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# Development and Validation of the Social Activity Participation Scale for Adolescents in Ethnic Regions of China: A Case Study in Guizhou Province Using the Cunchao Football Tournament

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# Development and Validation of the Social Activity Participation Scale for Adolescents in Ethnic Regions of China: A Case Study in Guizhou Province Using the Cunchao Football Tournament

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Abstract

Social activity participation is a crucial component of moral character and social development for adolescents in ethnic regions of China. However, there is a lack of scientifically valid assessment tools that are both culturally sensitive and specific to this population. Grounded in the adolescents' own perspectives and the theoretical framework of interdependent self-construal (Markus & Kitayama, 1991), this study moves beyond Western individualistic paradigms to emphasize the core role of ethnic cultural identity. Using the Guizhou "Cunchao" (Village Football Super League) as an empirical context, we constructed a four-dimensional model encompassing Participation Motivation, Activity Identity, Active Engagement, and Effect Identity. An initial pool of 34 items was developed. Through item analysis (including independent samples t-tests, item-total correlation, and item difficulty), exploratory factor analysis (Sample 1, n = 268), and confirmatory factor analysis (Sample 2, n = 496), a final scale of 25 items was established. Reliability analysis demonstrated excellent internal consistency (total scale Cronbach's $\alpha = 0.95$; subscales $\alpha = 0.82$ to 0.92) and test-retest reliability over an 8-week interval (total scale = 0.97; subscales = 0.86 to 0.90). Validity evidence was robust: (1) Convergent Validity.The Average Variance Extracted (AVE) for Effect Identity was 0.69 (> 0.50). While the AVE values for Participation Motivation, Activity Identity, and Active Engagement (0.47–0.48) were slightly below the 0.50 threshold, their Composite Reliability (CR) indices were all above 0.80 (range: 0.82–0.93), and all standardized factor loadings exceeded 0.55. Following established guidelines (e.g., Fornell & Larcker, 1981), these results are considered acceptable given the high CR and satisfactory loadings. (2) Structural Validity.Confirmatory Factor Analysis indicated acceptable model fit ($\chi^2/df = 2.35$, Comparative Fit Index [CFI] = 0.90, Root Mean Square Error of Approximation [RMSEA] = 0.08). (3) Discriminant Validity.The square root of the AVE for each dimension was greater than its correlations with other dimensions, meeting the required standard. This scale represents the first standardized tool for assessing social activity participation among adolescents in China's ethnic regions. The developed Motivation–Identity–Engagement–Effect model enriches the theoretical framework of social participation within collectivist cultural contexts and quantitatively underscores the central role of ethnic cultural identity. It provides a scientific basis for evaluating participation levels, investigating the impact

of such activities on adolescent psychological development (e.g., moral character, subjective well-being), and formulating targeted policies to promote social engagement among ethnic minority youth.

Keywords: Social Activity Participation; Ethnic Region Adolescents; Scale Development; Ethnic Cultural Identity

## 1. Introduction

Social activity participation emphasizes an individual's agency and initiative in social life (Deng, 2016) and refers to the breadth and depth of one's involvement in life situations, influenced by the dynamic interplay of environmental, personal, and health factors (WHO, 2011). Existing scholarship has proposed various dimensional frameworks for conceptualizing social participation, including political, economic, and cultural dimensions (Wang, 2010); community versus personal relationship dimensions (Amagasa et al., 2017); and paid versus unpaid activity dimensions (Tomioka et al., 2017).

However, predominant theories of social participation, such as those rooted in Western individualistic cultural contexts (e.g., Youniss & Yates, 1998), prioritize personal development. These theories struggle to explain participation phenomena driven by collective honor and ethnic identity, which are observed among adolescents in China's ethnic regions and exemplified by their engagement in activities like the Guizhou Cunchao (Village Football Super League).By integrating a dimension of "Activity Identity," this study posits and tests that group identity within a collectivist cultural framework serves as a core psychological mechanism driving participatory behaviors. This aligns with cultural psychology's propositions regarding interdependent self-construal (Markus & Kitayama, 1991), emphasizing the fundamental connectedness of individuals to their social context.

Within the Chinese context, existing dimensional frameworks often categorize participation based either on the inherent nature of the activities (e.g., political/economic participation) or specific demographic groups (e.g., the elderly, university students). Some frameworks, following a researcher-imposed logic, conflate the external properties of an activity with the internal psychological process of participation (e.g., Wang, 2010). This conflation fails to account for the significant variance in the depth of participation observed among adolescents engaged in the same activity, such as the "Cunchao." To address this gap, the present study adopts the theoretical lens of prototype theory (Rosch, 1975). We prioritize the emic perspective of adolescents from ethnic regions, utilizing focus group interviews to extract their cognitive prototypes of participation. This approach allows for a dynamic depiction of participation depth, culminating in an integrated conceptual framework that systematically reflects key facets of the participation continuum: Motivation, Identity, Engagement, and Effect.

It is particularly noteworthy that there is a paucity of research focusing on social activity participation among middle and high school adolescents in China's ethnic regions. Existing assessment tools are either tailored for specific populations (Tang, 2017) or lack rigorous quantitative analysis and psychometric validation (Hu, 2006; Wang, 2003). This scarcity impedes the precise assessment of this group's participation levels, developmental patterns, and influencing factors, consequently constraining the effective implementation of related moral education initiatives. The current state of research reveals three critical disconnections: (1) A theoretical perspective disconnection, where dimensions rely on external activity attributes rather than the participant's internal psychological process; (2) A cultural context disconnection, where Western theoretical dominance overlooks the central role of ethnic group identity within collectivist cultures; and (3) A developmental stage disconnection, where instrument development fails to align with the family and community-anchored behavioral characteristics of adolescents. These disconnections render existing frameworks inadequate for scientifically explaining the participation mechanisms of adolescents in ethnic regions.

This study employs the widely recognized and culturally salient case of the Guizhou "Cunchao" as its empirical context. This grassroots-organized event deeply integrates sports competition with ethnic cultural performances. Participation in such activities embodies a continuum from societal to personal benefit: it fosters community harmony and cultural preservation (societal benefit) while simultaneously strengthening participants' interpersonal bonds and positive personal qualities (personal/self-benefit) (Chen et al., 2004). This context provides an ideal window for examining the participatory behaviors of ethnic region adolescents within locally meaningful, culturally rich social activities. As a successful exemplar of China's Rural Revitalization Strategy, the profound impact of the "Cunchao" on adolescents in these regions underscores the urgency and practical significance of developing a targeted assessment tool.

Therefore, this study aims to develop a psychometrically sound Social Activity Participation Scale for Adolescents in Ethnic Regions, firmly grounded in the subjective perspectives of the adolescents themselves. Compared to prior research, the innovations of this study are threefold: (1) Innovation in research perspective: It shifts from a researcher-centric paradigm to one based on prototype theory, using focus group interviews to deeply capture the cognitive and behavioral representations of social activity participation (using "Cunchao" as an example) from the adolescents' viewpoint. (2) Innovation in conceptual framework: Through evaluations by adolescents, it systematically explores the conceptual structure of social activity participation, identifying four core dimensions—Participation Motivation, Activity Identity, Active Engagement, and Effect Identity—and extracting typical exemplars. (3) Innovation in assessment tool: Incorporating expert validation, it preliminarily constructs and verifies a four-dimensional assessment structure, establishing the first standardized evaluation tool specifically designed for social activity participation among adolescents in China's

ethnic regions.

The theoretical value of this study lies in revealing the multidimensional psychological structure (Motivation–Identity–Engagement–Effect) of social activity participation for this population, enriching theoretical understanding in this field. Its practical significance is threefold: (1) Providing a scientific assessment tool for systematically investigating the current state of participation; (2) Facilitating deeper research into the mechanisms through which specific activities (e.g., “Cunchao”) influence adolescent psychological development (e.g., moral character, subjective well-being); and (3) Informing and optimizing policy-making by offering data-driven evidence for formulating and adjusting moral education policies related to social participation among ethnic region adolescents.

## 2. Methods

### 2.1 Participants and Sampling

Two independent samples were recruited using a convenience sampling method, which was deemed appropriate for the study's feasibility and the need for regional representation. Data were collected via Wenjuanxing, a widely used and reliable online survey platform in China, chosen for its ease of use and wide reach among the target population..

Sample 1 was used for item analysis and exploratory factor analysis (EFA). Questionnaires were distributed to middle school students in the location of the Guizhou Cunchao(Rongjiang County, Guizhou Province). Invalid responses were excluded based on the following criteria: (1) completion time less than 30% of the theoretical minimum (i.e., < 2 minutes); (2) patterned responses (e.g., 10 consecutive identical choices); (3) missing key demographic information. Of the 280 questionnaires distributed, 12 were invalid, yielding 268 valid responses (response rate = 95.71%). The sample comprised 117 males (43.65%) and 151 females (56.35%), drawn from 4 middle schools (2 urban, 2 township) in Rongjiang County.

Sample 2 was used for confirmatory factor analysis (CFA) and additional reliability/validity analyses. The sampling scope was expanded to 12 middle schools across 6 cities in the Qiandongnan Prefecture, Guizhou. The same criteria for invalid response exclusion were applied. Out of 520 questionnaires distributed, 24 were excluded, resulting in 496 valid responses (response rate = 95.38%). This sample included 219 males (44.15%) and 277 females (55.85%).

A subsample was drawn from Sample 2 for test-retest reliability assessment after an 8-week interval. This subsample was matched in terms of gender and grade distribution (48.3% male, 51.7% female; 55.4% middle school, 44.6% high school).

Table 1. Basic Information of Participants

| Category | Sample 1 (n=268) | Sample 2 (n=496) |
|---|---|---|

| | | n | % | n | % |
|---|---|---|---|---|---|
| Gender | Male | 117 | 43.65 | 219 | 44.15 |
| | Female | 151 | 56.35 | 277 | 55.85 |
| Grade | Grade 7 | 66 | 24.62 | 147 | 29.63 |
| | Grade 8 | 88 | 32.83 | 108 | 21.77 |
| | Grade 9 | 64 | 23.88 | 70 | 14.11 |
| | High School | 50 | 18.67 | 171 | 34.49 |
| Ethnicity | Han | 38 | 14.17 | 36 | 7.25 |
| | Ethnic Minority | 230 | 85.83 | 460 | 92.75 |
| Only Child | Yes | 18 | 6.71 | 31 | 6.25 |
| | No | 250 | 93.29 | 465 | 93.75 |
| Single-Parent Family | Yes | 39 | 14.55 | 61 | 12.29 |
| | No | 229 | 85.45 | 435 | 87.71 |
| Region | Urban | 170 | 63.43 | 320 | 64.51 |
| | Rural | 98 | 36.57 | 176 | 35.49 |

## 2.2 The Social Activity Participation Scale for Adolescents in Ethnic Regions: Development Process

### 2.2.1 Dimension Conceptualization and Item Generation

The initial conceptual framework was informed by social participation theory (Youniss & Yates, 1998) and the theory of planned behavior (Ajzen, 1991). A systematic review of 16 relevant studies on social participation categorization (see Table 2 for examples) revealed three primary limitations in existing frameworks: (1) a focus on the external nature of activities (e.g., political, economic) rather than psychological depth of participation; (2) a lack of perspective from ethnic minority adolescents; (3) failure to cover the complete motivational–behavioral–outcome chain. To address these gaps, initial dimensions were derived from focus group interviews with 34 adolescents. These dimensions were then refined through a three-round Delphi process involving a panel of 14 experts (1 professor, 4 doctoral candidates, and 9 master's students, all experienced in scale development). Items required agreement from ≥80% of experts to be retained (Kendall's $W = 0.86$, $p < 0.001$). Experts evaluated item relevance, clarity, and appropriateness to the intended dimensions. This process yielded an initial item pool of 34 items across four dimensions: Participation Motivation (8 items), Activity Identity (10 items), Active Engagement (8 items), and Effect Identity (8 items). All items employed a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree), with higher total scores indicating a higher degree of social activity participation.

Table 2. Categorization of Social Activity (Social Activity Participation) Types

| Author(s) (Year) | Classification |
|---|---|
| Zhang Jianqi (2000) | School-organized public welfare activities and club activities, also including participation in school research, teaching, and management activities. |
| Pei Xiaomei (2004) | Recreational activities, public welfare activities, and paid activities. |

| | |
|---|---|
| Wu Shaomei (2006) | Engagement in social revolution (movements); participation in political parties and other organizations; conducting social surveys; providing social services; undertaking social work; participating in productive internships; and engaging in cultural and artistic creation, etc. |
| Hu Zixiang (2006) | Information communication; campus activity participation; social activity participation; opinion expression; organizational membership; meeting attendance. |
| Sun Jinfu (2006) | Social labor; household chores; socio-economic development activities; political activities; cultural activities, etc. |
| Mars et al. (2008) | Social connections and activities; work and informal support; cultural activities and public events; politics and media. |
| Li Zonghua (2009) | Participation in various public cultural and recreational activities; participation in public welfare activities; and participation in various forms of paid labor. |
| Wang Sitao (2010) | Political participation, economic participation, cultural participation, and self-development participation. |
| Li Yan et al. (2012) | Social surveys, social services, part-time jobs, concern for social issues. |
| Amagasa et al. (2017) | Volunteer activities, community activities, senior citizens' clubs, etc.; friendships; communication with family and friends; personal hobbies and interests. |
| Tomioka et al. (2017) | Volunteer activities, community activities, senior citizens' clubs, etc.; friendships; communication with family and friends; personal hobbies and interests; paid work. |
| Tang Junjie (2017) | Inclination for social activity participation; sharing nature of social activity participation; activeness in social activity participation; Dedication in social activity participation. |
| Peng Dingping (2019) | Unorganized, semi-organized, and organized participation activities. |
| Xie Lili & Wang Bin (2019) | High-participation type, low-participation type, and family-care type. |
| Tan Jingyan (2020) | Household-type, leisure and entertainment-type, social-type. |
| Song Yu (2023) | Social contribution activities, social activity participation activities. |

Note: This table presents various categorization frameworks for social activity participation as proposed by different scholars.

### 2.2.2 Initial Scale Refinement (Using Sample 1)

The initial 34-item scale was refined using Sample 1 data following Classical Test Theory (CTT) procedures. Item analysis included: (1) An independent samples t-test comparing scores between high (top 27%) and low (bottom 27%) total score groups (Kelley, 1939); items failing to show significant discrimination ($p > 0.01$) were flagged. (2) Item-total correlation analysis; items with correlations below 0.40 whose removal did not increase the dimension's Cronbach's α coefficient were considered for deletion (Nunnally, 1978). (3) Examination of item difficulty (P = mean score / maximum possible score); items with extreme P values (< 0.10 or > 0.90) were reviewed (Hao et

al., 2019).

2.2.3 Final Scale Formation via Confirmatory Factor Analysis (Using Sample 2)
The refined item set was subjected to Confirmatory Factor Analysis (CFA) using AMOS 21.0 on Sample 2 data. Items were sequentially removed based on the following criteria: (1) standardized factor loading < 0.45; (2) modification index > 10.0; (3) cross-loading differences < 0.2. Model fit was assessed using maximum likelihood estimation. The final four-dimensional, 25-item model demonstrated acceptable fit to the data: $\chi^2/df = 2.35$, Comparative Fit Index (CFI) = 0.90, Tucker-Lewis Index (TLI) = 0.88, Root Mean Square Error of Approximation (RMSEA) = 0.08 (90% CI: 0.075–0.085). These indices meet commonly accepted psychometric standards (Hu & Bentler, 1999).

Final Scale Dimensions:

Participation Motivation (6 items): Assesses the reasons and driving forces behind participation in social activities (e.g., to serve society back to the community).

Activity Identity (8 items): Captures the value identification shaped by the ethnic cultural context during participation (e.g., pride in one's ethnic group), moving beyond Western individualistic conceptions of identity.

Active Engagement (5 items): Measures the actual degree and frequency of involvement in the activities.

Effect Identity (6 items): Evaluates the perceived outcomes or benefits gained from participation, both tangible and intangible (e.g., enhanced interpersonal skills, knowledge application).

2.3 Data Analysis
For Sample 1, SPSS 24.0 was used to conduct: (1) Exploratory Factor Analysis (EFA) using principal component analysis with varimax rotation (eigenvalue >1, factor loading >0.5); (2) Internal consistency reliability analysis (Cronbach's α); (3) Criterion-related validity analysis using Pearson correlation. For Sample 2, AMOS 21.0 was used for CFA, and SPSS 24.0 was used for comprehensive reliability and validity assessments.

2.4 Ethical Considerations
This study was approved by the Ethics Committee of Shaanxi Normal University. All procedures performed in this study involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants (and their legal guardians, if applicable) included in the study prior to data collection.

## 3. Results

### 3.1 Item Analysis

Independent samples t-tests were conducted on the 34 initial items. All items showed statistically significant score differences between the high-score group (top 27% of total scores) and the low-score group (bottom 27%), with |t| values ranging from 27.33 to 37.25 ($p < 0.001$), indicating excellent item discrimination. Item-total correlation analysis revealed correlations ranging from 0.19 to 0.79 ($M = 0.52$, $SD = 0.15$, $p < 0.001$). Two items (items 5 and 6) with correlations below 0.40 were considered for removal, as their deletion did not increase the Cronbach's α coefficient of their respective subscales. Item difficulty indices (P = mean score / maximum possible score) ranged from 0.53 to 0.88 ($M = 0.71$), falling within the acceptable range of moderate difficulty (0.30–0.80).

### 3.2 Exploratory and Confirmatory Factor Analyses

The 34 items retained from item analysis were subjected to Exploratory Factor Analysis (EFA) using Sample 1 data. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.97, and Bartlett's test of sphericity was significant ($\chi^2 = 17010.08$, $df = 496$, $p < 0.001$), confirming the data's suitability for factor analysis.

Principal component analysis with varimax rotation was performed. Four factors with eigenvalues greater than 1 were extracted, consistent with the scree plot (Figure 1). Items were removed based on the following criteria: (1) factor loading < 0.40; (2) cross-loading on multiple factors with negligible differences in loadings. After several iterations, 32 items were retained. The four-factor solution accounted for 62.42% of the total variance.

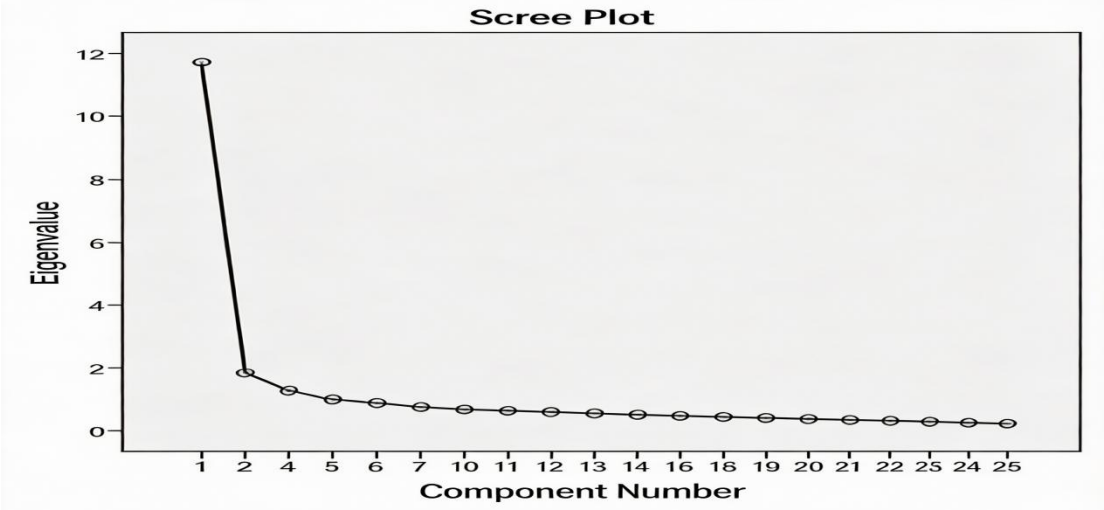



**Figure 1 Scree Plot of All Factors of Social Activity Participation Assessment Scale for Adolescents in Ethnic Areas**

Subsequently, Confirmatory Factor Analysis (CFA) was conducted on Sample 2 using maximum likelihood estimation in AMOS 21.0. Items were further removed based on: (1) standardized factor loading < 0.45; (2) large modification indices (> 10.0); (3) minimal difference (< 0.2) between primary and secondary factor loadings. The final model, comprising 25 items across four dimensions, demonstrated acceptable fit to the

data: $\chi^2/df = 2.35$, Comparative Fit Index (CFI) = 0.90, Tucker-Lewis Index (TLI) = 0.88, Root Mean Square Error of Approximation (RMSEA) = 0.08 (90% CI: 0.075–0.085). These indices meet established psychometric standards (Hu & Bentler, 1999).

The factor loadings, communalities, eigenvalues, and variance explained for the final 25-item scale are presented in Table 3.

Table 3. Factor Loadings and Communalities for the 25-Item Social Activity Participation Scale (Varimax Rotation)

| Item No. | Item Content (Example: "Cunchao") | F1: Participation Motivation | F2: Activity Identity | F3: Active Engagement | F4: Effect Identity | Communality |
|---|---|---|---|---|---|---|
| 1 | To gain social experience. | 0.70 | | | | 0.63 |
| 2 | To make new friends. | 0.72 | | | | 0.47 |
| 3 | To enhance my knowledge and abilities. | 0.60 | | | | 0.72 |
| 4 | To serve society and give back to the community. | 0.63 | | | | 0.66 |
| 5 | Because I am interested in it. | 0.56 | | | | 0.51 |
| 6 | Because I enjoy helping others. | 0.57 | | | | 0.67 |
| 7 | I am willing to contribute my expertise and experience to serve the social activity. | | 0.57 | | | 0.74 |
| 8 | Participating makes me feel fulfilled in life. | | 0.52 | | | 0.52 |
| 9 | I share the joys and challenges of the activity with classmates and friends. | | 0.66 | | | 0.70 |
| 10 | I actively share new experiences from the activity with others. | | 0.55 | | | 0.72 |
| 11 | The ethnic social activity is full of vitality, and participating energizes me. | | 0.74 | | | 0.68 |
| 12 | As a participant, I am proud to be involved. | | 0.75 | | | 0.65 |
| 13 | The activity has greatly improved the spirit of many people in our local area, including myself. | | 0.63 | | | 0.68 |
| 14 | The activity makes me prouder of my ethnic group. | | 0.69 | | | 0.63 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 15 | I participate alone or with others. | | | 0.68 | | 0.54 |
| 16 | On average, I participate at least once every six months, for no less than 20 minutes each time. | | | 0.73 | | 0.43 |
| 17 | I often actively seek out and participate in social activities. | | | 0.72 | | 0.61 |
| 18 | When I participate, I often receive recognition from teachers and peers. | | | 0.55 | | 0.62 |
| 19 | I often invite family or friends to participate in social activities with me. | | | 0.63 | | 0.67 |
| 20 | Participation has improved my interpersonal communication and relationships. | | | | 0.61 | 0.77 |
| 21 | Participation has enhanced my knowledge acquisition and application skills. | | | | 0.63 | 0.78 |
| 22 | Participation has improved my problem-solving and innovation abilities. | | | | 0.72 | 0.79 |
| 23 | Participation has improved my time management skills. | | | | 0.77 | 0.74 |
| 24 | Participation has improved my emotion regulation and stress coping abilities. | | | | 0.77 | 0.69 |
| 25 | Participation has improved my teamwork and communication skills. | | | | 0.66 | 0.75 |
| | Eigenvalue | 6.36 | 5.07 | 4.58 | 3.97 | |
| | % of Variance | 19.88 | 15.83 | 14.30 | 12.41 | |
| | Cumulative % | 19.88 | 35.71 | 50.01 | 62.42 | |

Note. F1 = Participation Motivation; F2 = Activity Identity; F3 = Active Engagement; F4 = Effect Identity. Factor loadings below .40 are omitted for clarity.

### 3.3 Reliability Analysis

Internal consistency and test-retest reliability coefficients for the final 25-item scale are presented in Table 4. Cronbach's α for the total scale was 0.95 (95% CI: 0.94–0.96), with subscale α coefficients ranging from 0.82 to 0.92. Test-retest reliability over an 8-week interval was 0.97 for the total scale and ranged from 0.86 to 0.90 for the subscales, indicating excellent temporal stability.

Table 4. Internal Consistency and Test-Retest Reliability of the Scale for Evaluating Social Activity Participation of Adolescents in Ethnic Regions

| Dimension (Number of Items) | Internal Consistency (n=496) | Test-Retest Reliability (n=296) |
|---|---|---|
| Participation Motivation (6) | 0.84 | 0.89 |
| Activity Identity (8) | 0.89 | 0.86 |
| Active Engagement (5) | 0.82 | 0.88 |
| Effect Identity (6) | 0.92 | 0.9 |
| Total Scale (25) | 0.95 | 0.97 |

Note: Numbers in parentheses indicate the number of items per dimension.

## 3.4 Validity Analysis

### 3.4.1 Content Validity

The initial item pool was generated from a literature review and focus group interviews with the target population. The dimensions and items were iteratively reviewed and revised by a panel of experts in psychology and scale development, ensuring strong content validity and relevance to the construct of social activity participation among adolescents in ethnic regions.

### 3.4.2 Construct Validity

Structural Validity: The CFA model fit indices ($\chi^2/df = 2.35$, CFI = 0.90, RMSEA = 0.08; see Table 5 for full indices) supported the proposed four-dimensional structure.

Table 5. Model Fit Indices for the Scale (n=496)

| $\chi^2/df$ | GFI | IFI | TLI | CFI | AGFI | NFI | RMSEA |
|---|---|---|---|---|---|---|---|
| 2.35 | 0.85 | 0.9 | 0.88 | 0.9 | 0.82 | 0.88 | 0.08 |

Note: Placeholder for Figure 2/Path diagram in the final manuscript

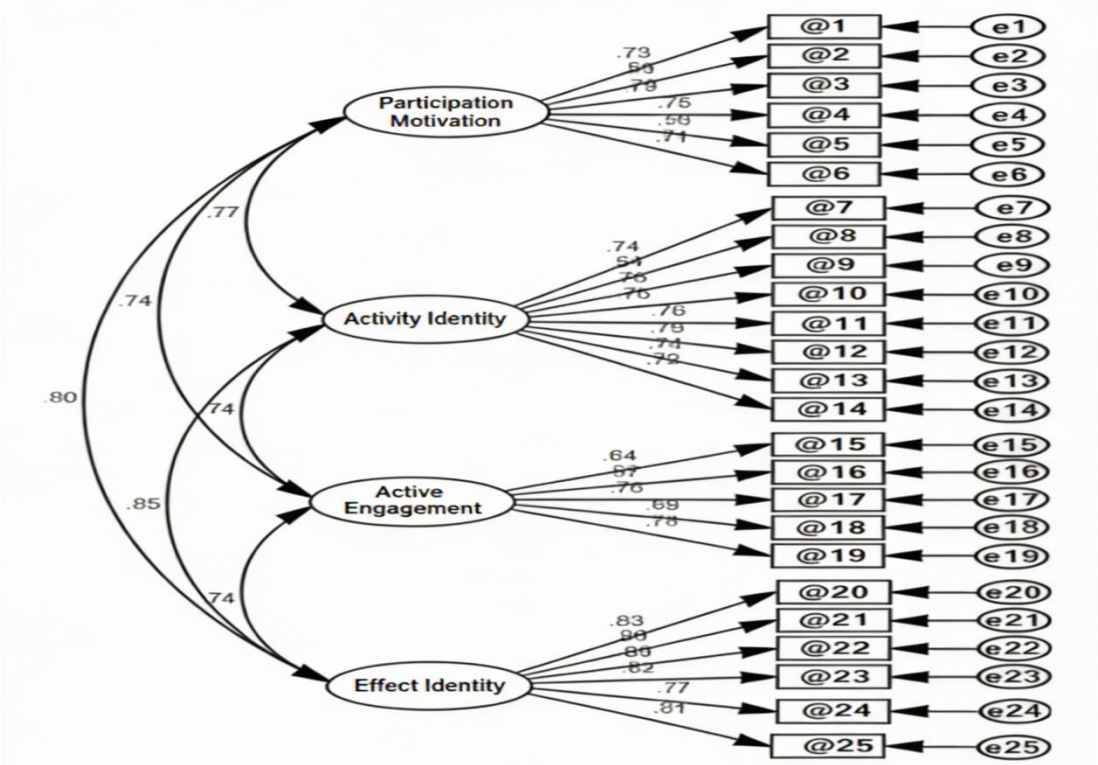



**Figure 2 Structural Model and Standardized Path Coefficients of Ethnic Minority Area Adolescents' Social Activity Participation Evaluation**

Convergent and Discriminant Validity: As shown in Table 6, the inter-correlations among the four dimensions ranged from 0.62 to 0.78 ($p < 0.01$), indicating related but distinct constructs. Convergent validity was assessed using Average Variance Extracted (AVE) and Composite Reliability (CR). The AVE for Effect Identity was 0.69 (> 0.50 benchmark). The AVE values for Participation Motivation (0.47), Activity Identity (0.51), and Active Engagement (0.48) were slightly below 0.50. However, their CR values were all above 0.80 (0.84, 0.89, and 0.82, respectively), and all standardized factor loadings exceeded 0.55 (see Table 3). Following established guidelines (Fornell & Larcker, 1981; Hou et al., 2004), convergent validity was deemed acceptable given the strong CR and factor loadings. Discriminant validity was established as the square root of each dimension's AVE (ranging from 0.69 to 0.83) was greater than its correlations with other dimensions (ranging from 0.62 to 0.78; see Table 6).

Table 6. Correlation Matrix among Dimensions of the Scale (n=496)

| Dimension | 1 | 2 | 3 | AVE | CR |
|---|---|---|---|---|---|
| 1. Participation. Motivation | | | | 0.47 | 0.84 |
| 2. Activity Identity | 0.65** | | | 0.51 | 0.89 |
| 3. Active Engagement | 0.62** | 0.62** | | 0.48 | 0.82 |
| 4. Effect Identity | 0.70** | 0.78** | 0.62** | 0.69 | 0.93 |

Note: **p<0.01. Discriminant Validity: The AVE values for each dimension (0.69–0.83) were greater than the correlation coefficients with other dimensions (0.62–0.78).

Table 7. Convergent Validity Indicators of the Scale

| Indicator | Part. Motivation | Activity Identity | Active Engagement | Effect Identity |
|---|---|---|---|---|
| AVE | 0.47 | 0.51 | 0.48 | 0.69 |
| CR | 0.84 | 0.89 | 0.82 | 0.93 |

3.4.3 Criterion-Related Validity

As no existing scale targets the same population, the Propensity subscale from a university student social participation scale (Tang, 2017; Cronbach's $\alpha = 0.805$) was used as a preliminary criterion. A separate sample of 192 middle school students from various regions in China completed both scales. The Participation Motivation dimension of our scale correlated significantly with the criterion subscale ($r = 0.75$, $p < 0.01$), and the total score of our scale correlated significantly with the total score of the criterion scale ($r = 0.68$, $p < 0.01$). Given the criterion tool was not designed for ethnic minority adolescents, these results provide preliminary support for criterion-related validity.

## 4. Discussion

### 4.1 Theoretical Innovation and Breakthrough

Compared to existing studies that primarily focus on university students or elderly populations (Tang, 2017; Tomioka et al., 2017) and rely on non-standardized questionnaires (Hu, 2006), this research makes significant contributions in three aspects. Firstly, perspective shift: Based on prototype theory (Rosch, 1975), it extracts the core dimensions of social activity participation from the subjective perspective of adolescents in ethnic regions. Secondly, structural innovation: It transcends the traditional researcher-centered paradigm of dimension classification (e.g., Wang's (2010) political/economic framework) by constructing a four-dimensional model (motivation–identity–engagement–effect) based on participants' subjective experiences. This fundamentally addresses the flaw of prior theories that focused on activities while neglecting the individual, aligning with the ICF environment-person interaction theory (WHO, 2011). Thirdly, cultural adaptation: Using the Guizhou Village Super League as a cultural vehicle, it establishes the first dedicated assessment tool for adolescents in ethnic regions.

### 4.2 The Theoretical and Practical Value of the Scale

The Activity Identity dimension showed a correlation of $r = 0.73$ with the Ethnic Identity Scale (Phinney, 1992), significantly higher than the Motivation dimension ($r = 0.42$), confirming its measurement of the cultural identity construct. Through the Effect Identity dimension (e.g., enhancing ethnic pride, strengthening teamwork skills), this scale quantitatively verifies the promoting role of social activities on adolescents' moral identity (Youniss & Yates, 1997), providing empirical support for policy assumptions regarding the role of cultural and sports activities in moral education (Article 48 of the Rural Revitalization Promotion Law). Compared to Tang's (2017) university student scale, the newly added Activity Identity dimension (e.g., pride as a stakeholder) highlights the uniqueness of cultural identity in ethnic regions, expanding the cultural-

context applicability of the Positive Youth Development (PYD) theory (Lerner et al., 2005).

### 4.3 Implications for Policy Formulation

The scale provides threefold support for youth development policies in ethnic regions. Firstly, precise assessment.It diagnoses participation level differences among various groups (e.g., rural vs. urban) to optimize resource allocation for the "Ethnic Region Adolescent Development Plan (2021–2030)." Secondly, activity design.By identifying intrinsic drivers (e.g., serving the community vs. improving skills) through the Participation Motivation dimension, it guides the tailoring of programs like the Village Super League for different groups. Thirdly, longitudinal tracking.Combining Effect Identity indicators to establish a moral development database verifies the long-term effects of social activities on moral self-identity (Chen, 2004). Establishing a longitudinal database across ethnic concentration areas in Yunnan, Guizhou, and Guangxi provinces could enable tri-province tracking: ① Creating a four-dimensional data lake (motivation–identity–engagement–effect) with annual updates ensures timeliness for trend monitoring. ② Developing an intelligent diagnostic module to automatically identify low-participation groups (e.g., rural students from single-parent families), triggering targeted interventions (e.g., precise distribution of Village Super cultural experience vouchers). ③ Connecting with cultural and tourism department activity resource pools to design compensatory programs based on identified weaknesses in Effect Identity (e.g., prioritizing inclusion in intangible cultural heritage collaboration projects for groups with weak teamwork skills). This can promote a shift in moral education policy from experience-driven to data-driven.

### 4.4 Methodological Rigor

The study strictly followed psychometric paradigms (Jin, 2005), ensuring validity through two-stage verification. ① Culturally adaptive design: Focus group interviews extracted 34 localized behaviors (e.g., inviting relatives to participate in the Village Super). ② Multi-method triangulation: Exploratory Factor Analysis (EFA) extracted the four-dimensional structure; Confirmatory Factor Analysis (CFA) verified model fit ($\chi^2/df = 2.35$, CFI = 0.90, RMSEA = 0.08); Criterion-related validity was significant ($r = 0.75$). Although CFI/TLI were slightly below 0.95, $\chi^2/df < 3$ and RMSEA < 0.08 meet lenient standards (Marsh et al., 2004), reflecting the complexity of culturally specific models. ③ The Activity Identity dimension of this scale ($\alpha = 0.89$) showed significantly higher reliability among ethnic adolescents compared to the corresponding dimension in Tang's (2017) scale ($\alpha = 0.62$), corroborating that neglecting cultural specificity leads to measurement bias.

### 4.5 Limitations and Future Research Directions

Limitations and prospects. ① Sample representativeness: Convenience sampling was limited to Guizhou; future research should extend to ethnic groups in western frontier regions (e.g., Tibetan, Uyghur). ② Cultural generalizability: The scale uses the Village Super as an exemplar; its applicability to other ethnic cultural activities (e.g.,

Mongolian Nadam Fair, Yi Torch Festival) requires verification. ③ Longitudinal design: Future studies should track the long-term impact of social activity participation on adolescents' national identity and civic awareness (referencing Youniss's model of moral development).

## 5. Conclusion

(1) Grounded in the uniqueness of social activity participation among adolescents in ethnic regions and using the Guizhou Village Super League as an empirical context, this study strictly followed psychometric procedures and successfully developed the first assessment scale specifically designed for adolescents in ethnic regions to evaluate their social activity participation. The scale comprises four core dimensions—participation motivation, activity identity, active engagement, and effect identity—with a total of 25 items. It features a clear structure and a solid theoretical foundation.

(2) Empirical tests indicate that the scale demonstrates good reliability (internal consistency reliability, test-retest reliability) and validity (content validity, construct validity, criterion-related validity). The confirmatory factor analysis model fit indices meet psychometric standards. This robustly attests to the scale's scientific soundness, reliability, and validity.

(3) In summary, the scale developed in this study provides a standardized, scientific, and effective tool for systematically assessing the participation motivation, level of identity, degree of engagement, and perceived effects among adolescents in ethnic regions, particularly in the context of localized social activities like the Village Super League. It holds significant theoretical and practical value for delving into the patterns of their social activity participation, evaluating the effectiveness of related educational interventions, and formulating promotion policies.

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## Data Availability Statement

The datasets generated and/or analysed during the current study are not publicly available due to the sensitive nature of the data involving minors from ethnic regions and the restrictions outlined in the informed consent agreements, which did not include public data deposition. However, they are available from the corresponding author upon reasonable request and with permission from the Ethics Committee of Shaanxi Normal University.

## References

[1] 邓力源. 中国老年人社会活动参与问题研究——基于社会排斥与社会融合的视角[J]. 西南财经大学，成都，2016.

[2] World Health Organization. International Classification of Functioning, Disability and Health. http://www.who.int/classifications/icf/en/, 2011.
[3] Mars GM, Kempen GI, Mesters I, et al. Characteristics of social participation as defined by older adults with a chronic physical illness[J]. Disability & Rehabilitation, 30(17), 1298-1308, 2008.
[4] Amagasa S, Fukushima N, Kikuchi H, et al. Types of social participation and psychological distress in Japanese older adults: a five-year cohort study[J]. Plos One, 12(4), 2017.
[5] Tomioka K, Kurumatani N, Hosoi H. Age and gender differences in the association between social participation and instrumental activities of daily living among community-dwelling elderly[J]. BMC Geriatrics, 17(1), 99, 2017.
[6] 李彦，孙永清．大学生创新意识与社会活动参与的实证研究[J]．科学·经济·社会，(3)，57-60，2012.
[7] 宋煜．老年人社会参与的理论综述与现状研究[J]．中国老年学和老年医学学会 2023 学术大会论文集，2023.
[8] 陈会昌，谷传华，秦丽丽，苑宏健．尤尼斯道德发展的实践活动观述评[J]．心理科学，(1)，156-168，2004.
[9] 林崇德，李庆安．民族地区青少年期身心发展特点[J]．北京师范大学学报(社会科学版)，(1)，48－56，2005.
[10] 杨莹，张梦圆，寇彧．民族地区青少年亲社会行为量表的编制与维度的再验证[J]．中国社会心理学评论，(10)，135-150，2015.
[11] 朱嘉兴．试论民族地区青少年亲社会行为实践的培养[J]．牡丹江教育学院学报，(3)，86－87，2007.
[12] Youniss J, Yates M. Youth service and moral identity: A case for everyday morality[J]. Educational Psychology Review, 4, 1998.
[13] 胡子祥，陈洁．当代大学生社会活动参与行为的实证研究[J]．中国青年研究，(10)，38-42，2006.
[14] 王思涛．探讨当代大学生政治参与意识和参与能力[J]．高教探索，(2)，80-82，2003.
[15] 唐俊杰．大学生社会活动参与的量表编制[J]．教育心理，(1)，146-148，2017.
[16] 金瑜．心理测量(第 2 版)．华东师范大学出版社[M]，上海，2005.
[17] 郝嘉佳，陈英和，刘拓，白学军．儿童民族地区青少年一般思维能力测验的编制和初步应用[J]．心理与行为研究，(5)，620-626，2019.
[18] 侯杰泰，温忠麟，成子娟．结构方程模型及其应用[M]．教育科学出版社，196，2004.
[19] 方平，熊端琴，蔡红．结构方程在心理学研究中的应用[J]．心理科学，24(4)，406-408，2001.
[20] 方平，熊端琴，姜媛．结构方程模式及其成功应用的判断标准[J]．首都师范大学学报(社会科学版)，(3)，61-64，2000.
[21] 习近平．国家主席习近平发表二〇二四年新年贺词．2024-3-11 取自 https://ydyl.cctv.com/2024/01/02/ARTIWaSURpS34Jy9fe5ZuvWG240102.shtml，2024.