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From national identity to well-being: the crucial mediating role of self-esteem in adolescents

Yue Yang^{1,2†}, Jun Zhan^{3*†} and Yanwen Fan⁴

Abstract

This study aims to explore the relationships between national identity, self-esteem, and subjective well-being among adolescents, with a particular focus on the mediating role of self-esteem between national identity and subjective well-being. A questionnaire survey conducted among 1,948 Chinese adolescents revealed significant positive correlations between national identity, self-esteem, and subjective well-being ($p < 0.01$). Gender, status, and place of birth significantly influenced national identity, self-esteem, and subjective well-being ($p < 0.05$). Structural equation modeling analysis revealed that national identity has a positive and direct effect on self-esteem (estimate: 0.48, $SE = 0.03$, $p < 0.001$); self-esteem has a positive and direct effect on subjective well-being (estimate: 0.59, $SE = 0.03$, $p < 0.001$); and national identity has a positive and direct effect on subjective well-being (estimate: 0.25, $SE = 0.05$, $p < 0.001$). Additionally, self-esteem plays a crucial mediating role between national identity and subjective well-being ($p < 0.001$). These findings underscore the importance of national identity in adolescents' mental health and well-being and highlight the key role of self-esteem in mediating this relationship.

Keywords National identity, Self-esteem, Subjective well-being, Adolescents

Introduction

National identity, as an individual's sense of belonging and identification with their country, constitutes an important dimension of self-cognition and plays a key role in promoting social integration and individual mental health [5]. Moreover, national identity is not a unitary

concept but consists of multiple dimensions: membership (identification with the nation), private (personal pride in one's country), public (how others view one's national identity), identity (the link between one's self-concept and the country), and comparison (evaluating one's country relative to others). These dimensions interact to shape an individual's overall sense of national identity. In the contemporary context of increasing social unrest and deepening globalization, research on national identity has received growing attention. Chinese scholars have conducted extensive research on national identity among Chinese adolescents. Studies have found a significant cross-lagged relationship between adolescents' national identity and self-esteem: national identity at Time 1 significantly predicts self-esteem at Time 2, and vice versa [1]. Moreover, the higher the rational national identity adolescents hold regarding the country's political and economic areas, the stronger their patriotic feelings

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[2]. Among university students, research has shown intergenerational transmission of national identity: parents' national identity is positively correlated with that of their university-age children, and parents' national identity enhances their children's national identity through the fulfillment of psychological needs [2]. An investigation conducted in southern Xinjiang revealed regional differences in national identity, with students in urban schools showing higher national identity scores compared to those in rural schools [3]. Additionally, Uyghur adolescents who participated more frequently in the Young Pioneers or Communist Youth League activities exhibited stronger group consciousness and national identity. It was also found that the more Han Chinese friends students had, the higher their national identity was; furthermore, the longer Uyghur adolescents studied Chinese, the stronger their recognition of mainstream culture became [3]. In a study conducted in Macau, it was found that there is a close connection between the "Moral and Civic" curriculum and national identity, with the perception of the curriculum's objectives being a key factor influencing national identity. However, the teaching and assessment methods employed by teachers had minimal impact on national identity [4].

However, beyond China, numerous global studies have also shown that national identity plays a significant role in shaping individual psychological well-being. Numerous empirical studies have revealed a close positive correlation between national identity and individual psychological well-being, a finding that has been widely supported and confirmed in cross-cultural studies. In particular, Saville's (2022) cross-cultural comparative study further confirmed the positive relationship between the strength of national identity and individual mental health and well-being. The study employed Latent Class Analysis (LCA) to identify distinct national identity groups across different cultural contexts. After classifying individuals into various identity groups, the study used generalized linear mixed-effects models to examine health disparities between these groups. This research aligns with the current study, which posits that national identity plays an important role in individual health outcomes, particularly in regions with complex national identity frameworks, such as Wales [6].

National identity is also closely related to individual self-esteem, which is considered a core component of self-evaluation and emotional experience. Self-esteem, as a key indicator of self-worth, has long been a central topic in psychological research. Studies have shown that national identity can significantly influence individuals' levels of self-esteem across different cultural contexts. For example, Wang and Yu (2016) conducted a comprehensive review of the relationship between group

identity and individual mental health. Specifically, the study highlighted that individuals who strongly identify with their national group tend to have higher levels of self-esteem. This relationship is mediated by various factors, including the individual's perceived social support, control beliefs, and attribution style. The impact of national identity on self-esteem is not uniform but varies depending on the motivation behind the individual's identification with the group, and how they perceive their group's social evaluation [7]. Cross-cultural studies have found that group identity (including national identity) has a significant positive impact on individual self-esteem [8–10], including enhancing collective self-esteem through a strengthened sense of belonging to the group and a sense of meaning in life, thereby promoting individual self-esteem levels.

The role of self-esteem in individual mental health and subjective well-being cannot be ignored. It has been proven to effectively predict changes in subjective well-being [11–13]. More importantly, self-esteem may play a mediating role between national identity and subjective well-being. According to social identity theory, individuals establish their identity and self-esteem through belonging to a group and comparing with other groups, which in turn affects their behavior and mental health [14]. This theory provides a theoretical framework for analyzing the complex relationship between national identity and individual psychological characteristics. For example, existing research supports the relationship between group identity, self-esteem, and mental health. Smokowski et al. (2014) examined adolescents from five ethnic groups (Caucasians, Indian Americans, African Americans, Latin Americans) and found that ethnic identity influenced self-esteem, which in turn affected indicators of mental health such as depression and anxiety [15]. However, ethnic identity emphasizes cultural and blood ties, while national identity also includes political, legal, and social governance dimensions. In exploring the relationship between national identity and mental health, self-esteem as a potential mediating variable has often been overlooked. However, self-esteem plays a crucial role in this relationship as it acts as a bridge between national identity and subjective well-being. According to social identity theory, individuals derive a sense of self-worth and psychological stability from their group membership, including national identity, which in turn influences their mental health. Practically, understanding the mediating role of self-esteem can inform intervention strategies aimed at enhancing adolescents' mental health by strengthening their national identity and promoting self-esteem, ultimately improving their overall well-being.

It is worth noting that adolescence is a critical period for forming essential psychological and social attributes, such as self-identity, values, and a sense of belonging. During this stage, adolescents begin to explore and establish their roles, social status, and relationships within society, including their identification with their country. This makes the study of the interactions between national identity, self-esteem, and subjective well-being particularly significant, as these factors play a vital role in shaping the psychological development of young individuals. Understanding how national identity and self-esteem influence adolescents' mental health and well-being can provide valuable insights into the mechanisms driving their psychological growth. Additionally, this research can inform interventions and policies aimed at enhancing adolescents' self-esteem, fostering positive national identity, and promoting overall well-being, which is crucial in supporting their social adaptation and resilience in an increasingly complex and globalized world.

One of the objectives of this study is to examine the sociodemographic differences in national identity, self-esteem, and subjective well-being. This analysis aims to explore how factors such as gender, student status, and place of birth influence these psychological constructs. Analyzing the issues related to identity and gender, Erikson (1994) already mentioned gender-specific differences in building up an identity [16]. Gender differences, for instance, are commonly observed in research, with females often displaying stronger emotional connections to their country. This may be due to gender socialization processes that encourage relational and community-oriented values. Studies also show that females tend to have higher levels of social concern, which might contribute to stronger national identification [17]. Regional differences, particularly between urban and rural areas, also play a significant role in adolescents' national identity and self-esteem. Adolescents from urban areas often have more access to educational and social resources, which may contribute to a stronger sense of belonging and higher self-esteem [18]. In contrast, rural adolescents may experience fewer resources, which can affect their national identity and self-esteem. Additionally, student leadership roles have been linked to higher self-esteem and national identity due to increased social recognition. Research shows that student leaders tend to have higher self-worth and a greater sense of national pride, as these roles provide validation and responsibility. These sociodemographic factors are crucial for understanding how national identity and self-esteem are shaped among adolescents.

More importantly, this study aims to investigate the relationships between national identity, self-esteem, and subjective well-being among adolescents, with a

particular focus on the mediating role of self-esteem between national identity and subjective well-being. Based on the aforementioned theories and research, this study proposes the following hypotheses: 1. There is a positive correlation between national identity and subjective well-being among adolescents; 2. There is a positive correlation between self-esteem and subjective well-being among adolescents; 3. Self-esteem mediates the relationship between national identity and subjective well-being among adolescents.

Methods

Participants

In this study, participants were randomly selected from middle schools in three provinces of China: Sichuan, Guangxi, and Fujian, with 436 students from Sichuan, 169 from Guangxi, and 1,347 from Fujian. A total of 1,948 students participated, including 995 males and 953 females, aged between 13 and 15 years ($M = 14.38$, $SD = 0.81$). Among them, 734 were from rural areas, while 1,214 were from urban areas. Additionally, 741 students held leadership positions as student leaders, and 1,207 did not. All measures were administered consistently by the researchers to ensure the reliability and consistency of data collection. The study protocol was reviewed and approved by the Academic Ethics Committee of Fujian Normal University (Approval No. [PSY250023]). Parental or legal guardian consent was obtained for all participants. Fujian Agriculture and Forestry University was also involved in the research process; however, its ethics committee did not issue a formal approval number. The study was conducted in accordance with institutional ethical standards and the Declaration of Helsinki.

Measures

National identity scale

The National Identity Scale used in this study was originally developed by Lilli and Diehl and has been translated into Chinese for the purposes of this research. This scale is rooted in the principles of collective self-esteem and social identity theory and has been widely cited in previous studies [19]. It consists of 20 items covering five dimensions: Membership (identification with the national identity, e.g., "I am a member of my country"), Private (personal identification with one's national identity, e.g., "I am glad to be a member of this country"), Public (public perception of one's national identity, e.g., "My country is considered good by others"), Identity (identification of personal relationships with the country, e.g., "National affairs have nothing to do with me" (reverse scored)), and Comparison (comparing one's country with others, e.g., "My country is better than other countries in many aspects").

The scale uses a 7-point Likert scoring method, with scores ranging from 1 to 7 (1: strongly disagree, 2: disagree, 3: somewhat disagree, 4: neutral, 5: somewhat agree, 6: agree, 7: strongly agree). The items in each dimension are added to each dimension score, and the scores in each dimension are added to the total score of national identity. Higher individual scores indicate a stronger national identity. According to previous research, this scale has high reliability and validity [19]. In this study, the Cronbach's alpha coefficient of the scale was 0.95, indicating high internal consistency, which meets the requirements for questionnaire survey statistics.

The Rosenberg self-esteem scale

The Rosenberg Self-Esteem Scale, originally developed by Rosenberg (1965) [20] and translated into Chinese [21], was used in this study to assess adolescents' self-esteem. This scale consists of 10 items that assess overall self-worth and self-perception. The scale uses a 4-point Likert scoring method, combining positive and reverse scoring. Each item is scored from 0 to 3 (0: strongly disagree, 1: disagree, 2: agree, 3: strongly agree). The score of each item is added up to the total score of self-esteem. Higher individual scores indicate higher levels of self-esteem. In this study, the Cronbach's alpha coefficient of the scale was 0.95, indicating high internal consistency, which meets the requirements for questionnaire survey statistics.

Adolescent student life satisfaction scale

The Adolescent Student Life Satisfaction Scale developed by Zhang Xinggui et al. (2004) was used in this study [24]. The scale consists of 36 items, divided into six dimensions: friendship satisfaction, family satisfaction, school satisfaction, academic satisfaction, freedom satisfaction, and environment satisfaction. Friendship satisfaction includes 8 items (e.g., "My friends respect me"), family satisfaction includes 7 items (e.g., "I like being with my parents"), school satisfaction includes 6 items (e.g., "I feel uncomfortable at school"), academic satisfaction includes 6 items (e.g., "I achieve my academic goals"), freedom satisfaction includes 5 items (e.g., "Basically, no one forces me to do things I don't like"), and environment satisfaction includes 5 items (e.g., "I wish I lived somewhere else instead of where I am now").

The scale uses a 7-point Likert scoring method. Each item is scored from 1 to 7 (1: completely disagree, 2: disagree, 3: somewhat disagree, 4: neutral, 5: somewhat agree, 6: agree, 7: completely agree). The items in each dimension are added to each dimension score, and the scores in each dimension are added to the total score of life satisfaction. Higher individual scores indicate higher levels of life satisfaction. In this study, the Cronbach's alpha

coefficient of the scale was 0.97, indicating high internal consistency, which meets the requirements for questionnaire survey statistics.

In this study, we controlled for variables such as gender, region, and student status. Gender was relatively balanced (995 males and 953 females), but the distribution of region (734 rural, 1214 urban) and student status (741 student leaders, 1207 non-student leaders) was imbalanced. Gender was controlled to account for potential differences in national identity and psychological well-being based on gender. Region was controlled because urban-rural differences might influence adolescents' perceptions of national identity, as well as their psychological health due to varying social and educational environments. Student status was controlled to mitigate the potential effects of differences in social roles, sense of responsibility, and psychological needs between student leaders and non-student leaders. Although there was some imbalance in these variables, we chose to control for them to ensure the accuracy and reliability of our results.

Statistical analysis

In this study, standardized questionnaires were used to collect data online. It is important to note that the use of sum scores for certain variables, such as national identity and self-esteem, was based on the original scale recommendations. However, we have reassessed the appropriateness of using sum scores in this study and ensured that they align with the original scale's validity and reliability. All data were analyzed using SPSS version 26.0 and AMOS version 24.0. During the preliminary analysis, descriptive statistics, correlation analysis, and repeated difference analysis of the sample data were performed, including Pearson correlations between dependent variables and their differences across independent variables such as gender, educational stage, and household registration. Based on previous theories and research, this study proposed a model hypothesis for the variables and tested the hypothesized model using Structural Equation Modeling (SEM). In this model, national identity and life satisfaction were set as latent variables, and their measurement scores were divided using an independent method. The model was estimated using the Maximum Likelihood Estimation method. The fit statistics and model evaluation criteria were as follows: GFI and AGFI ≥ 0.80 , CFI, TLI, and RFI ≥ 0.80 , RMSEA ≤ 0.08 .

The manuscript was independently written by authors. Following the completion of the manuscript, the language was polished using the AI tool ChatGPT 4.0 to ensure clarity and adherence to academic standards. This use of AI was in line with best practices for academic

writing and was not involved in the creation of the original content or the conception of the research.

Results

Primary analyses

Difference analysis

Before conducting the difference analysis, the descriptive statistics for each of the dependent variables are presented in Table 1. Independent sample t-tests were conducted with students' gender, status, and place of birth as independent variables, and national identity and its dimensions, self-esteem, subjective well-being, and its dimensions as dependent variables. The t-test results with

gender as the independent variable showed (see Table 2) that in terms of the total score of national identity and its dimensions, males scored significantly lower than females in the public and private dimensions ($p < 0.05$). In terms of the total self-esteem score, males scored significantly higher than females ($p < 0.05$). In terms of the total life satisfaction score and its dimensions, males scored significantly higher than females ($ps < 0.05$).

The t-test results with students' place of birth as the independent variable showed (see Table 3), that urban students scored higher than rural students in terms of total national identity score and in the public, private, membership, and identity dimensions ($ps < 0.05$). Urban students also scored higher than rural students in terms of self-esteem ($p < 0.05$). In terms of life satisfaction and its dimensions, urban students scored significantly higher than rural students ($ps < 0.05$).

The t-test results with students' status as the independent variable showed (see Table 4) that student leaders scored higher than non-student leaders in terms of total national identity score, membership, and identity dimension ($ps < 0.05$). In terms of self-esteem, student leaders scored higher than non-student leaders ($p < 0.05$). In terms of life satisfaction and its dimensions, student leaders scored significantly higher than non-student leaders ($ps < 0.05$).

Correlation analysis

The correlation analysis results showed significant positive correlations among national identity and its dimensions (public, private, membership, identity, comparison), self-esteem, and life satisfaction and its dimensions (friendship satisfaction, family satisfaction, school

Table 1 Descriptive statistics for dependent variables

Factor	M	SD	Max	Min
National Identity	122.83	18.367	140	20
Public	24.68	4.048	28	4
Private	25.99	3.793	28	4
Membership	22.53	5.408	28	4
Identity	24.54	4.289	28	4
Comparison	25.09	3.892	28	4
Self-esteem	21.12	5.440	27	3
Life Satisfaction	195.88	42.452	252	43
Friendship Satisfaction	38.69	8.833	49	7
Family Satisfaction	39.68	9.660	49	7
School Satisfaction	32.81	8.711	42	6
Academic Satisfaction	30.28	8.676	42	6
Freedom Satisfaction	27.06	7.133	35	5
Environment Satisfaction	27.36	5.508	35	5

Table 2 Gender differences in all dependent variables

Factor	Male (N = 995) M ± SD	Female (N = 953) M ± SD	t	p
National Identity	122.10 ± 19.723	123.60 ± 16.812	-1.807	0.070
Public	24.48 ± 4.374	24.90 ± 3.667	-2.336	0.019
Private	25.63 ± 4.178	26.36 ± 3.306	-4.275	0.000
Membership	22.66 ± 5.434	22.39 ± 5.380	1.122	0.262
Identity	24.38 ± 4.502	24.71 ± 4.050	-1.706	0.087
Comparison	24.95 ± 4.186	25.24 ± 3.556	-1.630	0.102
Self-esteem	21.69 ± 5.148	20.53 ± 5.672	4.753	0.000
Life Satisfaction	200.57 ± 40.957	190.99 ± 43.445	5.010	0.000
Friendship Satisfaction	39.54 ± 8.694	37.81 ± 8.894	4.340	0.000
Family Satisfaction	40.94 ± 9.035	38.37 ± 10.109	5.922	0.000
School Satisfaction	33.57 ± 8.491	32.02 ± 8.871	3.938	0.000
Academic Satisfaction	31.47 ± 8.462	29.03 ± 8.725	6.270	0.000
Freedom Satisfaction	27.70 ± 6.961	26.38 ± 7.250	4.101	0.000
Environment Satisfaction	27.34 ± 5.502	27.38 ± 5.514	-0.148	0.882

Table 3 Place of birth differences in all dependent variables

Factor	Rural (N = 734) M ± SD	Urban (N = 1214) M ± SD	t	p
National Identity	120.71 ± 18.274	124.12 ± 18.312	−3.986	0.000
Public	24.29 ± 4.190	24.92 ± 3.942	−3.343	0.001
Private	25.45 ± 4.053	26.31 ± 3.590	−4.911	0.000
Membership	22.18 ± 5.222	22.74 ± 5.509	−2.249	0.025
Identity	24.30 ± 4.426	24.69 ± 4.200	−1.943	0.052
Comparison	24.50 ± 4.086	25.45 ± 3.726	−5.286	0.000
Self-esteem	20.29 ± 4.985	21.63 ± 5.640	−5.315	0.000
Life Satisfaction	191.58 ± 40.827	198.48 ± 43.215	−3.483	0.001
Friendship Satisfaction	37.63 ± 8.852	39.34 ± 8.762	−4.161	0.000
Family Satisfaction	39.09 ± 9.597	40.04 ± 9.684	−2.106	0.035
School Satisfaction	32.10 ± 8.244	33.24 ± 8.959	−2.790	0.005
Academic Satisfaction	29.70 ± 8.148	30.63 ± 8.966	−2.284	0.022
Freedom Satisfaction	26.20 ± 6.874	27.58 ± 7.238	−4.141	0.000
Environment Satisfaction	26.86 ± 5.573	27.66 ± 5.447	−3.103	0.002

Table 4 Status differences in all dependent variables

Factor	Student Leader (N = 741) M ± SD	Non-Student Leader (N = 1207) M ± SD	t	p
National Identity	124.56 ± 17.580	121.77 ± 18.763	3.266	0.001
Public	24.85 ± 3.885	24.58 ± 4.144	1.425	0.154
Private	26.16 ± 3.799	25.88 ± 3.788	1.551	0.121
Membership	23.34 ± 4.852	22.03 ± 5.667	5.216	0.000
Identity	24.93 ± 4.030	24.30 ± 4.425	3.174	0.002
Comparison	25.28 ± 3.821	24.97 ± 3.932	1.695	0.090
Self-esteem	21.92 ± 5.067	20.64 ± 5.604	5.076	0.000
Life Satisfaction	200.50 ± 40.849	193.05 ± 43.180	3.773	0.000
Friendship Satisfaction	39.75 ± 8.399	38.05 ± 9.032	4.135	0.000
Family Satisfaction	40.38 ± 9.300	39.26 ± 9.853	2.484	0.013
School Satisfaction	33.57 ± 8.368	32.34 ± 8.887	3.009	0.003
Academic Satisfaction	31.65 ± 8.243	29.44 ± 8.829	5.510	0.000
Freedom Satisfaction	27.43 ± 6.880	26.83 ± 7.277	1.803	0.072
Environment Satisfaction	27.73 ± 5.362	27.13 ± 5.584	2.332	0.020

satisfaction, academic satisfaction, freedom satisfaction, environment satisfaction) ($ps < 0.01$, see Table 5.).

Measurement model and hypothesized model

Confirmatory factor analysis was conducted on the factors of national identity, self-esteem, and subjective well-being, as shown in Table 6. The factor loadings for each factor were all greater than 0.5, indicating that the model has a good basic fit. Based on existing theories and research, this study hypothesized that national identity can directly affect subjective well-being and indirectly

affect subjective well-being through the mediating role of self-esteem (see Fig. 1).

The initial model was continuously fitted using the maximum likelihood estimation (ML) method, with all factors being considered based on the modification indices (M.I.). This study employed Confirmatory Factor Analysis (CFA) to evaluate the model fit. From a theoretical standpoint, several scholars have suggested that “Membership” and “Identity” may conceptually overlap within the broader framework of social identity theory. While “Membership” emphasizes a sense of belonging and perceived value to the group, “Identity” reflects

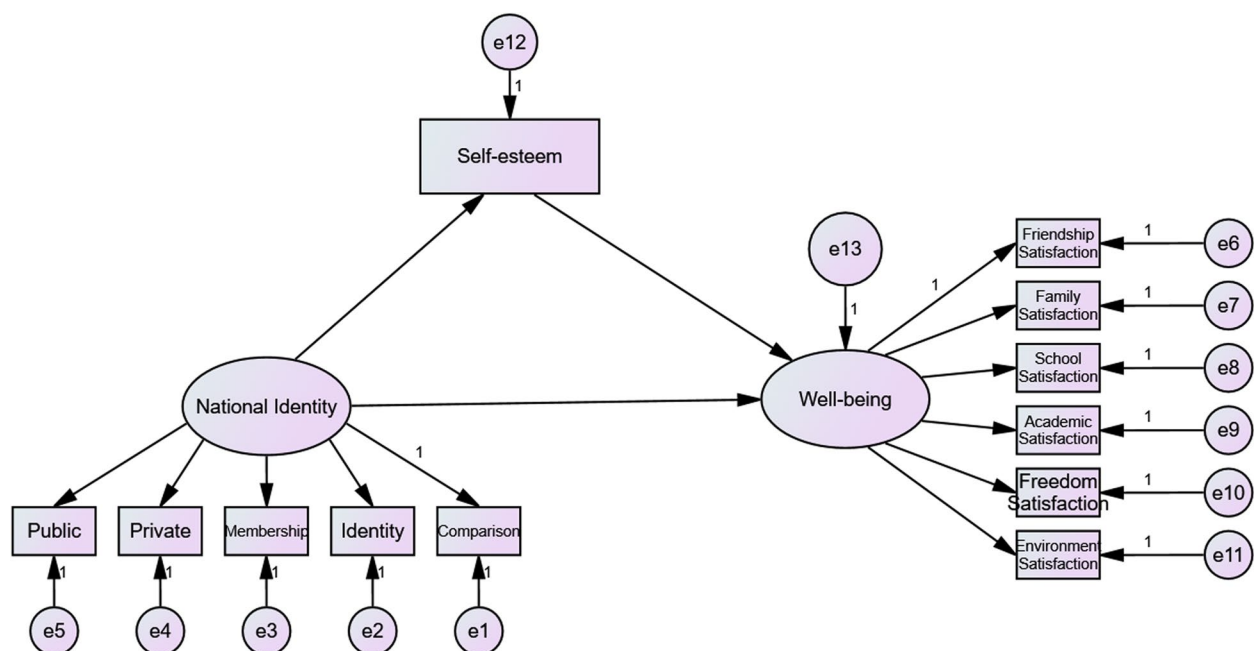
Table 5 Correlation analysis among all variables

	National Identity	Public	Private	Membership	Identity	Comparison	Self-esteem	Life Satisfaction	Friendship Satisfaction	Family Satisfaction	School Satisfaction	Academic Satisfaction	Freedom Satisfaction	Environment Satisfaction
National Identity	1	.877**	.832**	.825**	.892**	.867**	.566**	.569**	.480**	.483**	.558**	.431**	.494**	.570**
Public	.877**	1	.685**	.614**	.717**	.787**	.419**	.461**	.387**	.378**	.470**	.319**	.399**	.509**
Private	.832**	.685**	1	.518**	.693**	.754**	.358**	.371**	.284**	.318**	.400**	.210**	.310**	.476**
Membership	.825**	.614**	.518**	1	.721**	.566**	.668**	.599**	.530**	.516**	.559**	.525**	.519**	.478**
Identity	.892**	.717**	.693**	.721**	1	.683**	.496**	.503**	.417**	.435**	.492**	.389**	.431**	.501**
Comparison	.867**	.787**	.754**	.566**	.683**	1	.409**	.458**	.390**	.383**	.432**	.337**	.418**	.481**
Self-esteem	.566**	.419**	.358**	.668**	.496**	.409**	1	.689**	.614**	.594**	.608**	.641**	.612**	.517**
Life Satisfaction	.569**	.461**	.371**	.599**	.503**	.458**	.689**	1	.894**	.890**	.881**	.887**	.904**	.751**
Friendship	.480**	.387**	.284**	.530**	.417**	.390**	.614**	.894**	1	.717**	.724**	.838**	.772**	.568**
Family	.483**	.378**	.318**	.516**	.435**	.383**	.594**	.717**	.717**	1	.711**	.723**	.799**	.657**
School	.558**	.470**	.400**	.559**	.492**	.432**	.608**	.881**	.724**	.711**	1	.718**	.744**	.705**
Academic	.431**	.319**	.210**	.525**	.389**	.337**	.641**	.887**	.838**	.779**	.718**	1	.779**	.507**
Freedom	.494**	.399**	.310**	.519**	.431**	.418**	.612**	.904**	.772**	.799**	.744**	.779**	1	.629**
Environment	.570**	.509**	.476**	.478**	.501**	.481**	.517**	.751**	.568**	.657**	.705**	.507**	.629**	1

** . Correlation is significant at the 0.01 level (2-tailed)

Table 6 Structural Equation Model Parameter Estimates of Initial Model

			Regression Estimate	S.E.	C.R.	p	Standardized Regression Weights
Self-esteem	<---	National Identity	0.885	0.035	25.450	***	0.544
Well-being	<---	National Identity	0.605	0.049	12.396	***	0.262
Well-being	<---	Self-esteem	0.803	0.03	27.079	***	0.565
Comparison	<---	National Identity	1				0.859
Identity	<---	National Identity	1.089	0.023	47.691	***	0.849
Membership	<---	National Identity	1.2	0.031	38.525	***	0.742
Private	<---	National Identity	0.911	0.021	43.540	***	0.803
Public	<---	National Identity	1.045	0.021	49.039	***	0.863
Friendship Satisfaction	<---	Well-being	1				0.875
Family Satisfaction	<---	Well-being	1.067	0.021	51.426	***	0.854
School Satisfaction	<---	Well-being	0.953	0.019	50.441	***	0.845
Academic Satisfaction	<---	Well-being	0.978	0.018	53.514	***	0.871
Freedom Satisfaction	<---	Well-being	0.825	0.015	56.457	***	0.894
Environment Satisfaction	<---	Well-being	0.504	0.013	37.342	***	0.707

*** represents $p < 0.001$ **Fig. 1** Hypothesized Model of the Relationship between National Identity, Subjective Well-being, and Self-esteem

how this group membership is integrated into one's self-concept [22]. Empirical research has also shown that these components often load onto a single latent factor in adolescent populations, particularly when the items reflect perceived group value rather than structural participation [23]. Therefore, including both "Membership" and "Identity" as separate latent variables may introduce

conceptual redundancy and multicollinearity into the model. This theoretical overlap provides justification for considering the removal of "Membership" in favor of a more parsimonious and theoretically coherent model. After careful examination, the model fit improved significantly following the removal of the "Membership" factor, a decision supported by both data-driven evidence

and theoretical considerations. The Modification Indices (M.I.) provided by AMOS revealed a high covariance value (M.I. = 174.250) between the “Membership” and “Identity” factors, suggesting a substantial overlap in their conceptual content. According to AMOS’s explanation, allowing the covariance between the “Membership” and “Identity” factors to be a free parameter would result in a substantial reduction in the model’s discrepancy. Given this strong overlap, we determined that removing the “Membership” factor would be beneficial. Subsequently, the fit indices of the revised model showed notable improvements, especially in CFI, GFI, TLI, and RFI, all of which indicated a good model fit. The detailed comparison of the initial and revised models is presented in Table 7. To assess the robustness of parameter estimates under potential non-normality, we conducted a bootstrap analysis with 5,000 resamples using the bias-corrected confidence interval method. This approach helps reduce the influence of distributional violations on standard errors and supports more reliable inference in mediation models. However, although the RMSEA and chi-square/df values of the revised model remain slightly above the ideal thresholds (RMSEA close to 0.08, chi-square/df close to 5), suggesting there is still room for refinement, it

is important to consider that RMSEA values are typically influenced by the sample size and the complexity of the model. Similarly, the chi-square test tends to be sensitive to large sample sizes ($N > 1000$). Therefore, it would be inappropriate to judge the model fit solely based on these two indices. In fact, other fit indices such as CFI, TLI, and RFI provide a more holistic view of the model’s overall fit, and these indices suggest that the model fit is acceptable. In sum, the decision to remove the “Membership” factor is supported by both empirical evidence and theoretical considerations within the social identity framework, enhancing both the parsimony and interpretability of the model. The final model is represented by adding bidirectional arrows to indicate the covariance between the factors (see Fig. 2).

There are three paths producing direct effects in the model: national identity has a positive and direct effect on self-esteem (estimate: 0.49, $SE = 0.03$, $p < 0.001$); self-esteem has a positive and direct effect on subjective well-being (estimate: 0.59, $SE = 0.03$, $p < 0.001$); and national identity has a positive and direct effect on subjective well-being (estimate: 0.24, $SE = 0.05$, $p < 0.001$) (see Figure 2). Additionally, self-esteem serves as a mediating variable between national identity and subjective

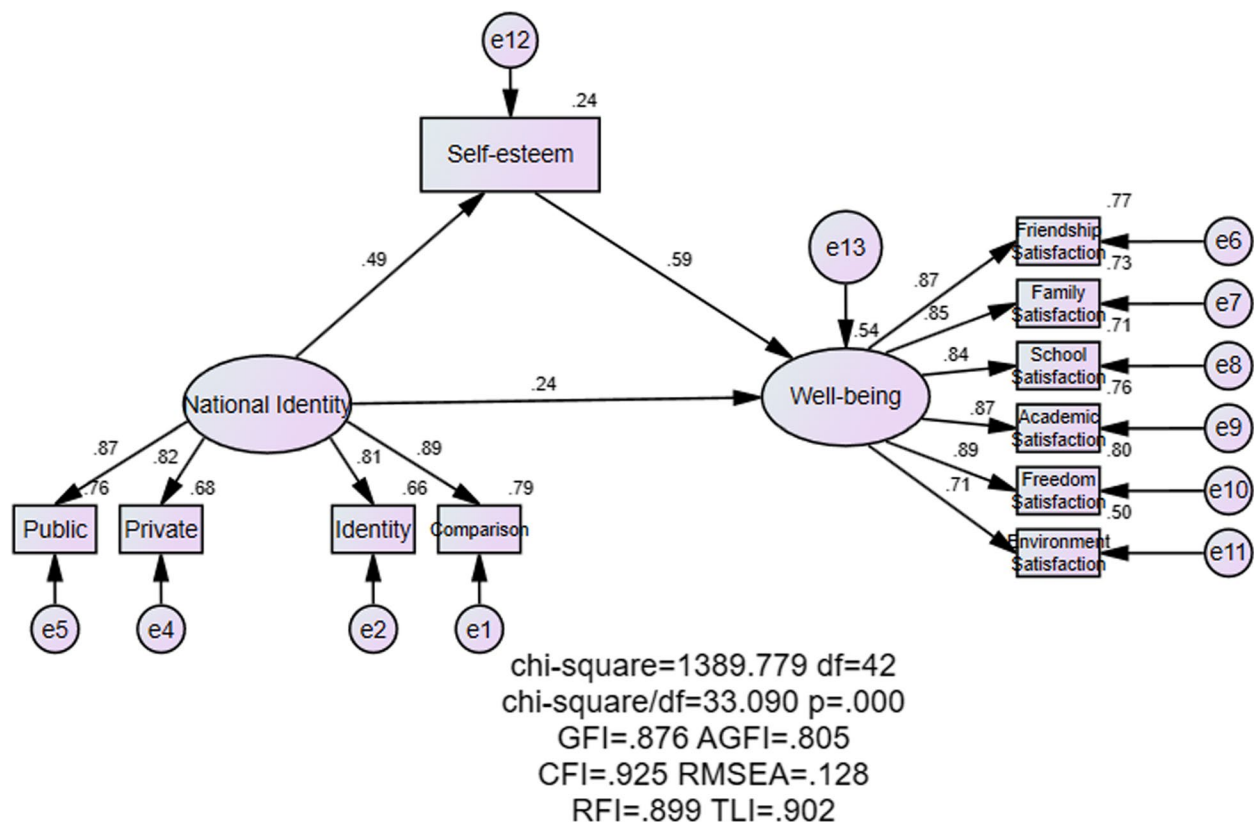


Fig. 2 Structural Equation Model of the Relationship between National Identity, Subjective Well-being, and Self-esteem

Table 7 Model Fit Indices and Fit Criteria

Indices	X ² /df	P	GFI	CFI	AGFI	RMSEA	RFI	TLI
Fit criteria	1–5	> 0.05	> 0.8	> 0.9	> 0.8	< 0.08	> 0.90	> 0.90
Initial model	42.880	< 0.001	0.822	0.892	0.733	0.147	0.860	0.862
Modified model	33.090	< 0.001	0.876	0.925	0.805	0.128	0.899	0.902

well-being. National identity has a positive indirect effect on subjective well-being through self-esteem, with an indirect effect of 0.29. The total effect of national identity on subjective well-being is the sum of the direct effect and the indirect effect ($0.24 + 0.49 \times 0.59 = 0.53$), with the direct effect accounting for 45.28% and the indirect effect accounting for 54.55%. To assess the robustness of indirect effects, we conducted a bootstrap analysis with 5,000 resamples. The indirect effect of national identity on subjective well-being through self-esteem was statistically significant ($\beta = 0.29$, $SE = 0.048$), with a 95% bias-corrected confidence interval of [0.554, 0.742], which did not include zero. This result provides strong evidence for the mediating role of self-esteem. Table 8.

Discussion

The Influence of gender, position, and place of origin on adolescents' national identity, self-esteem, subjective well-being

The findings of this study reveal significant gender differences in the “public” and “private” dimensions of national

identity, with female adolescents exhibiting a stronger sense of value in belonging to their country and perceiving a higher level of recognition from others compared to male adolescents. This finding is consistent with previous research, such as the study by Juskeviciene (2022), which found that females have a stronger emotional identification with their country and are more likely to recognize and agree with the cultural and historical values of the nation [25]. The reason for this may be that females are more inclined to seek social connections and a sense of belonging [26], and are more likely to exhibit prosocial behaviors, including loyalty and identification with the country [27]. Therefore, females may emphasize community awareness and relational values more when expressing patriotism. However, there were no significant gender differences in the dimensions of membership, comparison, and identity, indicating that both female and male adolescents have similar levels of participation in national affairs, identity with belonging to the country, and a sense of superiority when comparing their country with others.

Table 8 Structural Equation Model Parameter Estimates of Modified Model

			Regression Estimate	S.E.	C.R.	p	Standardized Regression Weights
Self-esteem	<---	National Identity	0.768	0.034	22.57	***	0.488
Well-being	<---	National Identity	0.536	0.045	11.868	***	0.24
Well-being	<---	Self-esteem	0.839	0.029	29.172	***	0.59
Comparison	<---	National Identity	1				0.889
Identity	<---	National Identity	1.008	0.022	46.224	***	0.813
Private	<---	National Identity	0.901	0.019	47.106	***	0.822
Public	<---	National Identity	1.018	0.02	52.176	***	0.871
Friendship Satisfaction	<---	Well-being	1				0.875
Family Satisfaction	<---	Well-being	1.067	0.021	51.425	***	0.854
School Satisfaction	<---	Well-being	0.953	0.019	50.413	***	0.845
Academic Satisfaction	<---	Well-being	0.978	0.018	53.52	***	0.871
Freedom Satisfaction	<---	Well-being	0.826	0.015	56.485	***	0.894
Environment Satisfaction	<---	Well-being	0.504	0.014	37.333	***	0.707

*** represents $p < 0.001$

This study also found that male adolescents scored significantly higher than female adolescents in terms of self-esteem. One of the important theoretical foundations for exploring the influence of gender differences on adolescent self-esteem is the social comparison theory [28], which posits that individuals evaluate their abilities and opinions by comparing themselves to others. For adolescents, these comparisons often revolve around aspects such as appearance, achievements, and social status [29]. The prevalence of social media intensifies these comparisons, especially in terms of appearance and lifestyle. Research indicates that female adolescents are more likely to engage in social comparisons through social media and consequently feel dissatisfied and stressed, which can negatively impact their self-esteem [33]. Additionally, the gender norms theory [34] suggests that societal expectations for males and females differ, shaping individuals' behaviors, beliefs, and self-evaluations. Males are typically encouraged to exhibit independence and confidence, traits closely associated with high self-esteem.

Moreover, students' roles and backgrounds significantly impact their national identity and self-esteem. Compared to rural students, urban students exhibit stronger performance in multiple dimensions of national identity and self-esteem, likely due to the rich resources and opportunities provided by urban environments, which help adolescents shape a firmer sense of national belonging and personal values [35]. Similarly, students holding leadership positions generally demonstrate higher national identity and self-esteem than those without leadership roles, possibly due to the social recognition and self-efficacy associated with leadership roles [40].

Additionally, the observed gender differences—female adolescents showing higher national identity but lower self-esteem—can be interpreted in light of gender socialization under Chinese cultural norms. Rooted in Confucian values, Chinese girls are often encouraged to be modest, obedient, and relationship-oriented, which strengthens their desire for group belonging and may enhance national identity [30].

At the same time, these norms tend to place stricter expectations on girls regarding academic performance and physical appearance. Studies have shown that Chinese adolescent girls report higher levels of body dissatisfaction and social comparison, and are more likely to internalize appearance-related societal standards, resulting in lower self-esteem [31, 32]. These findings help explain the paradox in our results: stronger national identity among females but lower self-esteem compared to males.

Relationship between national identity and Self-esteem

There are significant positive correlations between adolescents' national identity and its dimensions with self-esteem. This finding aligns with the perspectives of social identity theory [41]. Social identity theory emphasizes that individuals derive self-esteem from their belonging to social groups, while self-determination theory posits that fulfilling the needs for belonging and self-worth is crucial for self-esteem.

Numerous studies have found that a strong sense of national identity or ethnic identity is often associated with higher levels of self-esteem. For example, Smith and Henry (1996) demonstrated how group identification, when it becomes part of an individual's self-concept, enhances self-esteem [42]. Additionally, Jetten et al. (2001) showed how individuals strengthen their identification with their own group to maintain and enhance self-esteem when perceiving discrimination from mainstream society [43]. Ferrari et al. (2015) further revealed the importance of confirming national identity in enhancing individual self-esteem, especially for those with a strong sense of national identity [44]. Mooringinsih et al. (2021) used structural equation modeling to analyze the influence of religious importance, self-esteem, multicultural attitudes, and intergroup relations on Indonesian national identity, finding a positive relationship between self-esteem and national identity [40].

However, the relationship between national identity and individual self-esteem is not static and may be influenced by multiple factors. Spinner-Halev and Theiss-Morse (2003) suggested that while national identity can enhance individual self-esteem, this relationship is not always stable due to the competitive nature of intergroup relations, which can lead to negative consequences such as intergroup hostility [45]. Additionally, the relationship between ethnic identity and majority group identity shows complexity, indicating that an individual's self-esteem is related not only to their ethnic identity but also to how they identify with and integrate into the majority group. Studies on Uyghur college students in China have further confirmed this complexity, showing a positive correlation between cultural identity and self-esteem, as well as the mediating role of cultural adaptation attitudes [46]. Therefore, the relationship between national identity and self-esteem may be influenced by a combination of factors such as cultural adaptation attitudes, ethnic identity, and other social and psychological factors.

From a cross-cultural perspective, the significant effect of national identity on self-esteem and subjective well-being observed in this study may be especially pronounced in collectivist societies like China. Cross-cultural research has demonstrated that in collectivist

cultures, national identity is closely associated with community belonging and relational harmony, thereby enhancing self-esteem through social affirmation and group acceptance [38]. In contrast, in individualistic cultures such as the United States and Western Europe, self-esteem is more strongly rooted in personal achievement, autonomy, and uniqueness rather than group membership [37, 39]. Therefore, collectivist values may amplify the influence of national identity on self-esteem, as group belonging is more deeply integrated into one's self-concept and identity, which in turn contributes to enhanced psychological well-being [36].

Relationship between national identity and subjective well-being

This study found a significant positive correlation between adolescents' national identity and their life satisfaction. Social identity theory [47] emphasizes the importance of an individual's social identity and group identification on their self-esteem and psychological well-being. Recent studies have deepened our understanding of the relationship between national identity and life satisfaction. For example, a study on different ethnic groups in the UK found a positive correlation between British national identity and life satisfaction [48]. This suggests that even in multicultural social environments, a strong sense of national identity is associated with higher life satisfaction. Additionally, a study on Holocaust survivors and their descendants in the Czech Republic and Slovakia found that despite severe historical trauma, national identity still plays an important role in enhancing life satisfaction [49]. This study highlights the importance of national identity in transgenerational transmission and its association with individuals' subjective well-being. Another study from the perspective of cultural adaptation explored the relationship between ethnic identity, cultural adaptation, and life satisfaction, finding significant positive correlations among these factors [50]. This study provides insights into how ethnic identity and cultural adaptation are associated with life satisfaction through their effects on individuals' national identity and social belonging.

It is important to note that some studies, although not directly focusing on the relationship between national identity and life satisfaction, reveal various factors influencing life satisfaction, such as individual psychological states, gender roles, and social class. These factors may interact with national identity to shape individuals' life experiences and satisfaction. For example, a study in China found that national music courses could enhance university students' subjective well-being, although the study did not find a direct association with national identity or self-esteem [51]. A study on emerging adults in the

Philippines found that the relationship between national resilience and life satisfaction was mediated by depressive emotions and moderated by gender [52]. Another study explored the relationship between subjective social class and life satisfaction, considering the roles of class consistency and identity uncertainty [53].

Overall, both direct and indirect research indicates a complex association between national identity and individuals' life satisfaction. Understanding this relationship requires considering multiple aspects, including individual psychology, socio-cultural, and socio-economic factors.

Relationship between self-esteem and subjective well-being

Consistent with this study, the positive correlation between self-esteem and subjective well-being has been confirmed in many studies. This aligns with Rosenberg (1965) self-esteem theory, which emphasizes the core role of self-esteem in individual mental health and well-being, positing that self-esteem is a general feeling of self-worth and is crucial for mental health. This theory has been supported by numerous recent studies. For example, a study explored how self-esteem influences the relationship between social support and subjective well-being, finding a significant positive correlation between self-esteem and subjective well-being [54]. Additionally, a study on Chinese school-age children found significant correlations between gender equality awareness, self-esteem, and subjective well-being [55]. This study further confirms the positive relationship between self-esteem and individuals' subjective well-being, while also highlighting the role of gender roles and social expectations in shaping both self-esteem and subjective well-being. Diener et al. (2002) showed that there is a bidirectional relationship between subjective well-being and self-esteem, where self-esteem can enhance subjective well-being, and subjective well-being can also enhance self-esteem [56]. A study on Filipino adolescents found that gender and various dimensions of subjective well-being significantly predicted self-esteem, with life satisfaction being the strongest predictor of self-esteem [57].

When exploring the relationship between self-esteem and subjective well-being, some studies also examined the role of other variables. For example, one study found that self-esteem mediated the relationship between gratitude and subjective well-being, suggesting that self-esteem not only directly affects individuals' subjective well-being but may also serve as a bridge between other positive psychological traits and subjective well-being [58]. In the context of social media, a study examined the relationship between social network use, social

comparison, and subjective well-being, finding strong associations among social comparison, reflection, identity distress, identity clarity, self-esteem, and subjective well-being [59]. Furthermore, a study on Chinese school-age children found significant correlations between gender equality awareness, self-esteem, and subjective well-being, further confirming the positive impact of self-esteem on subjective well-being and emphasizing the role of gender roles and social expectations in forming self-esteem and subjective well-being [55].

In summary, the positive correlation between self-esteem and subjective well-being has received widespread support. Self-esteem, as a general feeling of self-worth, is an important component of individual mental health and well-being. Enhancing self-esteem can effectively increase individuals' subjective well-being, and vice versa.

Role of self-esteem in predicting subjective well-being from National Identity

The findings of this study further confirm the strong relationship among national identity, self-esteem, and subjective well-being, particularly the mediating role of self-esteem between national identity and subjective well-being. In the introduction, we proposed that national identity influences adolescents' social belonging and self-concept, which in turn affect their psychological well-being (e.g., subjective well-being). The novelty of our study lies in not only confirming the direct relationship between national identity and subjective well-being but also highlighting the mediating effect of self-esteem. This finding extends social identity theory (SIT) by showing that national identity is not just a source of self-esteem, but also contributes indirectly to subjective well-being through self-esteem.

The mediating role of self-esteem in the relationship between national identity and subjective well-being provides deeper insights into how individuals derive self-worth from their group affiliations, ultimately influencing their psychological well-being. Social identity theory serves as the theoretical foundation for this, suggesting that individuals enhance their self-esteem through their membership in social groups. Those with a strong national identity tend to derive more psychological fulfillment from group belonging, which subsequently boosts their self-worth. In line with self-determination theory, which posits that fulfilling needs for belonging and self-worth is crucial for well-being, our findings suggest that national identity not only satisfies the need for social belonging but also leads to greater self-esteem and well-being [41].

On the empirical front, our findings align with previous studies that have examined the relationship

between ethnic identity, self-esteem, and subjective well-being. For instance, study on Tibetan students in China found significant correlations among ethnic identity, self-esteem, and life satisfaction, with self-esteem playing a mediating role between ethnic identity and life satisfaction [60]. It is important to note that the mediating role of self-esteem may vary across different cultural contexts. In collectivist cultures, such as China, where group belonging and social harmony are highly valued, national identity plays a particularly significant role in shaping self-esteem. In contrast, in individualistic cultures, national identity may have a more indirect impact on self-esteem, with personal achievements and individual values playing a more prominent role in self-worth.

Self-esteem not only mediates the relationship between national identity and subjective well-being but may also mediate the relationship between other psychological and behavioral factors and subjective well-being. Another study found that gratitude and self-esteem directly predicted subjective well-being, with self-esteem mediating the relationship between gratitude and subjective well-being [58]. Research on adolescents also showed that self-esteem mediated the relationship between peer victimization and subjective well-being, with forgiveness moderating this relationship, emphasizing how self-esteem and forgiveness jointly influence individuals' subjective well-being when facing negative social experiences [61]. Furthermore, a study explored how perceived threats during the Qatar blockade affected adolescents' well-being through self-esteem and examined the buffering role of national identity. The results showed that perceived threats reduced well-being by lowering self-esteem, and the strength of national identity did not change this relationship, highlighting the mediating role of self-esteem between national identity and subjective well-being [62]. Additionally, a study investigated how occupational identity verification, self-esteem, and identity salience influenced managers' mental health, including psychological distress and depression, further confirming the mediating role of self-esteem between individual identity and psychological well-being [63]. Another study found that problematic internet use and self-esteem played a chain mediating role in the relationship between internet use time and subjective well-being [64].

From a practical standpoint, the findings of this study suggest valuable strategies for enhancing adolescents' mental health. Particularly in multicultural and cross-cultural contexts, fostering a strong sense of national identity could be an effective strategy to enhance adolescents' social belonging and self-esteem, thereby boosting

their subjective well-being. Given the mediating role of self-esteem, policies and interventions aimed at strengthening national identity among adolescents could lead to improved psychological support, especially in the face of social pressures. Educators and policymakers should consider promoting national identity as a means to support self-esteem and well-being, especially in diverse social environments.

Conclusion

Through empirical analysis, this study reveals the inter-relationships between adolescents' national identity, self-esteem, and subjective well-being, particularly the mediating role of self-esteem in linking national identity and subjective well-being. The results provide empirical support for social identity theory and self-esteem theory and offer practical guidance for promoting adolescents' mental health and well-being. Education and social policies should emphasize cultivating adolescents' national identity and self-esteem to enhance their subjective well-being.

Limitation

Despite providing valuable insights, this study has several limitations. First, due to the use of a survey research design, causal relationships cannot be determined. Future research could use experimental methods to further explore the causal relationships among these variables. Second, this study mainly relied on self-report data, which may have social desirability bias. Future research could use multiple methods and sources to enhance the reliability of the results. Third, this study is its reliance on cross-sectional data, which prevents establishing causal relationships. Future research could employ longitudinal designs to better understand the causal mechanisms between national identity, self-esteem, and subjective well-being. Additionally, the sample of this study was limited to Chinese adolescents, which may restrict the generalizability of the findings. Future research should consider factors such as family background, socioeconomic status, peer relationships, and other individual characteristics that may influence national identity, self-esteem, and subjective well-being. Finally, although the sample size is large, future research should consider evaluating whether it is sufficiently representative of the general adolescent population, and whether the age range adequately captures the developmental changes in national identity, self-esteem, and subjective well-being.

Abbreviations

SEM	Structural Equation Modeling
GFI	Goodness Of Fit Index
AGFI	Adjusted-Goodncss-Of-Fit Index

CFI	Comparative Fit Index
TLI	Tucker-Lewis index
RFI	Relative Fit Index
RMSEA	Root Mean Square Error Of Approximation
ML	The Maximum Likelihood Estimation Method
M.I.	The Modification Indices
CFA	Confirmatory Factor Analysis
CI	Confidence Interval
SE	Standard Error
LCA	Latent Class Analysis
M	Mean
SD	Standard Deviation
Max	Maximum
Min	Minimum
C.R.	Critical Ratio
SMC	Squared Multiple Correlations
N	Sample Size
X ² /df	chi-square/df
SIT	social identity theory

Supplementary Information

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Supplementary Material 1.

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Authors' contributions

All authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by Yue Yang, Jun Zhan and Yan WenFan. The first draft of the manuscript was written by Yue Yang and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

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Data availability

Data is provided within the manuscript or supplementary information files.

Declarations

Ethics approval and consent to participate

The study protocol was reviewed and approved by the Academic Ethics Committee of Fujian Normal University (Approval No. PSY250023). Fujian Agriculture and Forestry University was also involved in the research process; however, its ethics committee did not issue a formal approval number. The study was conducted in accordance with institutional ethical standards and the principles of the Declaration of Helsinki. Informed consent was obtained from all participants. For those under the age of 16, consent was obtained from their parents or legal guardians.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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