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The Analysis of the Educational Value of the Revolutionary Themed Comic Works in the Image Expression of the National Community Consciousness during the Anti-Japanese War

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SUMMARY: *Casting a firm sense of Chinese national community is an inevitable requirement for realizing the great rejuvenation of the Chinese nation. Based on the perspective of educational value, the article searches for the path of casting the national community consciousness in the image expression of revolutionary cartoons in the anti-war period. Firstly, a structural equation model is constructed, and historical memory, emotional education, value education and cultural dissemination are selected as the observational variables to express the educational value of cartoons, with national identity as the mediating parameter. Based on the factor analysis model and SEM, the relationship between variables is explored. A questionnaire containing 21 items was also designed for this purpose. The overall KMO value of the scale was as high as 0.936, the combined reliability CR value of all variables was higher than 0.83, and the exploratory factor analysis extracted six common factors with a cumulative variance explained of 72.158%, which fully proved the reliability of the measurement tool. There were significant differences in the expression of national identity and sense of community among students with different political profiles, with within-group sums of squares of 8.642 and 7.318, respectively. All four educational value dimensions significantly and positively influence national identity with path coefficients ranging from 0.194 to 0.321, while the influence of national identity on the image expression of community consciousness is even stronger with a path coefficient of 0.507.*

KEYWORDS: *revolutionary cartoons; national community consciousness; image expression; factor analysis model; structural equation modeling*

1 Introduction

Since 1840, the Opium Wars and the ensuing invasions of China by the imperialist powers have ravaged the common homeland of the Chinese nation's existence, and a common destiny has bound all ethnic groups together [1, 2]. In 1902, Liang Qichao creatively put forward the term “Chinese nation”, which has gradually become the symbol of the identity of all ethnic groups in China [3, 4]. Although Sun Yat-sen's "Five-ethnic Republic" failed to truly reflect the fundamental essence of modern Chinese ethnic issues, the Xinhai Revolution brought about the awakening of the Chinese national consciousness, which was actually the awakening of the "community consciousness" and laid the ideological foundation for the construction of the modern Chinese national community [5-8]. The May Fourth Movement raised the great banner of patriotism and greatly contributed to the awakening of the Chinese nation [9].

And after the outbreak of the Anti-Japanese War, the conveyance of the national community

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consciousness became an important ideological work to inspire the nation, and in this process, the revolutionary theme comics played an important role [10, 11]. After the Lugou Bridge Incident in 1937, under the patriotic banner of anti-Japanese salvation, the war-torn artists were united as never before in the rear, unleashing a great passion for artistic creation and contributing to the salvation of the nation in distress [12-14]. During the hard years, Chinese art developed in a sad and impassioned way. Comics, a genre characterized by exaggeration, satire, humor, and friendliness, flourished, and Chinese comics thus entered a new peak of development [15, 16]. The sense of national community during the War of Resistance Against Japanese Aggression was mainly embodied in the unity of all forces, inspired by the firm belief that “the Chinese nation is the consciousness of all the peoples of China”, and fought in order to safeguard the territorial and sovereignty integrity of the country, as well as the interests of the Chinese nation as a whole [17-20]. Against this background, revolutionary-themed cartoon works, on the other hand, with distinctive visual language and profound ideological connotations, have become an important tool for conveying national salvation and survival [21, 22]. These works constructed national identity and strengthened collective memory through image narratives, and played a continuous educational function as a way to awaken the sense of national community among all Chinese people to work together in the anti-Japanese struggle [23-25].

Taking the revolutionary cartoons as the research object, we explore how the cartoons can stimulate the sense of identity of national community consciousness through image expression. First, we delve into the historical context, analyze the image content of the anti-war cartoons, and refine the three core mechanisms of the cartoons' educational function, i.e., the construction of national cognition, the construction of national emotion, and the guidance of behavior to the public. Then, factor analysis model and structural equation model are used to solve the problem. The former extracts the core factors from the questionnaire data, and the latter verifies whether there is a hypothesized causal path between these factors. On the basis of the research methodology, the article further decomposes the educational value of cartoons into four dimensions: historical memory, emotional education, values education and cultural dissemination, and discusses in detail how they affect the pictorial expression of national community consciousness. The mediating variable of national identity is also introduced. It is hypothesized that it plays the role of a bridge between external educational value and internal sense of community. Finally, the abstract concept was transformed into an operational questionnaire. Multidimensional questions were designed to capture the respondents' internal identification with the educational value of cartoon works, national identity, and the graphic expression of national community.

2 Educational value of revolutionary cartoons in the construction of pictorial expressions of national community consciousness

2.1 Content of National Identity Construction in Revolutionary Cartoons of the Resistance Period

In order to make the national identity deeply rooted in people's hearts and minds and to mobilize the masses during the period of the war of resistance, the news cartoon played a wider role than the newspaper in disseminating the news. As a political and cultural phenomenon with ethnicity, the basic content of national identity includes three aspects: national cognition, national emotion and behavioral guidance. In order to build a sense of national belonging of the Chinese

people, cartoons should also start from the construction of national cognition, national emotion and behavioral guidance.

2.1.1 Ethnic Cognition Building

In the process of cognition, members of the nation experience the homogeneity of the relationship between themselves and the nation, perceive the boundaries of difference between themselves and others, establish a sense of national differentiation, and build up a cognitive framework of the Chinese nation as well as a psychological tendency to identify with it or not. In the process of self-recognition, cartoonists see things in a small way, starting with topics that are close to the interests of the masses, then gradually rising to the height of the nation, and subconsciously helping the public to depict the outline of the Chinese nation with figurative examples.

With the outbreak of the Anti-Japanese War, the Chinese nation faced the crisis of extinction of the country and the destruction of the race. By depicting the national situation of internal and external troubles, the cartoonists helped the people to re-conceptualize the current situation of the country in a short period of time, to understand the seriousness of the situation, to clarify the relationship between friends and foes, and to seek a basis of judgement for the next action, so as to avoid falling into a state of chaos and disorder because of ignorance, which would give the enemies an opportunity to take advantage of the situation.

2.1.2 National sentiment building

In wartime cartoon works, emotional rendering and national righteousness are more obvious, specifically embodied in the feelings of grief and indignation over the destruction of the country, patriotism with no fear of sacrifice, and the belief that the nation will win, whose construction is a process of gradually sublimating from personal emotions to national and ethnic sentiments.

Cartoons utilize the family culture to establish a link between personal and national emotions, displaying the prevailing social sentiments of the time through tense characters' expressions or actions, and uncovering the common scars of the masses, thus triggering the pain and empathy of the people as victims.

Patriotic spirit is specifically manifested in the Chinese people's courageous resistance to foreign invasion. Patriotic feelings in cartoons are mostly shown in fierce battle scenes, which aim to touch people's hearts, inspire people's fighting spirit, and strengthen the belief that the nation will win.

Chinese national faith is the people's firm belief in safeguarding national interests and loyalty to the motherland, which always inspires people to link the rise and fall of the motherland with themselves. The national faith shown in the cartoon is reflected in encouraging the people to hold on to the belief that the Chinese nation will win.

2.1.3 Behavioral guidance

The construction of a sense of community among the Chinese nation has gone through a dynamic process from political symbolism to social recognition. The final point of the activities of national identity construction is in behavioral guidance, i.e., the social participation and cultural practice of the members of the nation. During the Anti-Japanese War period, cartoons helped the public to draw a clear line between enemies through the construction of national cognition in the early stage, mobilized the emotions of national compatriots through the construction of national emotion, and finally guided the public to actively participate in the overall struggle against the war through behavioral involvement, which was specifically manifested in encouraging men to support the front and mobilizing the people to support the rear.

2.2 Factor Analytic Modeling and Structural Equation Solving

Revolutionary cartoons of the anti-war period play an important role in the construction of national identity, and their graphic expressions have profound educational significance. In this regard, the factor analysis model and structural equation method are introduced to empirically investigate the internal mechanism between the educational value of cartoons and national identity and community consciousness.

2.2.1 Factor analysis model

Factor analysis is a method for modeling correlations between high-dimensional observable data by expressing the correlations in a low-dimensional, directed subspace. Assuming that $X=\{x_1,\cdots,x_n\}$ is a dataset of observable variables where $x_i \in R^p$ and x_i is independently and identically distributed, it is assumed that the dataset has been subtracted from the mean, and thus $E(x_i)=0$. The factor analysis model can be expressed as:

$$x_i = Af_i + \xi_i, \quad i=1,\cdots n \tag{1}$$

where $A_{p\times k}$ is referred to as the factor loading matrix; f_i is the $k(k<p)$ dimensional common factor, $F' \equiv (f_1,\cdots,f_n)$, the factor score F is the potential vector, $f_i \sim N(0,I_k)$; ξ_i is known as the special factor with a zero-mean, $\xi_i \sim N(0,D)$, D is the diagonal matrix of $p\times p$, and f_i and ξ_i are assumed to be independent of each other.

Assuming that the observable data set x_i is continuous, and following the linear regression assumptions about the mean of the observable data, the mean is set to be a linear function of the inputs to the latent variable f_i, and thus the likelihood function can be expressed as

$$P(x_i \mid A,D,f_i) = N(x_i \mid Af_i, D) \tag{2}$$

The data set $\{x_i\}_{i=1}^n$ is independently and identically distributed with

$$\begin{aligned} P(X \mid A,D,F) &= \prod_{i=1}^n P(x_i \mid A,D,f_i) = \prod_{i=1}^n N(x_i \mid Af_i, D) \\ &= \prod_{i=1}^n \left(\frac{1}{\sqrt{2\pi|D|}} \exp\left\{ -\frac{1}{2}(x_i - Af_i)^T D^{-1}(x_i - Af_i) \right\} \right) \end{aligned} \tag{3}$$

The parameters of a Bayesian model are generally treated as random variables, so a reasonable prior distribution must be set for these parameters. It is assumed that the prior distribution of the model parameters has the same distribution form as the posterior distribution. Therefore, in order to facilitate the calculation of the posterior distribution of the model parameters, this paper sets the prior distribution of the model parameters as the conjugate prior distribution when estimating the parameters of the model using the variational Bayesian inference algorithm, otherwise it is difficult to find out the specific form of the variational posterior distribution. The detailed selection process is as follows:

Based on the prior distribution setup of the factor loading matrix A, it is assumed that each column of A obeys a Gaussian distribution with the same mean and different precision.

$$P(A|v)=\prod_{j=1}^{k}P(A_j|v_j)=\prod_{j=1}^{k}N\left(A_j|0,\frac{I_p}{v_j}\right) \tag{4}$$

where A_j denotes the j th column of A and $v=\{v_1,\ldots v_k\}$ is a random variable. Since the variable v has some influence on the distribution of the factor loading matrix A, setting a super-prior distribution on each element of the variable v has:

$$\begin{aligned}P(v|a^*,b^*)&=\prod_{j=1}^{k}P(v_j|a^*,b^*)=\prod_{j=1}^{k}Ga(v_j|a^*,b^*)\\&=\prod_{j=1}^{k}\frac{1}{\Gamma(a^*)}\cdot(b^*)^{a^*}\cdot(v_j)^{a^*-1}\cdot e^{-b^*v_j}\end{aligned} \tag{5}$$

where a^* and b^* are the shape and inverse scale parameters, respectively. It is also possible to characterize the distribution of A in terms of row vectors, the

$$\begin{aligned}P(A|v)&=\prod_{q=1}^{p}P(A_q|v)=\prod_{q=1}^{p}N\left(A_q|0,diag(v)^{-1}\right)\\&=\prod_{q=1}^{p}\left(\frac{\sqrt{|v|}}{\sqrt{2\pi}}\exp\left\{-\frac{1}{2}A_q^T diag(v)A_q\right\}\right)\end{aligned} \tag{6}$$

where A_q denotes the q th row of A; and $diag(v)$ is a diagonal matrix with diagonal elements $\{v_1,\cdots,v_k\}$.

Because the number of degrees of freedom of D does not increase with the dimensionality of the component, the prior distribution assumptions of the parameters are made without assuming the prior distribution of D, and instead, D is treated as a hyper-parameter for direct optimization. The model structure of FA is represented by a probabilistic graph as shown in Fig. 1.

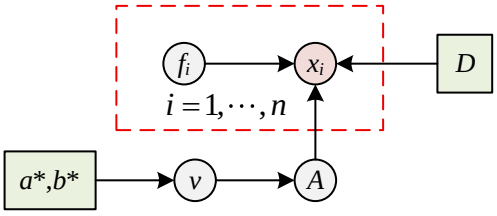

Figure 1: FA probabilistic graphical model

In Figure 1, the circles represent the random variables, the boxes represent the parameters, the dashed frames represent repetitions, and the arrows depict the dependencies between the variables. Figure 1 clearly reflects the relationship between the random variables. According to this structure of the FA model, the joint probability density of the dataset X and the unobservable variables $Z=\{A,v,\{f_i\}_{i=1}^{n}\}$ can be expressed as:

$$P(X,Z)=P\left(X\mid A,D,\{f_i\}_{i=1}^{n}\right)P(A\mid v)P(v)\prod_{i=1}^{n}P(f_i) \tag{7}$$

2.2.2 Structural equation modeling solution

Structural equation modeling, in short, still utilizes a system of simultaneous equations to solve, but it does not have very strict assumption constraints. In contrast to traditional statistical analysis, structural equation modeling allows for measurement error in both the independent and dependent variables. Structural equation modeling has additional features that are superior to methods such as multiple regression, path analysis, systems of simultaneous equations in econometrics, and factor analysis. Path analysis and covariate modeling in econometrics, although they also use systems of covariates, are analogous to multiple regression in that they can only deal with variables that have observations and are assumed to be free of measurement error in their observations. In the social sciences, however, many variables such as intelligence, ability, trust, self-esteem, motivation, success, ambition, prejudice, alienation, conservatism, satisfaction, and other concepts are not directly measurable. In fact, these variables are basically hypothetical concepts that people have created for the purpose of understanding and studying society, and therefore, there is no operational method of direct measurement for these variables.

One can find some observable variables that serve as identifiers of these latent variables, however, the observational identifiers of these latent variables always contain a large amount of measurement error. In statistical analysis, even for those observable variables that can be measured, there is always the problem of measurement error. In conventional regression analysis, the occurrence of measurement error in the dependent variable can lead to serious bias in the estimation of the parameters of the conventional regression model, which can lead to the unreliability of the model developed. While conventional factor analysis allows for the creation of multivariate identifiers for latent variables and can also deal with measurement error, it cannot analyze the relationships between factors. Structural equation modeling, on the other hand, enables the researcher to deal with measurement error in the analysis and at the same time analyze the structural relationships among the latent variables. Thus the system of simultaneous equations of structural equation modeling includes the following two types of equations:

(1) Measurement equations

$$\begin{aligned} y &= \Lambda_y \eta + \varepsilon \\ x &= \Lambda_x \xi + \delta \end{aligned} \tag{8}$$

Measurement equations are a set of equations representing the relationship between observed variables x, y and latent variables η, ξ.

(2) Structural equations

$$\eta = \mathrm{B}\eta + \Gamma\xi + \zeta \tag{9}$$

A structural equation is a set of equations that represents the relationship between a latent variable and a latent variable.

Equation Description:

x-is a vector of exogenous indicators

y-is a vector of endogenous indicators

Λ_x-Relationship between exogenous indicators and exogenous latent variables

Λ_y-Relationship between endogenous indicators and endogenous latent variables

δ -error term for exogenous indicator x
ε -error term of endogenous indicator y
η -endogenous latent variable
ξ -exogenous latent variable
B -relationship between endogenous latent variables
Γ -Exogenous latent variables on endogenous latent variables
ζ -Residual terms of structural equations

From these two sets of equations, with some modeling setup, the individual parameters in the structural equation model can be computed through a kind of iterative solution process.

2.3 Influence of Educational Value of Comic Works on Graphic Expression of National Community Consciousness

Based on section 2.1 on the construction of national identity by revolutionary cartoons during the war period, it can be seen that revolutionary cartoons, as a powerful tool for mass education, visualize the abstract concept of the Chinese nation through unique image narrative strategies, and construct and strengthen the sense of community among the masses at the visual level. This section analyzes the cartoons from the perspective of educational value, explaining how they influence national cognition and ultimately contribute to the pictorial expression of national community consciousness through four dimensions: historical memory, emotional education, value education, and cultural dissemination.

2.3.1 Assumptions on the Relationship between Revolutionary Comics and Graphic Expression of Popular Community Consciousness

(1) The hypothesis of the relationship between historical memory of cartoons and the image expression of people's sense of community.

Antiwar cartoons frame the atrocities of the Japanese invaders, the resistance of the people and the military, and the suffering of the nation through images, integrating the individual war experience and sublimating it into a collective historical memory that can be shared. This image-constructed memory transcends the limitations of words, establishes common historical coordinates among different classes of people, and provides a solid historical foundation and emotional anchor for the formation of a sense of community. The following hypotheses are proposed

H1: The historical memory of cartoons has a positive influence on the graphic expression of national community consciousness.

(2) The hypothesis of the relationship between the emotional education of cartoons and the image expression of people's sense of community.

Caricatures, with their intuitive, exaggerated shapes and tension-filled compositions, effectively stimulate the empathy of the audience. Compassion for the suffering of compatriots, indignation at the invaders, reverence for heroes, and desire for victory, these collective emotions mobilized by cartoons break down the barriers of mass boundaries, and melt into the collective passion of our solidarity. This emotional bond is the strongest adhesive to the sense of community. In this regard, it is hypothesized that

H2: Emotional education of cartoons has a positive effect on the expression of images of national community consciousness

(3) Assumption on the relationship between value education of cartoons and image expression of people's sense of community

Revolutionary cartoons clearly convey the core values of patriotism, which is responsible for the rise and fall of the nation, collectivism, which is united against foreign invasion, and

heroism, which is defiant of violence and fights to the end. It repeatedly proclaims through visuals that the fate of the individual is closely linked to the fate of the nation. This value inculcation guides the public to integrate self-worth realization into the collective cause of saving the nation, thus reaching a consensus on the value orientation and strengthening the community identity. In this regard, the following hypotheses are proposed

H3: The value education of comics has a positive influence on the graphic expression of national community consciousness.

(4) Hypothesis on the relationship between the cultural dissemination of cartoons and the image expression of people's sense of community

The cartoons skillfully use traditional cultural symbols such as the Great Wall, the Yellow River, and the dragon, which symbolize the Chinese nation, and also create new cultural symbols of the war, such as “slash at the heads of the devils with a big knife”. These symbols were repeated and strengthened in the course of dissemination and became the visual identity of the Chinese nation as a community. By sharing these symbols, the people gained a common cultural identity and enhanced their sense of belonging. It is hypothesized that

H4: The cultural dissemination of cartoons has a positive effect on the graphic expression of national community consciousness

(5) The mediating effect of national identity

National identity refers to an individual's sense of belonging, emotional attachment, and value recognition of membership in the Chinese nation. There is a positive relationship between the educational values of revolutionary cartoons and national identity. The following hypotheses are attempted:

H5a: Historical memory has a positive influence on national identity.

H5b: Emotional education has a positive influence on national identity.

H5c: Values education has a positive influence on national identity.

H5d: Cultural communication has a positive influence on national identity.

And national identity is indispensable for the graphic expression of the final national community consciousness, hypothesizing that

H6: National identity has a positive effect on the pictorial expression of national community consciousness.

National identity, as a key internal psychological variable, plays a bridging role between the educational value of comics and the pictorial expression of community consciousness. Therefore, there is a hypothesis:

H7a: Ethnic cognition plays a mediating role in historical memory and ethnic community consciousness image expression

H7b: Ethnic cognition plays a mediating role in emotional education and national community consciousness image expression

H7c: Ethnic cognition plays a mediating role in values education and pictorial expression of national community consciousness

H7d: Ethnic cognition plays a mediating role in cultural dissemination and pictorial expression of national community consciousness.

2.3.2 Structural modeling

Based on the above research hypotheses, this study constructed a structural model containing four independent variables (historical memory, emotional education, value education, and cultural dissemination), one mediator variable (national identity), and one dependent variable (image expression of national sense of community), to illustrate the mechanism of the influence of the educational value of antiwar cartoons on the image expression of national sense of community. The structure of the model is shown in Figure 2.

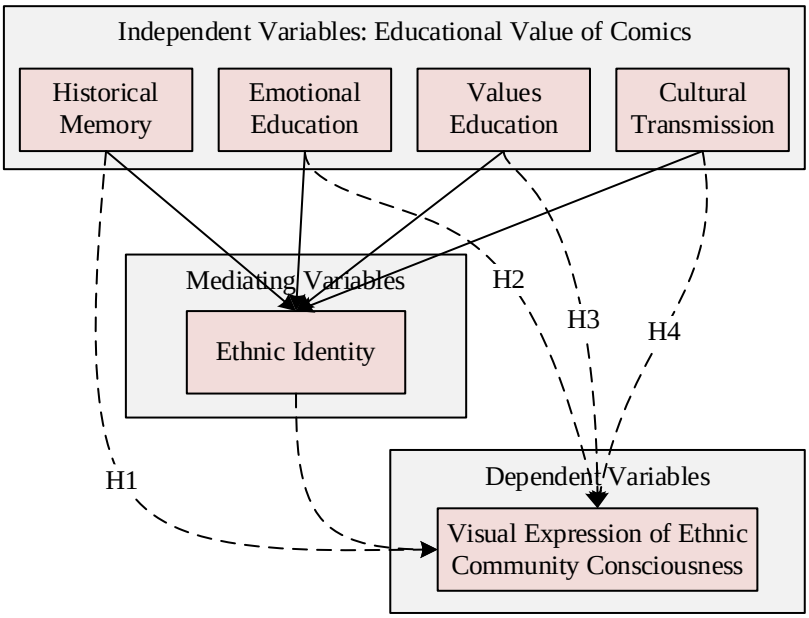

Figure 2: Model for the expression of the image of ethnic community consciousness

2.4 Questionnaire design

In order to verify the above hypotheses, a multidimensional questionnaire is designed to quantitatively measure each variable of the model. Taking college students as the research object, the questionnaire design includes four major modules, the first is the basic demographic information, including gender, ethnicity, grade level, major category, political appearance, and whether or not they are student cadres, etc.; the second part is the measurement of the educational value of the cartoon works; the third part is used to measure the mediating variable national identity; and the fourth part is the measurement of the dependent variable national community consciousness image expression quantitatively.

Each scale of the questionnaire was assigned using a Likert 5-point scale, with 1 representing very non-conformity, 2 representing basic non-conformity, 3 representing basic conformity, 4 representing conformity, and 5 representing very conformity, with the degree deepening step by step.

2.4.1 Educational value of comic works

In order to quantify the educational value of cartoons with revolutionary themes, the questions were designed around four dimensions: historical memory, emotional education, values education and cultural dissemination, with three questions under each dimension, for a total of 12 questions. The aim is to comprehensively assess the educational function of cartoons in the knowledge, emotion, value and culture dimensions. The measurement indicators are shown in Table 1.

Table 1: Measurement Indicators of the Educational Value of Comic Works

Variable	Dimension	Item
The educational value of revolutionary-themed comic works	History Education	HM1: Comics enable me to understand the historical facts of the Chinese nation's resistance war.
		HM2: Through the depiction of scenes in the comics, I feel the weight of history.
		HM3: Comics can help form memories of the revolution during the resistance period.
	Emotional Education	EE1: It arouses my indignation towards the invaders.
		EE2: It evokes admiration and sympathy for the soldiers and civilians during the resistance war.
		EE3: It enhances national self-esteem and pride.
	Values Education	VE1: Comics promote the spirit of patriotism.
		VE2: Comics embody the concept of collectivism.
		VE3: Comics uphold the heroic spirit.
	Cultural Dissemination	CE1: The symbols used in the comics allow me to feel the common cultural bond.
		CE2: Comics convey the unique culture and spirit of the nation.
		CE3: Comics are an important part of the Chinese nation's culture.

2.4.2 National Identity Measurement Indicators

The designed scale on ethnic identity is shown in Table 2. The scale focuses on individuals' cognitive and affective evaluations of their ethnic membership and is the mediating variable in the model of this study.

Table 2: The design scale of national identity

Variable	Item
National Identity	NI1: I am proud to be a member of the Chinese nation.
	NI2: I have a deep affection for the history and achievements of the Chinese nation.
	NI3: I believe the prosperity and development of the Chinese nation is closely related to me personally.
	NI4: I understand and accept this identity of being Chinese.

2.4.3 Measurement indicators of pictorial expressions of national community consciousness

The national community consciousness image expression measure is shown in Table 3. The scale contains five question items, which are used to measure the intensity of the Chinese national community consciousness perceived by the respondents through viewing the cartoon images.

Table 3: Indicators for the Image Expression of National Community Consciousness

Variable	Item
Image of ethnic consciousness expression	ICE1: The comic images make me feel the united atmosphere of our being a whole.
	ICE2: The comic images enable me to appreciate the connection of the Chinese nation where we share the same breath and destiny.
	ICE3: The comic builds an image of the Chinese nation community through its graphics.
	ICE4: The comic enhances my sense of sharing joys and sorrows with my fellow countrymen.
	ICE5: The comic images successfully express the consciousness of the Chinese nation community.

3 Empirical analysis of factors influencing the sense of national community

3.1 Descriptive statistical analysis of demographic variables

A total of 435 valid questionnaires were collected in this survey and research, and the respondents were undergraduate college students.Firstly, the basic information situation of the research respondents of this survey was analyzed. This part of the survey mainly investigates the information of college students such as gender, ethnicity, grade, major category, political profile, and whether they are student cadres. Descriptive statistics about demographic variables are shown in Table 4.

Table 4: Descriptive statistics of demographic variables

Item	Variable	Number of people	Percentage
Gender	Male	211	48.51%
	Female	224	51.49%
Ethnicity	Han ethnicity	378	86.90%
	National minority	57	13.10%
Grade	Freshman	136	31.26%
	Sophomore	115	26.44%
	Junior	99	22.76%
	Senior	85	19.54%
Major	Science and Engineering	173	39.77%
	Agriculture	31	7.13%
	Medicine	40	9.20%
	Economic and Management	73	16.78%
	Humanities and Social Sciences (including Arts and Sports)	118	27.13%
Political affiliation	The masses	158	36.32%
	Communist Youth League member	222	51.03%
	Party member	55	12.64%
Student leader	Yes	78	22.53%
	No	337	77.47%

In terms of gender distribution, the number of females is slightly higher than males, with a total of 224 students, accounting for 51.49%, and the gender ratio of males and females is roughly balanced; in terms of ethnicity distribution, Han Chinese students are higher than ethnic

minority students, with the former accounting for 86.90%; the distribution of grade levels is not balanced, with the number of students in the first year > sophomore > junior > senior, accounting for 31.26%, 26.44%, 22.76% and 19.54%; from the distribution of professional categories, the research sample mainly comes from science and technology and humanities and social sciences including arts and sports, accounting for 39.77% and 27.13% respectively, and the economic management category also amounts to 16.78% of the share; in the classification of political appearance, 36.31% of the students are mass identity, 51.03% of the Communist Youth League members and 12.64% of party members; participating in the survey of university students 77.47% of them are student cadres. On the whole, the personal information of the survey respondents is in line with the characteristics of the university student group.

3.2 One-way ANOVA based on demographic variables

In this paper, an ANOVA was conducted to investigate the extent to which the demographic variables (gender, ethnicity, grade, professional category, political outlook, and whether or not one is a student cadre) have an impact on the related variables involved in the study (educational value of cartoon works, national identity, and pictorial expression of common national consciousness) by using an independent samples t-test and one-way ANOVA, wherein gender, ethnicity, and whether or not one is a student cadre were two categorical variables, so the independent samples t-test was conducted, while multicategorical variables such as grade level, major category, and political outlook were analyzed by one-way ANOVA to compare the differences.

3.2.1 One-way ANOVA based on grade level

There were four groups of grades, and a one-way ANOVA was used to explore whether there were significant differences between students in different grades with respect to the variables. The test for grade level differences in scores for each variable dimension is shown in Table 5.

Table 5: Test of grade differences in the scores of each variable dimension

		SS	df	MS	F	P
Educational Value of Comic Works	Inside groups	2.145	3	0.715	1.832	0.141
	Within groups	167.892	431	0.39		
	Total	170.037	434			
National identity	Inside groups	3.782	3	1.261	2.415	0.066
	Within groups	225.118	431	0.522		
	Total	228.9	434			
Image of ethnic consciousness expression	Inside groups	5.634	3	1.878	3.892	0.009
	Within groups	207.966	431	0.482		
	Total	213.6	434			

Students of different grades do not show distinct attitudes in perceiving the educational value of cartoons and forming national identity, with p-values of 0.141 and 0.066 respectively, both greater than 0.05. This indicates that regardless of grade level, students' acceptance of the historical information and emotional impact conveyed by revolutionary cartoons is basically the same. However, in terms of the expression of national community consciousness images, students in different grades showed differences, P=0.009. Perhaps it is because students in higher grades, due to the perfection of their knowledge structure and the deepening of their social experience, are more capable of interpreting the meaning of the whole as a connected destiny from the symbols of the cartoon images.

3.2.2 One-way ANOVA based on specialty category

There were five groups of majors, and a one-way ANOVA was used to explore whether there were significant differences between students from different majors for the variables. The test for differences in the major category of scores on the dimensions of each variable is shown in Table 6.

Table 6: Test of majors differences in the scores of each variable dimension

		SS	df	MS	F	P
Educational Value of Comic Works	Inside groups	4.327	4	1.082	2.814	0.025
	Within groups	165.71	430	0.385		
	Total	170.037	434			
National identity	Inside groups	2.891	4	0.723	1.372	0.243
	Within groups	226.009	430	0.526		
	Total	228.9	434			
Image of ethnic consciousness expression	Inside groups	6.245	4	1.561	3.257	0.012
	Within groups	207.355	430	0.482		
	Total	213.6	434			

There were significant differences in the perceptions of students from different majors in evaluating the educational value of comics and in their feelings about the expression of images of community awareness, with p-values of 0.025 and 0.012, respectively. As for the national identity emotion dimension, professional background did not cause significant difference, P=0.243. A reasonable speculation is that students of humanities and social sciences may be more sensitive to image narratives, historical background and cultural symbols due to their professional training, so they are better able to read the educational significance and collective spirit embedded in the cartoons. On the contrary, students of science and engineering may be more concerned with the facts themselves, thus creating cognitive differences between students of different disciplines in these two aspects. Based on the dimension of national identity, which is a more basic and universal emotion, it transcends the boundaries of disciplinary thinking and does not differ according to specialties.

3.2.3 One-way ANOVA based on political affiliation

There were three groups of political profiles, and a one-way ANOVA was used to explore whether there were significant differences between students with different political profiles with respect to the variables. The test of differences in scores political appearance for each variable dimension is shown in Table 7.

Table 7: Test of political affiliation differences in the scores of each variable dimension

		SS	df	MS	F	P
Educational Value of Comic Works	Inside groups	1.873	2	0.937	2.385	0.093
	Within groups	168.164	432	0.389		
	Total	170.037	434			
National identity	Inside groups	8.642	2	4.321	8.467	0.000
	Within groups	220.258	432	0.51		
	Total	228.9	434			
Image of ethnic consciousness expression	Inside groups	7.318	2	3.659	7.682	0.001
	Within groups	206.282	432	0.477		
	Total	213.6	434			

Whether it is shaping individual national identity or interpreting community imagery in the

cartoons, there are highly significant differences between student groups of different political profiles, with p-values of less than 0.01. Specifically, party members and members of the Communist Youth League, scored significantly higher on these two core variables. Because the team organization itself contains strong patriotism and collectivism education, members will more consciously draw spiritual power from political symbols and historical narratives, and thus are more likely to activate a sense of inner belonging and community in revolutionary cartoon images. In contrast, the educational value of the cartoons themselves is not significantly differently recognized among students of different political profiles, suggesting that the basic educational function of the cartoons is universally recognized.

3.3 Scale Reliability Test

3.3.1 Reliability test

The reliability test of the scale in this paper uses Cronbach's α value and combined reliability CR value. When the Cronbach's α value and the CR value exceeds 0.7, it indicates that the scale has good reliability. The reliability analysis of the variables of the three scales is shown in Table 8.

Table 8: Reliability analysis of each variable of the three scales

		CITC	The deleted α coefficient	Cronbach's α	CR
History Education	HM1	0.712	0.812	0.835	0.841
	HM2	0.689	0.825		
	HM3	0.723	0.804		
Emotional Education	EE1	0.745	0.856	0.882	0.885
	EE2	0.811	0.812		
	EE3	0.768	0.838		
Values Education	VE1	0.732	0.821	0.851	0.854
	VE2	0.715	0.842		
	VE3	0.785	0.794		
Cultural Dissemination	CE1	0.698	0.802	0.827	0.831
	CE2	0.665	0.831		
	CE3	0.721	0.788		
National identity	NI1	0.801	0.889	0.907	0.91
	NI2	0.832	0.878		
	NI3	0.785	0.895		
	NI4	0.763	0.902		
Image of ethnic consciousness expression	ICE1	0.721	0.901	0.914	0.918
	ICE2	0.798	0.887		
	ICE3	0.845	0.878		
	ICE4	0.772	0.894		
	ICE5	0.811	0.884		

It was found that the corrected item-total correlation CITC value of each question item of the questionnaire was greater than 0.5, indicating that most of the question items in this questionnaire had a strong correlation line with the total number of questions, and that there was a degree of discrimination between the variables designed in the questionnaire; the Cronbach's α values corresponding to the six dimensions of the scale, namely, history education,

emotional education, values education, cultural dissemination, national identity, and pictorial expression of national community consciousness, were respectively are 0.835, 0.882, 0.851, 0.827, 0.907 and 0.914, all of which are greater than 0.7, and the CR values of the combined reliability are similarly all greater than 0.7, indicating that the questionnaire's internal consistency is better, so the results of this survey have excellent reliability. At this point, the Cronbach's α after deletion of items for all questions is lower than the Cronbach's α reliability coefficients for the corresponding dimensions, and based on this result, it can be assumed that all the questions are a measure of the same concept without the need for deletion of items.

3.3.2 Validity tests

Validity analysis was conducted to verify the reasonableness and accuracy of the question item design. KMO and Bartlett's spherical test were first performed to determine whether the sample data were suitable for factor analysis. When the KMO value is greater than 0.7, it indicates that the questionnaire is very suitable for factor analysis. Also Bartlett's spherical test needs to satisfy the significance, which is significant at the level of $P < 0.01$, indicating that it is suitable for factor analysis and also reflecting that the validity of the questionnaire is good. The results of the sample KMO and Bartlett test are shown in Table 9.

Table 9: The results of KMO and Bartlett test for the sample

KMO		0.936
Bartlett test	Approximate Chi-square	14327.219
	df	435
	P	0.000

The KMO value is 0.935, which is greater than 0.7, satisfying the prerequisite requirements of factor analysis. The data also passed the Bartlett's test of sphericity with $p<0.05$. It indicated that the validity of the questionnaire was good, verified the rationality of the questionnaire design, and also provided data support for identifying the potential factor structure.

3.4 Exploratory factor analysis

Based on the above sample data through the validity test can be used to carry out factor analysis, exploratory factor analysis is a dimension reduction operation on the scale items, according to the classification results to test the questionnaire dimensions of the design of the questionnaire is reasonable and whether it meets the expectations.

3.4.1 Total Variance Interpretation

Firstly, the dimensionality reduction operation was carried out, and the 21 variables were subjected to principal component analysis, factors with eigenvalues greater than 1 were extracted, and the maximum variance rotation method was selected. The results of total variance interpretation are shown in Table 10.

Table 10: Overall variance explanation results

Factor	Initial eigenvalue			Extracted load squared sum			Rotated load squared sum		
	Total	% of Total	Cumulative %	Total	% of Total	Cumulative %	Total	% of Total	Cumulative %
1	16.775	31.131	31.131	16.775	31.131	31.131	5.545	20.264	20.264
2	3.028	13.392	44.523	3.028	13.392	44.523	4.873	17.406	37.670
3	2.011	9.931	54.454	2.011	9.931	54.454	3.932	12.137	49.807
4	1.586	7.389	61.843	1.586	7.389	61.843	2.827	8.952	58.759
5	1.399	5.804	67.647	1.399	5.804	67.647	2.676	6.721	65.480
6	1.195	4.511	72.158	1.195	4.511	72.158	2.640	6.678	72.158
7	0.964	2.974	75.132						
8	0.838	2.475	77.607						
9	0.622	2.298	79.905						
10	0.529	2.092	81.997						
11	0.458	2.052	84.049						
12	0.431	1.953	86.002						
13	0.425	1.807	87.809						
14	0.399	1.779	89.588						
15	0.367	1.751	91.339						
16	0.334	1.646	92.985						
17	0.299	1.614	94.599						
18	0.278	1.586	96.185						
19	0.243	1.423	97.608						
20	0.200	1.343	98.951						
21	0.181	1.049	100						

We extracted six common factors with eigenvalues greater than 1, which together explain 72.158% of the information in all 21 question items. It indicates that more than 70% of the core information of the complex picture that originally needs to be painted by 21 questions can now be effectively summarized by these 6 thematic factors. After rotation, the distribution of the explanation rate of these six factors becomes more balanced, from 20.264% to 6.678%, indicating that the factor structure is more balanced in terms of the contribution of each main factor after optimization.

3.4.2 Component matrix after rotation

The first six factors extracted above are used as principal factors and the rotated component matrix is shown in Table 11.

Table 11: The rotated component matrix

	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6
HM1				0.785		
HM2				0.826		
HM3				0.814		
EE1			0.807			
EE2			0.897			
EE3			0.834			
VE1					0.801	
VE2					0.791	
VE3					0.887	
CE1						0.850
CE2						0.789
CE3						0.834
NI1		0.861				
NI2		0.814				
NI3		0.851				
NI4		0.807				
ICE1	0.746					
ICE2	0.885					
ICE3	0.852					
ICE4	0.830					
ICE5	0.872					

The rotated component matrix showed that the six factors categorized by factor rotation had loadings higher than 0.78, with high loading coefficients, and the topics were all retained. And the matrix is very consistent with the division of variables in the pre-design of the scale, and the dimensions obtained are consistent with the dimensions manually divided in the design of the questionnaire, so the validity of the questionnaire in this study is good.

Specifically, the three question items HM1-HM3 are closely clustered on Factor 4, which clearly represents the historical memory dimension; EE1-EE3 make up Factor 3, Emotional Education; VE1-VE3 are attributed to Factor 5, which corresponds to Values Education; whereas CC1-CC3 together make up Factor 6, Cultural Communication. The question items of National Identity (NI1-NI4) and Image Expression of National Community Consciousness (ICE1-ICE5) were also clearly loaded on Factor 2 and Factor 1 respectively, forming two independent latent variables. This attribution relationship provides strong evidence that the questionnaire scales designed in this paper have excellent structural validity.

3.5 Structural Equation Modeling Analysis

Based on the structural equation modeling (SEM) solution in Section 2.3.2, the next choice was to analyze with structural equation modeling to explore the complex relationship among the variables of the educational value of cartoon works, national identity, and image expression of national community consciousness. The model was first analyzed for goodness-of-fit, and path analysis and mediation effect tests were conducted after determining that the model fit was up to standard.

3.5.1 Model Fit Tests

The fitness test of the structural equation model constructed by the study between the educational value of cartoon works with revolutionary themes and the pictorial expression of national community consciousness is shown in Table 12.

Table 12: Adaptability test of structural equation model

Indicator	Test Result	Evaluation Criteria
X^2/df	1.724	>1 and <3
RMSEA	0.033	<0.08
GFI	0.979	>0.9
AGFI	0.957	>0.9
NFI	0.980	>0.9
RFI	0.973	>0.9
IFI	0.990	>0.9
TLI	0.986	>0.9
CFI	0.987	>0.9

The ratio of chi-square to degrees of freedom (X^2/df) of this model is 1.724, which satisfies the range of less than 3 and greater than 1, with a good fit; the value of RMSEA is 0.033, which is less than 0.08 and within the range of excellence, which indicates a good match; the values of the rest of the reference indexes, GFI, AGFI, NFI, RFI, IFI, TLI, and CFI, are 0.979, 0.957, 0.980, 0.973, 0.990, 0.986, and 0.987, which reach the level of greater than 0.9, and all of them meet the standard of reference value. Therefore, the structural equation model of this study is well fitted.

3.5.2 Path analysis

The path analysis visualizes the relationship between the variables. In Table 13 the standardized path coefficients, standard errors, critical ratios and p-values between the variables are presented.

Table 13: Path coefficients and test results

Path	Estimate	SE	CR	P
History education → National identity	0.215	0.048	4.479	0.000***
Emotional education → National identity	0.283	0.051	5.549	0.000***
Value education → National identity	0.194	0.045	4.311	0.000***
Cultural dissemination → National identity	0.321	0.055	5.836	0.000***
National identity → Image of ethnic consciousness expression	0.507	0.043	11.79	0.000***
History Education → Image of ethnic consciousness expression	0.098	0.041	2.39	0.017*
Emotional Education → Image of ethnic consciousness expression	0.165	0.044	3.477	0.004**
Values Education → Image of ethnic consciousness expression	0.152	0.039	3.072	0.008*
Cultural Dissemination → Image of ethnic consciousness expression	0.109	0.046	2.935	0.013*

History education, emotional education, values education and cultural communication all have significant positive effects on national identity with p-values less than 0.001 and path coefficients of 0.215, 0.283, 0.194, and 0.321, respectively.This is in perfect agreement with hypotheses H5a to H5d in section 2.3.1.

Second, the path coefficient of national identity to national community consciousness image expression is as high as 0.507, which is also highly significant and verifies the correctness of hypothesis H6. It indicates that national identity is indeed the central hub connecting educational value and final perception.

When observing the direct path of the four educational variables to image expression, it is found that the strength of their effects is less than that of the indirect path through national identity, with path coefficients of 0.098, 0.165, 0.152 and 0.109, respectively, but the direct effects of history education, emotion education, values education and cultural communication are still all significant, with p-values of less than 0.05. Hypotheses H1-H4 are all valid as well.

3.5.3 Tests of the mediating effect of ethnic identity

In order to test the mediating role of ethnic identity, the Bootstrap method was selected in the AMOS software and set to perform 5,000 repeated samples, and the test results were obtained as shown in Table 14.

Table 14: Test of the mediating effect of national identity

	Utility value	SE	Bias-corrected 95% CI		P
			Lower	Upper	
History education → National identity → Image of ethnic consciousness expression	0.109	0.028	0.061	0.172	0.001 ***
Emotional education → National identity → Image of ethnic consciousness expression	0.143	0.031	0.089	0.211	0.000 ***
Value education → National identity → Image of ethnic consciousness expression	0.098	0.026	0.054	0.157	0.001 ***
Cultural dissemination → National identity → Image of ethnic consciousness expression	0.163	0.033	0.105	0.235	0.000 ***

The test criterion of mediation effect is mainly by verifying whether 0 is included in the upper and lower limits of the confidence interval, if 0 is included, it means that the mediation test result does not support the path and the hypothesis is not valid, if the upper and lower limits do not include 0 when the path is supported and the hypothesis is valid.

As can be seen from the data in Table 14, the effect values of the four paths of history education → ethnic identity → ethnic community consciousness, emotion education → ethnic identity → ethnic community consciousness, values education → ethnic identity → ethnic community consciousness, and cultural dissemination → ethnic identity → ethnic community consciousness are 0.109, 0.143, 0.098, and 0.163, respectively, and none of them contains 0 in their confidence intervals, which indicates that there is a mediating role between national identity in terms of the four educational values of history education, emotion education, values education and cultural dissemination and national community consciousness. Based on the

above tests, it is possible to obtain that hypotheses H7a, H7b, H7c, and H7d are all verified.

4 Conclusion

A series of indicators of model fitness, $X^2/df=1.724$, RMSEA=0.033, CFI=0.987, all passed the test criteria, which indicates that the path of educational value→national identity→community consciousness proposed for the revolutionary-themed cartoons is practicable. Exploratory factor analysis successfully extracted six male factors, the total variance explained rate is as high as 72.158%.

Among the four major dimensions affecting national identity, the coefficient of cultural transmission path is 0.321, which has the most prominent force and is the strongest factor connecting individual and collective identity. For the dimension of national identity as a hub, it has the strongest direct driving force on the expression of community consciousness images, with a path coefficient = 0.507, and more importantly, the Bootstrap test confirms that it plays a significant mediating role in all paths. Specifically, the indirect effect of cultural communication on image expression through national identity is 0.163, with a 95% confidence interval of [0.105, 0.235], which does not include 0. In this regard, it can be seen that the cartoons do not simply play a direct role in the sense of community, but rather more through the first shaping of the people's innermost sense of belonging to achieve the sense of community.

With the value concept as the anchor point, emotional resonance as the link, and cultural symbols as the core, anti-war revolutionary cartoons can efficiently complete the image construction and dissemination of national community consciousness by consolidating the psychological bridge of national identity.

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