well-developed identity clarity. This finding warrants interpretation within the Chinese cultural context. Chinese cultural frameworks tend to prioritize relational embeddedness and group-oriented functioning over individual identity articulation (Markus & Kitayama, 1991). Within collectivist cultural contexts, the self is characteristically defined through social relationships rather than individual attributes (Hwang, 2012). Social relationship resources therefore carry particular adaptive significance for Chinese university freshmen. Belonging and social engagement may function as primary adjustment resources, drawing on culturally familiar relational repertoires. The compensatory role of social resources observed in L3 may reflect a culturally specific form of psychological resourcefulness that Western-derived developmental frameworks have insufficiently theorized (Arnett, 2000). Future cross-cultural research would be well-positioned to examine the generalizability of this pathway.

The present findings advance COR Theory in three specific respects. First, they demonstrate that resource combinations, rather than individual resources, determine adjustment outcomes. No single condition is necessary or sufficient. This extends COR Theory's claim about resource constellations into the configurational domain. Second, the risk profiles illuminate the boundary conditions of resource substitutability. Configuration H2 shows that resilience cannot substitute for the simultaneous absence of identity and belonging resources. Substitutability operates within limits defined by the conjunctural resource context. Third, the protective profiles reveal asymmetric resource dynamics. Configuration L1 generates a resource gain spiral through the synergy of cross-domain resources, while Configuration L2 achieves protection through within-domain resource substitution. These distinctions refine COR Theory's account of how resource combinations generate protective effects.

The asymmetry between risk and protective profiles constitutes a key methodological contribution. Variable-based analyses would characterize self-identity exploration as a significant negative predictor of adjustment difficulties, implying a symmetrical relationship. The present findings reveal this characterization as inadequate. The absence of self-identity exploration is a consistent feature of all risk configurations. Its presence, however, is only conditionally protective. It always requires the conjunction of either belonging or resilience. This differential causal role exemplifies the asymmetric causality that configurational theory identifies as a fundamental property of complex social phenomena (Misangyi et al., 2017; Ragin, 2008). From an applied standpoint, the conditions most relevant to preventing maladjustment are not identical to those most relevant to promoting successful adjustment. Intervention strategies should be calibrated accordingly.

Limitations

This study is subject to several limitations. First, the cross-sectional design precludes causal inference, and the temporal stability of the identified configurations remains unknown. Longitudinal research tracking students from pre-enrollment through the completion of their first academic year would enable a more definitive assessment of how these profiles evolve and whether early adjustment patterns predict longer-term outcomes. Second, convenience sampling was employed, and participants were drawn from universities in southern China. Information on the number of institutions and institutional type is unavailable. This limits the ability to evaluate how representative the sample is of the broader Chinese undergraduate population. In configurational analysis, sampling constraints are particularly consequential. The configurations identified may reflect patterns specific to the sampled institutions rather than the broader Chinese higher education context. Specifically, convenience sampling may restrict the diversity of cases available for analysis, potentially resulting in certain condition combinations being underrepresented. This could affect the coverage of the identified configurations and limit the detection of configurational paths that are less prevalent in the sampled population. Whether analogous configurational structures emerge across diverse institutional settings and non-Chinese university contexts remains an empirical question meriting systematic investigation. Third, the analytical model was restricted to five conditions. Potentially relevant factors such as familial support, financial strain, and pre-university mental health history were not incorporated. Future research should incorporate more expansive condition sets. Researchers should remain attentive to the parsimony requirements of fsQCA to avoid model complexity.

Conclusion

This study used NCA and fsQCA to examine the configurational antecedents of adjustment difficulties among Chinese university freshmen. The NCA results showed that no single condition is individually necessary for the outcome. The fsQCA results identified three risk profiles and three protective profiles. The absence of self-identity

exploration appeared consistently across all risk configurations, highlighting its consistent role in the adjustment process. The protective profiles demonstrated equifinality, indicating that successful adjustment can be achieved through different combinations of resources. The asymmetry between risk and protective profiles further confirms that preventing maladjustment and promoting successful adjustment require distinct intervention strategies.

These findings carry theoretical and practical significance. Theoretically, they demonstrate that adjustment difficulties are not linearly determined by individual predictors. They arise from specific conjunctural combinations of conditions. This highlights the limitations of symmetric methods such as regression in capturing the causal complexity of university adjustment, and underscores the complementary value of NCA and fsQCA. Practically, the consistent presence of absent self-identity exploration across risk profiles suggests that universities should prioritize identity-related support during the freshman year. First-year seminars, career exploration programs, and peer mentoring initiatives are examples of how such support can be structured. The protective role of sense of belonging points to the importance of early community-building efforts. Orientation programs and peer support networks can help freshmen develop the social connectedness that buffers against maladjustment. The finding that resilience alone is insufficient when identity clarity and belonging are both absent implies that resilience training should be embedded within broader support frameworks rather than delivered in isolation. Future research should extend this configurational approach to longitudinal designs and diverse cultural contexts to deepen the understanding of university adjustment.

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Abbreviations

AD	Adjustment Difficulties
CBF-PI-B	Chinese Big Five Personality Inventory-Brief
CCSAS	Chinese College Student Adjustment Scale
CD-RISC	Connor-Davidson Resilience Scale
COR	Conservation of Resources
EXT	Extraversion

fsQCA	Fuzzy-Set Qualitative Comparative Analysis
NCA	Necessary Condition Analysis
NEU	Neuroticism
RES	Psychological Resilience
SIE	Self-Identity Exploration
SOB	Sense of Belonging

References

- Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*, 55(5), 469–480. <https://doi.org/10.1037/0003-066X.55.5.469>
- Bagdžiūnienė, D., Žukauskaitė, I., Bulotaitė, L., & Sargautytė, R. (2025). Study and personal resources of university students' academic resilience and the relationship with positive psychological outcomes. *Frontiers in Psychology*, 16, 1517359. <https://doi.org/10.3389/fpsyg.2025.1517359>
- Cheung, H. Y., & Hui, S. K. F. (2003). Mainland immigrant and Hong Kong local students' psychological sense of school membership. *Asia Pacific Education Review*, 4(1), 67–74. <https://doi.org/10.1007/BF03025553>
- Costa, P. T., & McCrae, R. R. (1992). Revised NEO personality inventory (NEO-PI-R) and NEO five-factor inventory (NEO-FFI) professional manual. *Psychological Assessment Resources*. https://www.researchgate.net/publication/240133762_Neo_PI-R_professional_manual.
- Deng, Y., Chen, H., & Yao, X. (2021). Curvilinear effects of extraversion on socialization outcomes among Chinese college students. *Frontiers in Psychology*, 12, 652834. <https://doi.org/10.3389/fpsyg.2021.652834>
- Dong, Y., Dang, L., Li, S., & Yang, X. (2021). Effects of facets of mindfulness on college adjustment among first-year Chinese college students: The mediating role of resilience. *Psychology Research and Behavior Management*, 14, 1101–1109. <https://doi.org/10.2147/PRBM.S319145>
- Dul, J. (2016a). Identifying single necessary conditions with NCA and fsQCA. *Journal of Business Research*, 69(4), 1516–1523. <https://doi.org/10.1016/j.jbusres.2015.10.134>
- Dul, J. (2016b). Necessary condition analysis (NCA): Logic and methodology of necessary but not sufficient causality. *Organizational Research Methods*, 19(1), 10–52. <https://doi.org/10.1177/1094428115584005>
- Fang, X., Wo, J., & Lin, X. (2005). Development of Chinese college student adjustment scale. *Studies of Psychology and Behavior*, 3(2), 95–101. (In Chinese). <https://psybeh.tjnu.edu.cn/EN/Y2005/V3/I2/95>.
- Gao, L., Xie, Y., Jia, C., & Wang, W. (2020). Prevalence of depression among Chinese university students: A systematic review and meta-analysis. *Scientific Reports*, 10(1), 15897. <https://doi.org/10.1038/s41598-020-72998-1>
- Gopalan, M., & Brady, S. T. (2020). College students' sense of belonging: A national perspective. *Educational Researcher*, 49(2), 134–137. <https://doi.org/10.3102/0013189X19897622>
- Griffin, S. M., Lebedová, A., Cruwys, T., McMahon, G., Foran, A. M., et al. (2025). Identity change and the transition to university: Implications for cortisol awakening response, psychological well-being and academic performance. *Applied Psychology: Health and Well-Being*, 17(1), e12608. <https://doi.org/10.1111/aphw.12608>
- Han, S.-S., Zhang, Y.-S., Zhu, W., Ye, Y.-P., Li, Y.-X., et al. (2025). Status and epidemiological characteristics of depression and anxiety among Chinese university students

- in 2023. *BMC Public Health*, 25(1), 1189. <https://doi.org/10.1186/s12889-025-22443-7>
- Hardy, S. A., Francis, S. W., Zamboanga, B. L., Kim, S. Y., Anderson, S. G., et al. (2013). The roles of identity formation and moral identity in college student mental health, health-risk behaviors, and psychological well-being. *Journal of Clinical Psychology*, 69(4), 364–382. <https://doi.org/10.1002/jclp.21913>
- Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, 44(3), 513–524. <https://doi.org/10.1037/0003-066X.44.3.513>
- Hobfoll, S. E. (2011). Conservation of resource caravans and engaged settings. *Journal of Occupational and Organizational Psychology*, 84(1), 116–122. <https://doi.org/10.1111/j.2044-8325.2010.02016.x>
- Hwang, K.-K. (2012). *Foundations of Chinese psychology: Confucian social relations*. Vol. 1. Berlin/Heidelberg, Germany: Springer. <https://doi.org/10.1007/978-1-4614-1439-1>
- Kahn, M. (2016). Risk and protective factors explaining first year college adjustment [dissertation]. Philadelphia, PA, USA: University of Pennsylvania. <https://repository.upenn.edu/handle/20.500.14332/32957>
- King, R. B., Wang, Y., Fu, L., & Leung, S. O. (2024). Identifying the top predictors of student well-being across cultures using machine learning and conventional statistics. *Scientific Reports*, 14(1), 8376. <https://doi.org/10.1038/s41598-024-55461-3>
- Li, Y. (2026). Research on the influence of college students' personality traits on academic performance based on the big five personality model. *Public Relations World*. (In Chinese). <https://www.cnki.net>
- Li, J., & Lee, V. W. Y. (2025). Thriving through transitioning: Unravelling the interplay of transitional challenges and adjustments into university. *Higher Education Research & Development*, 44(2), 465–479. <https://doi.org/10.1080/07294360.2024.2401016>
- Liu, X., Zhang, Y., Gao, W., & Cao, X. (2023). Developmental trajectories of depression, anxiety, and stress among college students: A piecewise growth mixture model analysis. *Humanities and Social Sciences Communications*, 10(1), 736. <https://doi.org/10.1057/s41599-023-02252-2>
- Luo, J., Zhang, B., Cao, M., & Roberts, B. W. (2023). The stressful personality: A meta-analytical review of the relation between personality and stress. *Personality and Social Psychology Review*, 27(2), 128–194. <https://doi.org/10.1177/10888683221104002>
- Luyckx, K., Schwartz, S. J., Berzonsky, M. D., Soenens, B., Vansteenkiste, M., et al. (2008). Capturing ruminative exploration: Extending the four-dimensional model of identity formation in late adolescence. *Journal of Research in Personality*, 42(1), 58–82. <https://doi.org/10.1016/j.jrp.2007.04.004>
- Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*, 98(2), 224–253. <https://doi.org/10.1037/0033-295X.98.2.224>
- Masten, A. S., Lucke, C. M., Nelson, K. M., & Stallworthy, I. C. (2021). Resilience in development and psychopathology: Multisystem perspectives. In: *Annual review of clinical psychology* (pp. 521–549). Palo Alto, CA, USA: Annual Reviews. <https://doi.org/10.1146/annurev-clinpsy-081219-120307>
- Misangyi, V. F., Greckhamer, T., Furnari, S., Fiss, P. C., Crilly, D., et al. (2017). Embracing causal complexity: The emergence of a neo-configurational perspective. *Journal of Management*, 43(1), 255–282. <https://doi.org/10.1177/0149206316679252>
- Monroe, S. M., & Simons, A. D. (1991). Diathesis-stress theories in the context of life stress research: Implications for the depressive disorders. *Psychological Bulletin*, 110(3), 406–425. <https://doi.org/10.1037/0033-2909.110.3.406>
- Ormel, J., Jeronimus, B. F., Kotov, R., Riese, H., Bos, E. H., et al. (2013). Neuroticism and common mental disorders: Meaning and utility of a complex relationship. *Clinical Psychology Review*, 33(5), 686–697. <https://doi.org/10.1016/j.cpr.2013.04.003>
- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879–903. <https://doi.org/10.1037/0021-9010.88.5.879>
- Potterton, R., Austin, A., Robinson, L., Webb, H., Allen, K. L., et al. (2022). Identity development and social-emotional disorders during adolescence and emerging adulthood: A systematic review and meta-analysis. *Journal of Youth and Adolescence*, 51(1), 16–29. <https://doi.org/10.1007/s10964-021-01536-7>
- Ragin, C. C. (2008). *Redesigning social inquiry: Fuzzy sets and beyond*. Chicago, IL, USA: University of Chicago Press. <https://doi.org/10.7208/chicago/9780226702797.001.0001>
- Schneider, C. Q., & Wagemann, C. (2012). *Set-theoretic methods for the social sciences: A guide to qualitative comparative analysis*. Cambridge, UK: Cambridge University Press. <https://doi.org/10.1017/CBO9781139004244>
- Trusty, W. T., Scofield, B. E., Christensen, A. E., White, T. D., Murphy, Y. E., et al. (2025). Psychological symptoms and academic dropout in higher education: A six-year cohort study. *Journal of College Student Mental Health*, 39(4), 776–796. <https://doi.org/10.1080/28367138.2024.2444883>
- van Kessel, G. Ryan, C., Paras, L., Johnson, N., Zariff, R. Z., et al. (2025). Relationship between university belonging and student outcomes: A systematic review and meta-analysis. *The Australian Educational Researcher*, 52(3), 2511–2534. <https://doi.org/10.1007/s13384-025-00822-8>
- Wang, Y. (2026). Exploring the impact of AI-enhanced language tools on multilingual learners' grit, enjoyment, anxiety, and emotional disengagement: A positive psychology 2.0 perspective. *International Journal of Multilingualism*, 15(3), 1–22. <https://doi.org/10.1080/14790718.2026.2641065>
- Wang, M., Dai, X., & Yao, S. (2010). Development of the Chinese big five personality inventory brief version (CBF-PI-B): Theoretical framework and reliability. *Chinese Journal of Clinical Psychology*, 18(5), 545–548. (In Chinese). <https://doi.org/10.16128/j.cnki.1005-3611.2010.05.012>
- Wang, Y., Xin, Y., & Chen, L. (2024). Navigating the emotional landscape: Insights into resilience, engagement, and burnout among Chinese high school English as a foreign language learners. *Learning and Motivation*, 86(2), 101978. <https://doi.org/10.1016/j.lmot.2024.101978>
- Wu, S., Liu, H., Li, Y., & Teng, Y. (2024). The influence of self-esteem on sociocultural adaptation of college students of Hong Kong, Macao and Taiwan: The chain mediating role of social support and school belonging. *Psychology Research and Behavior Management*, 17, 905–915. <https://doi.org/10.2147/PRBM.S445042>
- Xu, B. (2021). From massification towards post-massification: Policy and governance of higher education in China. *International Journal of Chinese Education*, 10(3), 1–14. <https://doi.org/10.1177/22125868211046032>

- Yu, X., & Zhang, J. (2007). Comparison of the application of resilience scale and Connor-Davidson resilience scale. *Psychological Science*, (5), 1169–1171. (In Chinese). <https://doi.org/10.16719/j.cnki.1671-6981.2007.05.035>
- Yuan, W., Jiang, Z., Liu, Y., Chen, Z., Chu, X., et al. (2024). Comprehensively strengthen and improve students' mental health system in the new era. *China CDC Weekly*, 6(29), 719–722. <https://doi.org/10.46234/ccdcw2024.162>
- Zhang, R. (2000). Research on identity and ego-identity status in youth: Construction of ego-identity status and its self-measurement. *Psychological Science*, 23(4), 430–434, 510. (In Chinese). <https://doi.org/10.16719/j.cnki.1671-6981.2000.04.011>
- Zhang, X., & He, X. (2026). The influence of Chinese national community consciousness on college students' mental health: The mediating role of ego identity. *Psychology of China*, 8(1), 8–13. (In Chinese). <https://doi.org/10.35534/pc.0801002>