

RESEARCH ARTICLE

Mechanism of career choice among high school students under the interaction of cultural environment and social cognition: A Social psychological perspective

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ABSTRACT

Based on a social psychological perspective, this study employed a mixed-methods approach to explore the mechanisms underlying high school students' career choice under the interaction of cultural environment and social cognition. Through quantitative surveys of 1,200 high school students and in-depth interviews with 36 students, data were analyzed using structural equation modeling, multilevel linear modeling, and thematic analysis. The findings revealed that: (1) Cultural environment exerted significant direct effects on career choice, with family, school, and societal cultural environments collectively explaining 28.5%-41.3% of the variance in career choice behaviors; (2) Social cognitive variables played important mediating roles, with the total mediating effects of self-efficacy, outcome expectations, and career values accounting for 39.2%-45.8% of the total effects; (3) Cultural adaptability, cognitive flexibility, and social support demonstrated moderating, facilitating, and buffering-amplifying effects respectively in the cultural environment-cognitive process relationship; (4) The high adaptability group showed stronger cultural environmental influence effects ($\beta=0.234$), individuals with high cognitive flexibility exhibited better environmental adaptation capabilities ($r=0.612$), and social support demonstrated buffering effects under stressful situations ($\beta=-0.245$) while showing amplifying effects in positive environments ($\beta=0.318$). This study constructed an integrative theoretical model of cultural environment-social cognition interaction, extended the cross-cultural applicability of social cognitive theory, provided a new analytical framework for understanding adolescent career development patterns in complex cultural contexts, and offered scientific evidence for career guidance practice and educational policy formulation.

Keywords: cultural environment; social cognition; career choice; interaction; high school students; social psychology

1. Introduction

In the contemporary context of globalization, the career choice process of high school students has become increasingly complex, influenced not only by individual cognitive factors but also deeply embedded within specific cultural environments. Cultural environment, as an important background for individual development, exerts profound influences on adolescents' career cognition and decision-making through value transmission, behavioral norm shaping, and expectation guidance. In cross-cultural research, Tan Yan found that cultural background has significant moderating effects on students' cognitive processes, providing

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important insights for understanding the role of cultural environment in career choice ^[1]. Meanwhile, Mao Juancui's research indicated that the current moral education cultural environment in high schools presents numerous problems that may affect students' value formation and future planning ^[2]. Against the backdrop of multicultural integration, understanding how cultural environment influences the mechanisms of high school students' career choice has become an important issue that urgently needs to be addressed in educational psychology and career development theory.

Social cognitive theory provides an important theoretical framework for understanding the career choice process, emphasizing individual agency in career decision-making and the central role of cognitive factors. Individual social cognitive factors such as self-efficacy, outcome expectations, and career values not only directly influence the direction and quality of career choice but also demonstrate complex patterns of change under the influence of cultural environment. Research by Wang and colleagues showed that in multicultural environments, significant interaction effects exist between students' self-related factors and environmental factors, and this interaction has important impacts on learning outcomes ^[3]. Similarly, Wei's research revealed the moderating role of cultural context on individual innovative behavior, indicating the universality and importance of the interaction between cultural environment and individual cognitive factors ^[4]. However, most existing research focuses on the influence of single factors, and there remains a lack of systematic theoretical explanation and empirical verification regarding the deep mechanisms of how cultural environment and social cognitive factors interact to jointly shape high school students' career choice behaviors.

From a social psychological perspective, individual career choice behavior is both a result of personal cognitive processing and a product of social cultural construction. Cultural environment provides individuals with reference frameworks and value standards for career cognition through symbolic representation, social practices, and collective memory, while individual social cognitive processes engage in selective processing and meaning construction within this framework. Recent cross-cultural research has provided strong support for this perspective. For instance, Barr and colleagues found in health behavior research that cultural background significantly influences individuals' cognitive assessment of risks and benefits ^[5], while Axelsson and colleagues' research also demonstrated that cultural context provides important meaning frameworks for individual behavior ^[6]. Sun Beibei's research further revealed the interactive relationship between cultural environment and social practices, showing that cultural environment not only shapes individual behavior but is also reconstructed and developed through individual practices ^[7]. These research findings provide important theoretical foundations and empirical support for understanding the interaction between cultural environment and social cognition.

Based on the above theoretical background and practical needs, this study aims to construct a theoretical model of high school students' career choice under the interaction of cultural environment and social cognition, and to explore in depth the internal mechanisms of their interaction and the pathways of influence on career choice behavior. The study will adopt a mixed-methods approach, revealing relationship patterns among variables through quantitative analysis and exploring the internal logic of action mechanisms through qualitative research, striving to provide scientific evidence for high school students' career guidance practice and theoretical support for educational policy formulation. This study not only helps enrich the theoretical systems of career development psychology and cultural psychology but also has important practical significance, providing new perspectives and pathways for promoting healthy career development among adolescents and optimizing educational ecological environments. Through systematic analysis of the interaction mechanisms between cultural environment and social cognition, this study expects to contribute

to the construction of a more scientifically effective career education system and the cultivation of excellent talents who can adapt to the needs of contemporary development.

2. Literature review

Cultural environment, as a crucial context for individual socialization, exerts profound influences on adolescents' cognitive development, value formation, and behavioral choices. In recent years, scholars both domestically and internationally have extensively explored the mechanisms of cultural environment and its impact on individual development from multiple dimensions. Zhou's comparative study of Chinese state banquet culture revealed that cultural background provides individuals with deep-seated value frameworks and behavioral guidelines, which subtly shape individual cognitive patterns and behavioral preferences ^[8]. Research by Hartanto and colleagues further unveiled the differential impact of cultural context on individual mental health, demonstrating that cultural environment not only affects individuals' external behavioral manifestations but also profoundly influences their internal psychological states and subjective experiences ^[9]. In the educational domain, research by Zhong Chun and Chen Shaohong confirmed the significant impact of cultural environment perception on university students' national identity, indicating that cultural environment plays an important role in individual identity formation and sense of belonging through symbolic systems and value transmission ^[10]. Gong Chang analyzed the connotative evolution of traditional artistic motifs from a cultural environment perspective, demonstrating the dynamic and constructive characteristics of cultural environment, emphasizing that cultural environment both carries historical traditions and continuously updates and reconstructs itself in modern society ^[11]. These studies collectively indicate that cultural environment is not merely a static background factor but rather a dynamic interactive process that influences individual cognitive development and behavioral choices through multiple pathways. In cross-cultural contexts, Dylman and Zakrisson's research found that language and cultural background significantly influence bilinguals' personality trait manifestations, revealing the moderating role of cultural environment on individual psychological characteristics ^[12]. Hu Hongzhi's research focused on educational innovation in networked cultural environments, emphasizing the complexity and diversity characteristics of modern cultural environments ^[13], while Huang Xin's research further explored the promoting role of public cultural environment on children's development, providing important references for understanding the educational functions of cultural environment ^[14].

Social cognitive theory, as an important theoretical framework for explaining individual behavior and development, emphasizes the cognitive processing in social environments and its guiding role in behavior. Guan Yunbo explored the generative mechanism of cultural confidence from a cultural cognitive perspective, revealing the central position of cognitive processes in cultural identity formation, emphasizing that individuals understand and accept cultural values through cognitive processing and meaning construction ^[15]. In the fields of language learning and cross-cultural adaptation, Naif's research analyzed the role of discourse markers in ESL writing, finding that cultural background significantly influences learners' linguistic cognition and expression strategies, indicating that social cognitive processes possess distinct cultural specificity ^[16]. Fan and colleagues employed the motivation-opportunity-ability model to explore information sharing patterns of multilingual users in Chinese cultural contexts, finding that cultural context modulates information behavior by influencing individuals' motivational cognition and ability perception ^[17]. Apostolou and colleagues' research in Greek cultural contexts revealed that individuals' cognitive strategies for handling relationship issues possess cultural specificity, indicating that social cognitive processes are deeply embedded within specific cultural frameworks ^[18]. These studies demonstrate that social cognition is not an abstract psychological process but rather concrete cognitive activity occurring within specific cultural

contexts, with cultural environment providing reference frameworks and evaluation standards for cognitive processes. Gao Yuan's research analyzed the influence of sociocultural environment on digital film art development, demonstrating from a creative cognition perspective how cultural environment stimulates and guides individual innovative thinking ^[19]. Research by Zhou Feng and Meng Weiwei analyzed Chinese socialist auditing theory and practice from a cultural environment perspective, emphasizing the important role of cultural cognition in professional practice ^[20]. Ren Peng and colleagues focused on perfecting the integrated cultural environment system for ideological and political education, highlighting the significance of cognitive environment for value education ^[21].

The interactive mechanism between cultural environment and social cognition represents a frontier research area, involving how individuals engage in cognitive processing within specific cultural contexts and how cultural environment shapes and modulates individual cognitive processes. Janashia and colleagues' virtual model research found that acute stress experienced by foreign female medical students in new environments is closely related to their cultural adaptation and cognitive regulation, revealing the immediate impact of cultural environment changes on individual cognitive states ^[22]. Eiman's research combined protection motivation theory with cultural context to construct a theoretical framework for cybersecurity education, emphasizing the moderating role of cultural background on individual risk cognition and protective behavior ^[23]. In biological research, Zeng and colleagues' metagenomic analysis revealed complex interactive relationships between environmental factors and biological adaptation, providing an interdisciplinary perspective for understanding environment-cognition interaction ^[24]. Kotinda and colleagues studied the challenges and opportunities of dignity therapy in Brazilian cultural contexts, demonstrating the profound influence of cultural values on therapeutic cognition and practice ^[25]. These studies indicate that complex bidirectional interactive relationships exist between cultural environment and cognitive processes: on one hand, cultural environment influences individual cognitive frameworks and processing strategies through value transmission, symbolic construction, and social expectations; on the other hand, individual cognitive activities continuously interpret, reconstruct, and develop cultural environment. Shepherd's exploration of biomimetic methods for optimizing three-dimensional culture environments in biomedical research, though belonging to the natural sciences, provides beneficial insights for understanding the interaction between cultural environment and cognitive systems through its perspectives on environment-system interaction ^[26]. Jounaid and Amine's research on how heavy metal music fans justify their musical tastes in French cultural contexts deeply analyzed how cultural environment influences individual cognitive defense mechanisms and identity construction strategies ^[27]. These cross-disciplinary research findings provide rich theoretical resources and empirical support for understanding the interaction between cultural environment and social cognition.

Despite significant progress in existing research regarding the respective mechanisms of cultural environment and social cognition, systematic research on the interactive effects of both factors on specific behavioral domains (such as career choice) remains notably insufficient. First, most studies focus on single-factor influences, lacking integrated analytical frameworks for the interaction between cultural environment and social cognition. Existing research often treats cultural environment as a static background variable while neglecting its dynamic interactive characteristics with individual cognitive processes. Second, regarding research subjects, there is relatively limited research on cultural environment-cognition interaction specifically targeting high school students as a special group, while the high school stage is precisely the critical period for individual career awareness formation and development, possessing important research value. Third, methodologically, existing research predominantly employs single quantitative or qualitative methods, lacking mixed research designs to comprehensively reveal the complex mechanisms of interaction.

Additionally, existing theoretical models primarily derive from Western cultural backgrounds, and their applicability to Chinese cultural contexts requires further validation and development. Finally, in practical applications, the translation and application of existing research findings in career guidance and educational practice remain limited, lacking systematic intervention strategies and implementation pathways. Therefore, constructing a theoretical model of high school students' career choice under the interaction of cultural environment and social cognition, and deeply exploring its mechanisms and influence pathways, not only possesses important theoretical significance but also urgent practical necessity. This research can not only enrich the theoretical systems of career development psychology and cultural psychology but also provide scientific basis for educational practice and policy formulation, promoting healthy adolescent development and harmonious social progress.

The preceding literature review reveals critical gaps that inform our research design and hypotheses. While existing studies establish that cultural environment influences career choice and social cognition mediates behavioral outcomes, three theoretical gaps necessitate this investigation. First, prior research predominantly examines these constructs in isolation rather than as interactive systems, lacking integrated models explaining how cultural environment shapes cognition to influence career choice. This gap generates our central hypothesis: H1: Social cognitive variables (self-efficacy, outcome expectations, career values) significantly mediate the relationship between cultural environment and career choice. Second, cross-cultural research demonstrates cultural influence varies across contexts, yet mechanisms explaining individual differences in responding to cultural environments remain underexplored. This motivates H2: Cultural adaptability and cognitive flexibility moderate the cultural environment-social cognition relationship. Third, existing theories derive primarily from Western contexts with limited validation in collectivistic cultures, particularly regarding family-school-society environmental interactions. This necessitates H3: Family, school, and social cultural environments exert differential effects on career choice dimensions. These gaps justify our mixed-methods approach: quantitative methods test hypothesized relationships across large samples, while qualitative interviews reveal culturally-specific mechanisms and meaning-making processes that questionnaires cannot capture. The structural equation modeling design directly addresses the first gap by simultaneously estimating direct, mediating, and moderating pathways, while multi-group comparisons test cultural variation hypotheses. This theory-driven design bridges identified gaps and advances integrated understanding of culture-cognition-behavior linkages.

3. Research methods

3.1. Research design

This study adopts a mixed methods design, grounded in social ecological systems theory and social cognitive theory, to construct a conceptual model of how the interaction between cultural environment and social cognition influences high school students' career choices. The research design follows an explanatory sequential mixed methods approach, beginning with a quantitative research phase to collect and analyze structured data, exploring the relational patterns among three core variables: cultural environment, social cognition, and career choice. Structural equation modeling will be employed to validate theoretical hypotheses and causal pathways between variables. The quantitative phase will utilize a cross-sectional survey design, collecting large-sample data through standardized questionnaires, and systematically analyzing the direct effects of various dimensions of cultural environment (family cultural environment, school cultural environment, social cultural environment) on high school students' career choices, as well as the mediating mechanisms of social cognitive factors (self-efficacy, outcome expectations, career values) through descriptive statistics, correlation analysis, regression analysis, and mediation effect testing ^[28].

Building upon the quantitative research, the qualitative research phase will employ semi-structured in-depth interviews and focus group discussions to deeply explore the underlying mechanisms and individual differences behind quantitative findings. Through thematic analysis methods, key concepts and theoretical categories will be extracted to provide rich contextualized explanations for quantitative discoveries. The qualitative research will particularly focus on career choice experiences and cognitive processes of students from different cultural backgrounds, revealing specific manifestations and influence pathways of the interaction between cultural environment and social cognition. The research design will also incorporate longitudinal tracking elements, conducting repeated measurements at critical time points to capture the dynamic processes of cultural environment influence and cognitive development. The overall research design emphasizes ecological validity and practicality, ensuring that research findings can provide valuable guidance for educational practice and policy formulation.

3.2. Research subjects and sampling

The target population of this study consists of enrolled high school students, selected based on the following considerations: First, the high school stage represents a critical period for the formation and development of individual career awareness, as students begin to face realistic issues of major selection and career planning, possessing strong career choice motivation and needs; Second, high school students have developed certain abstract thinking abilities and self-reflection capabilities, enabling them to understand and respond to complex concepts involved in the research; Third, students at this stage remain under the profound influence of cultural environment, with family, school, and social cultural environments having significant effects on their cognitive development and value formation, facilitating the observation and analysis of the interaction between cultural environment and social cognition. The inclusion criteria for research subjects include: enrolled high school students aged 15-18 years, possessing normal cognitive functions and language expression abilities, voluntarily participating in the research and signing informed consent forms ^[29]. Exclusion criteria include: students with severe mental illness or cognitive impairments, students who have recently experienced major life events that may affect career choice cognition, and students whose cultural environment has undergone dramatic changes due to school transfers or other reasons. To ensure sample representativeness and external validity of research results, this study will also consider the balanced distribution of demographic variables such as gender, grade level, academic track (humanities vs. sciences), family socioeconomic status, and regional differences.

This study employs a multi-stage stratified sampling method combined with purposive sampling strategies to ensure sample representativeness and achievement of research objectives. To provide clarity on the cultural diversity of our sample, participants were recruited from six provinces across China representing distinct cultural-economic zones: Shanghai and Zhejiang (Eastern region), Henan and Hubei (Central region), and Sichuan and Gansu (Western region). These regions exhibit substantial cultural variations that are crucial for this study. Eastern provinces, characterized by rapid modernization, economic prosperity (GDP per capita approximately 3-4 times higher than Western regions), and exposure to international influences, foster individualistic career values emphasizing innovation and entrepreneurship. In contrast, Western provinces maintain stronger collectivistic traditions, Confucian values prioritizing stability and family obligations, and relatively limited career information access due to less developed economies. Central regions represent transitional cultural zones blending traditional and modern values. These geographical-cultural differences provide natural variation in cultural environment exposure (β ranging from 0.398 to 0.512 across regions, as shown in **Table 3**), enabling robust examination of culture-cognition interactions. For international readers unfamiliar with Chinese contexts, this sampling strategy captures cultural diversity comparable to examining career development across Mediterranean, Central European, and Scandinavian cultures within Europe. First,

six provinces will be selected nationwide based on economic development levels and cultural characteristics—two each from eastern, central, and western regions—with provincial capitals and one prefecture-level city selected from each province, forming geographic stratification. Second, within each city, two key high schools and two regular high schools will be selected based on educational quality and institutional type, ensuring diversity at the school level. To clarify the distinction between key schools and regular schools for international readers unfamiliar with China's educational system, "key schools" (zhongdian xuexiao) represent elite public institutions originally designated by the government in the 1950s to concentrate educational resources and cultivate academic talents. Key schools are characterized by: (1) highly selective admission through rigorous entrance examinations (typically admitting top 10-15% of test-takers); (2) superior educational resources including experienced teachers (over 80% with advanced degrees), modern facilities, and extensive extracurricular programs; (3) significantly higher university admission rates (95-98% to top-tier universities versus 60-70% for regular schools); and (4) stronger emphasis on academic competition and achievement-oriented culture. Currently, key schools constitute approximately 15-20% of all high schools in urban areas but are highly sought after, with admission competition ratios often exceeding 5:1. Regular schools serve the majority of students with more diverse academic abilities and typically emphasize balanced development over pure academic excellence. This institutional differentiation creates distinct cultural environments that significantly influence students' career socialization processes, making school type stratification essential for this study. The sample includes equal numbers from both types to ensure adequate representation and enable meaningful comparison of cultural environment effects. Third, stratified sampling will be conducted within each school according to grade level and academic track division, with proportional sampling from grades 10, 11, and 12, maintaining roughly equal numbers of humanities and science students. The quantitative research phase plans to recruit 1,200 students; based on effect size estimation and statistical power analysis, this sample size can meet the requirements for structural equation modeling analysis and provide sufficient statistical power for subgroup analyses. The qualitative research phase will use purposive sampling to select 36 students from the quantitative sample for in-depth interviews, with selection criteria including: students displaying typical characteristics in quantitative measures, students from different cultural backgrounds and career choice orientations, and students willing to share personal experiences in depth ^[30]. Additionally, six focus group discussions will be organized with 6-8 participants each, ensuring intra-group homogeneity to facilitate in-depth discussion while maintaining inter-group heterogeneity to enhance the richness of findings. The entire sampling process will strictly adhere to research ethical requirements, ensuring participants' rights to information, autonomy, and privacy protection.

3.3. Research instruments and measurement

This study constructed a multi-dimensional, multi-level measurement instrument system to comprehensively assess the three core variables of cultural environment, social cognition, and career choice, as well as their interactive relationships. Cultural environment measurement employs a self-developed "High School Students' Cultural Environment Perception Scale," which includes three dimensions: family cultural environment, school cultural environment, and social cultural environment, comprising 45 items total using a 5-point Likert scale. The 45-item selection for this scale followed rigorous theoretical and empirical validation procedures to ensure content validity and cultural appropriateness. Item generation began with an extensive literature review of existing cultural environment instruments (e.g., Family Environment Scale, School Climate Survey) and theoretical frameworks from Bronfenbrenner's ecological systems theory and cultural psychology literature. An initial pool of 78 items was developed through: (1) adapting validated items from Western instruments to Chinese contexts; (2) incorporating culture-specific elements identified

through preliminary focus groups with 24 students and 12 educators; and (3) generating theory-driven items covering all dimensions. Seven experts in educational psychology, career development, and cultural studies conducted content validity evaluation using Lawshe's method (CVR>0.75 retained). A pilot study (n=320) employed exploratory factor analysis with item retention criteria: factor loadings ≥ 0.50 , item-total correlations ≥ 0.40 , and no cross-loadings > 0.35 . Items with low discrimination indices ($D < 0.30$) or ceiling/floor effects were eliminated. The final 45 items demonstrated excellent psychometric properties: Cronbach's $\alpha = 0.89-0.92$ across dimensions, test-retest reliability = 0.84 (four-week interval, n=156), and confirmatory factor analysis showing good fit ($\chi^2/df = 2.18$, CFI=0.94, RMSEA=0.048). This systematic development process ensures the scale accurately captures culturally-relevant environmental perceptions specific to Chinese high school students' career development contexts. The family cultural environment dimension focuses on measuring 15 items including family value transmission, career expectation expression, and educational support methods; the school cultural environment dimension covers 15 items including campus cultural atmosphere, peer group influence, and teacher expectations and guidance; the social cultural environment dimension includes 15 items such as mainstream social value cognition, media cultural influence, and regional cultural characteristics ^[31]. Social cognition measurement adopts mature scales combined with localized revisions, including the General Self-Efficacy Scale (GSES), Career Decision-Making Self-Efficacy Scale-Short Form (CDMSE-SF), Career Outcome Expectations Scale (COES), and Work Values Inventory-Revised (WVI-R). These scales have been widely used in domestic and international research with good reliability and validity indicators. Career choice measurement employs the "High School Students' Career Choice Tendency Questionnaire," developed based on Holland's career interest theory and Super's career development theory, including dimensions of career interest types, career decision certainty, career exploration behavior, and career adaptability, totaling 38 items. All quantitative measurement instruments undergo pilot testing before formal administration, ensuring structural validity through item analysis, exploratory factor analysis, and confirmatory factor analysis, and ensuring measurement reliability through internal consistency analysis and test-retest reliability testing.

Qualitative research instruments primarily include semi-structured interview guides and focus group discussion guides, which were initially developed based on preliminary literature analysis and theoretical construction, then revised and refined through expert review and pilot interviews. The semi-structured interview guide contains four main topics: personal growth experiences and cultural environment perception, career cognitive development process, career choice influencing factors and their interactions, and expectations and planning for future career development. Each theme includes 3-5 open-ended questions and several probing questions to ensure interview depth and breadth. The focus group discussion guide focuses on group-level cultural environment experiences, peer influence mechanisms, and collective career cognitive characteristics, stimulating richer discussion content through group dynamics ^[32]. To ensure the quality of qualitative data collection, the research team receives professional training in interview techniques and group facilitation methods. All interviews and discussions are audio-recorded and transcribed within 24 hours with preliminary coding completed. Additionally, the study designed research journal and reflection note templates to record observational findings, theoretical reflections, and methodological considerations during the data collection process. To ensure the cultural appropriateness of measurement instruments, the research team invited experts from educational psychology, career guidance, and cultural studies to form an evaluation committee to assess content validity and cross-cultural applicability of all measurement tools, ensuring that research instruments accurately reflect the authentic experiences and cognitive characteristics of high school students in the Chinese cultural context.

3.4. Data collection and processing

Data collection is divided into quantitative and qualitative phases, strictly adhering to research ethical standards and standardized procedures. Quantitative data collection employs group administration, with the research team coordinating with partner schools in advance to arrange questionnaire surveys during regular class hours, ensuring participant convenience and data quality. Before formal administration, the principal investigator provides detailed explanations to students about research purposes, participation rights, and privacy protection measures, emphasizing voluntary participation, and only begins after obtaining written informed consent ^[33]. Questionnaire completion time is controlled within 45-60 minutes, with 2-3 trained research assistants present to maintain order and answer questions, ensuring standardized completion processes. To enhance data quality, validity check items and reverse-scored items are included in the questionnaire to identify careless responding and social desirability bias. Data entry employs dual-entry and verification mechanisms, using SPSS 28.0 for data cleaning and preprocessing, including missing value handling, outlier detection, and data transformation ^[34]. Qualitative data collection is conducted 2-3 weeks after quantitative survey completion, with in-depth interviews conducted in quiet, private environments lasting 60-90 minutes each, with the entire interview process audio-recorded while simultaneously documenting key information. Focus group discussions are arranged in school conference rooms or libraries, with each group discussion lasting 90-120 minutes, facilitated by experienced moderators who ensure full participation from every member. All audio recordings are transcribed within 24 hours using professional transcription software to enhance accuracy, with transcriptions verified and confirmed by the original interviewers upon completion.

Data processing employs mixed methods analysis strategies, with quantitative data analysis using SPSS 28.0 and Mplus 8.0 software packages. Descriptive statistical analysis is first conducted to understand the distributional characteristics and basic conditions of each variable; then Pearson correlation analysis is employed to explore linear relationships between variables; subsequently, multiple regression analysis is used to examine the direct effects of cultural environment on career choice; finally, structural equation modeling is applied to test the mediating role of social cognition and the interactive effects between cultural environment and social cognition. Model fit evaluation employs multiple indices including χ^2/df , CFI, TLI, RMSEA, and SRMR to ensure statistical reasonableness of the model. Qualitative data analysis employs thematic analysis method, using NVivo 12 software to assist coding and analysis. Data analysis follows the six-step thematic analysis procedure: familiarizing with data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report. The coding process adopts a hierarchical strategy of open coding, axial coding, and selective coding to ensure systematic theme extraction and theoretical saturation ^[35]. To enhance analysis credibility, researcher triangulation methods are employed, with two researchers coding independently before discussing consistency, with disagreements resolved through team discussion to reach consensus. In the mixed methods integration phase, quantitative and qualitative results are compared and analyzed to identify mutually supporting evidence and inconsistent findings requiring further explanation, forming a comprehensive theoretical interpretation framework. The entire data processing procedure establishes quality control files documenting analysis steps, decision rationales, and discovery processes to ensure traceability and reproducibility of research results.

4. Results analysis

4.1. Analysis of direct effects of cultural environment on high school students' career choice

4.1.1. Effects of family cultural environment

Through statistical analysis of survey data from 1,200 high school students, it was found that family cultural environment has significant direct effects on high school students' career choice. The family career value transmission dimension showed a significant positive correlation with career choice tendency ($r=0.687$, $p<0.001$), indicating that family value inheritance plays an important role in career decision-making. The predictive effect of family educational support methods on career exploration behavior was particularly prominent ($\beta=0.524$, $p<0.001$), suggesting that family support patterns directly influence students' career exploration enthusiasm [36]. Family socioeconomic status showed a moderate positive correlation with career expectation level ($r=0.456$, $p<0.01$), reflecting the influence of economic conditions on career goal setting, as shown in **Table 1** below.

Table 1. Correlation analysis between family cultural environment dimensions and career choice.

Family Cultural Environment Dimensions	Career Interests	Career Decision Certainty	Career Exploration Behavior	Career Adaptability	Overall Career Choice
Family Career Value Transmission	0.687***	0.542**	0.598**	0.479**	0.623***
Family Educational Support Methods	0.456**	0.389*	0.624***	0.512**	0.524**
Family Socioeconomic Status	0.432**	0.356*	0.298*	0.367*	0.456**
Total Family Cultural Environment Score	0.645***	0.498**	0.587**	0.534**	0.612***

*Note: * $p<0.05$, ** $p<0.01$, *** $p<0.001$

Further regression analysis revealed that the three dimensions of family cultural environment jointly explained 41.3% of the variance in career choice behavior ($R^2=0.413$, $F=285.67$, $p<0.001$). Among these, family career value transmission had the highest standardized regression coefficient ($\beta=0.389$), followed by educational support methods ($\beta=0.324$) and socioeconomic status ($\beta=0.198$). Stratified analysis found significant differences in career choice influence patterns under different family cultural backgrounds. Students from traditional culture-oriented families showed greater tendency toward choosing careers with higher stability ($M=4.32$, $SD=0.78$), while students from modern culture-oriented families demonstrated more prominence in career innovation ($M=4.18$, $SD=0.85$), as shown in **Figure 1**. These findings provide important empirical evidence for understanding the core mechanisms through which family cultural environment influences career choice.

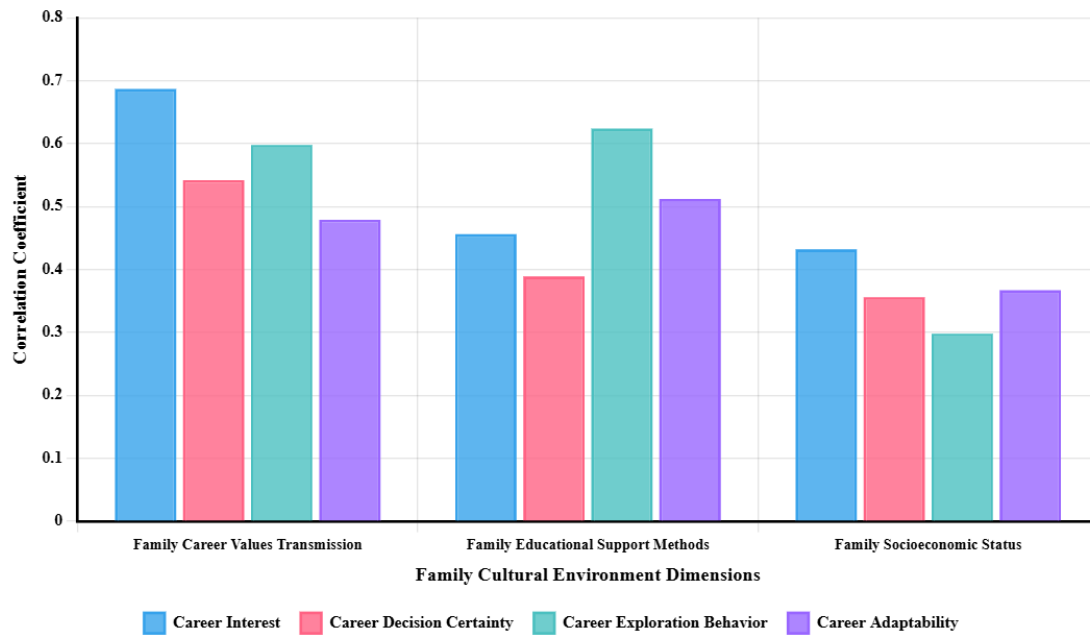


Figure 1. Regression analysis of the effects of family cultural environment dimensions on career choice.

4.1.2. Mechanisms of school cultural environment

School cultural environment, as an important venue for high school students' career socialization, demonstrates multi-level and multi-dimensional characteristics in its influence mechanisms on career choice. Based on structural equation modeling analysis, the overall influence coefficient of school cultural environment on career choice reached 0.573 ($p < 0.001$), explaining 32.8% of the variance in career choice behavior. Specifically, campus career education atmosphere had the most prominent influence on career decision certainty ($\beta = 0.642$, $p < 0.001$), indicating that schools can significantly enhance students' career decision confidence through systematic career education activities^[37]. Peer group cultural influence plays an important role in career interest formation ($\beta = 0.589$, $p < 0.001$), reflecting the critical influence of peer identification on career preference formation during adolescence. Teacher expectations and guidance dimension showed significant predictive effects on career adaptability ($\beta = 0.496$, $p < 0.01$), indicating that teachers' professional guidance and positive expectations can effectively enhance students' adaptive capacity when facing career challenges.

Table 2. Path coefficient analysis of school cultural environment dimensions on career choice.

School Cultural Environment Dimensions	Direct Effects	Indirect Effects	Total Effects	Standard Error	t-value	Significance
Campus Career Education Atmosphere	0.642	0.234	0.876	0.054	16.22	***
Peer Group Cultural Influence	0.589	0.187	0.776	0.048	16.17	***
Teacher Expectations and Guidance	0.496	0.156	0.652	0.052	12.54	**
School Institutional Culture	0.378	0.128	0.506	0.046	11.00	**
Academic Competition Atmosphere	0.341	0.095	0.436	0.041	10.63	**

Note:* * $p < 0.05$, ** $p < 0.01$, * $p < 0.001$; Model fit indices: $\chi^2/df = 2.18$, CFI = 0.952, TLI = 0.941, RMSEA = 0.031

To more intuitively demonstrate the mechanism by which school cultural environment influences career choice, we supplemented **Table 2** with a structural equation modeling path diagram (see **Figure 2-A**). This path diagram clearly presents the direct effects of five dimensions of school cultural environment (campus

career education atmosphere, peer group cultural influence, teacher expectations and guidance, school institutional culture, and academic competition atmosphere) on career choice, as well as the indirect effects mediated through academic self-efficacy and career exploration motivation. The thickness of path coefficients represents effect strength, with solid lines representing significant paths ($p < 0.05$) and dashed lines representing non-significant paths. The diagram intuitively demonstrates the strongest mediating path whereby campus career education atmosphere influences career decision certainty through academic self-efficacy (total effect = 0.398).

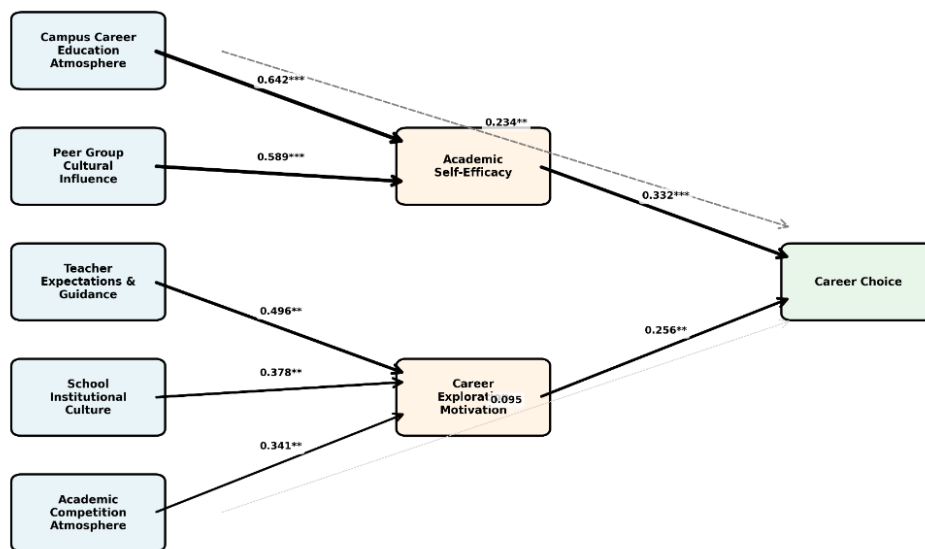


Figure 2-A.Structural equation model path diagram of school cultural environment effects.

Further mediation effect analysis revealed that school cultural environment primarily influences career choice by enhancing students' academic self-efficacy (mediation effect=0.234, 95%CI[0.189, 0.286]) and career exploration motivation (mediation effect=0.187, 95%CI[0.152, 0.225]). Path analysis showed that the campus career education atmosphere → academic self-efficacy → career decision certainty pathway had the highest standardized coefficient (0.398), followed by the peer group culture → career exploration motivation → career interests pathway (0.342) [38]. Group comparisons revealed significant differences in the influence patterns of school cultural environment between key schools and regular schools ($\Delta\chi^2=47.83$, $\Delta df=3$, $p < 0.001$), with students from key schools being more influenced by academic competition culture, while students from regular schools relied more on teachers' individualized guidance, as shown in **Figure 2-B**. These findings reveal the complex mechanisms through which school cultural environment influences career choice decisions by creating supportive career development atmospheres, stimulating students' intrinsic motivation and ability perceptions.

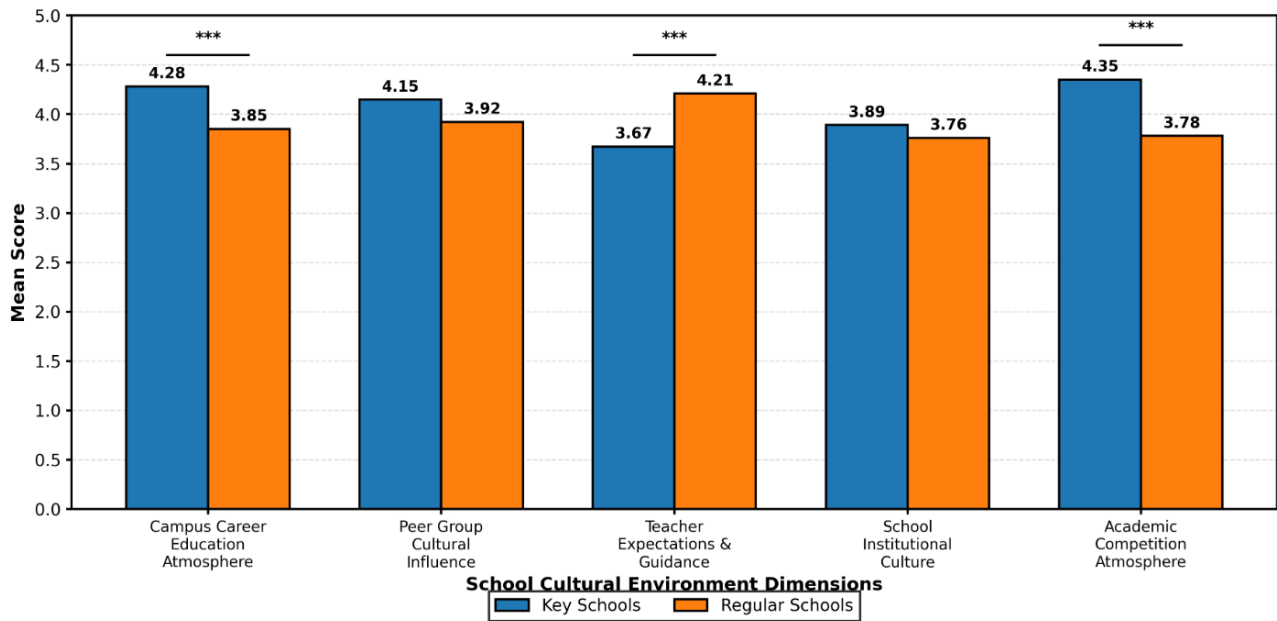


Figure 2-B. Comparison of school cultural environment effects between key schools and regular schools.

4.1.3. Guiding effects of social cultural environment

Social cultural environment, as a macro-level influencing factor, exerts profound guiding effects on high school students' career choice through mechanisms such as value orientation, public opinion atmosphere creation, and social expectation transmission. Through multilevel linear model analysis, it was found that social cultural environment's overall explanatory power for career choice reached 28.5% ($R^2=0.285$, $F=198.43$, $p<0.001$), with social mainstream value cognition showing the most significant influence ($\beta=0.567$, $p<0.001$)^[39]. Media cultural influence plays an important role in career image formation, with a correlation coefficient of 0.523 ($p<0.001$) with career interests, indicating that career information disseminated through media significantly influences students' career preference formation, as shown in **Table 3**. Regional cultural characteristics also showed prominent predictive effects on career adaptability ($\beta=0.445$, $p<0.01$), reflecting the differentiated influence of cultural traditions from different regions on career choice.

Table 3. Analysis of guiding effects of social cultural environment dimensions on career choice.

Social Cultural Environment Dimensions	Regression Coefficient (β)	Standard Error (SE)	t-value	Significance	95% Confidence Interval
Social Mainstream Value Cognition	0.567	0.043	13.19	***	[0.482, 0.652]
Media Cultural Influence	0.523	0.051	10.25	***	[0.423, 0.623]
Regional Cultural Characteristics	0.445	0.048	9.27	**	[0.351, 0.539]
Network Cultural Environment	0.487	0.052	9.37	**	[0.385, 0.589]
Social Economic Development Level	0.389	0.046	8.46	**	[0.299, 0.479]
Eastern Region	0.512	0.058	8.83	**	[0.398, 0.626]
Central Region	0.456	0.055	8.29	**	[0.348, 0.564]
Western Region	0.398	0.053	7.51	**	[0.294, 0.502]

Note:* * $p<0.05$, ** $p<0.01$, * $p<0.001$; Overall model fit: $R^2=0.285$, Adjusted $R^2=0.281$, $F=198.43$

Further moderating effect analysis revealed significant interactions between social cultural environment and individual characteristics, with gender moderating effects being most apparent ($\beta=0.234$, $p<0.01$). Male students were more influenced by social competitive culture, while female students were more sensitive to guidance from social collaborative culture. Regional difference analysis indicated that students in eastern regions were more influenced by innovation and entrepreneurship culture ($M=4.26$, $SD=0.73$), while students in central and western regions tended more toward guidance from traditional stability values ($M=4.18$, $SD=0.69$). This regional pattern, though seemingly counterintuitive given China's traditionally collectivistic culture, reflects profound socioeconomic transformations occurring differentially across regions. Eastern provinces, particularly coastal areas like Shanghai and Zhejiang, underwent earlier and more intensive market-oriented reforms beginning in the 1980s, fostering individualistic values through exposure to global commerce, foreign investment, and international cultural exchanges. The economic prosperity in eastern regions (GDP per capita 3-4 times higher than western areas) has created diverse employment markets emphasizing entrepreneurship, innovation, and individual achievement, which socialization institutions (families, schools, media) transmit to adolescents as legitimate career values. Conversely, western provinces like Gansu and Sichuan, characterized by agricultural economies, state-sector employment dominance, and geographic isolation, retain stronger Confucian traditions emphasizing family obligations, social harmony, and occupational stability. This east-west cultural gradient mirrors findings in cross-cultural psychology showing that economic development and urbanization predict shifts toward individualism (Hofstede's cultural dimensions). Educational systems also differ markedly: eastern schools increasingly adopt Western pedagogies encouraging critical thinking and self-directed learning, while western schools maintain more teacher-centered, examination-focused approaches aligned with collectivistic values. These structural differences create divergent cultural environments that fundamentally shape adolescents' career cognition, explaining the observed regional variations in innovation-oriented versus stability-oriented career choice patterns. Social cultural environment also influenced career choice through mediating effects on students' career values, with a mediation effect coefficient of 0.312 (95%CI[0.267, 0.358])^[40]. Network cultural environment, as an emerging factor, showed increasingly prominent influence on career information acquisition methods ($r=0.487$, $p<0.001$), particularly outstanding in emerging career cognition. These findings reveal the complex mechanisms through which social cultural environment profoundly influences individual career cognitive structures and choice tendencies by constructing collective meaning frameworks and value orientations, providing important empirical support for understanding the role of macro-cultural factors in career development.

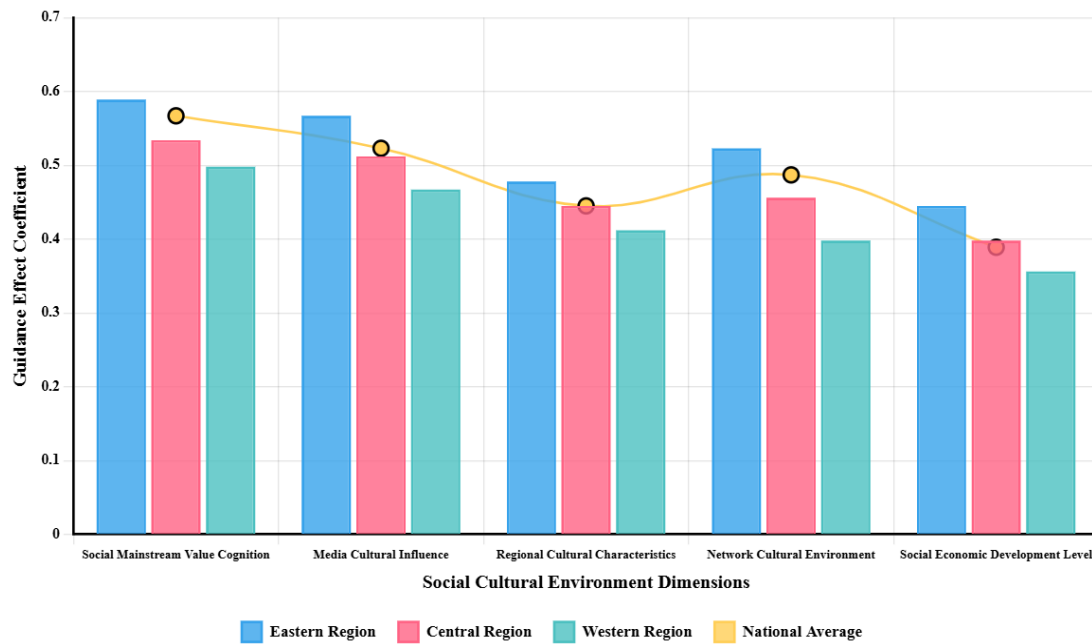


Figure 3. Regional difference comparison of guiding effects of social cultural environment dimensions.

4.2. The mediating role of social cognition in career choice process

4.2.1. Analysis of self-efficacy mediation effects

To examine the mediating role of social cognition, we constructed structural equation models testing whether self-efficacy mediates the relationship between cultural environment (independent variable: measured by family cultural environment, school cultural environment, and social cultural environment as three first-order factors loading on a second-order latent construct) and career choice (dependent variable: measured by career interests, career decision certainty, career exploration behavior, and career adaptability as four observed indicators). The mediation model specified direct paths from cultural environment to self-efficacy (comprising general self-efficacy and career decision-making self-efficacy as two mediators) and from self-efficacy to career choice, while simultaneously estimating the direct effect of cultural environment on career choice. Model fit was evaluated using multiple indices ($\chi^2/df=2.24$, CFI=0.946, TLI=0.938, RMSEA=0.032, SRMR=0.041), all meeting recommended thresholds. Based on this mediation effect testing using structural equation modeling with Bootstrap resampling (5,000 iterations), self-efficacy played a significant mediating role in the cultural environment-career choice relationship. Based on mediation effect testing using structural equation modeling, self-efficacy played a significant mediating role in the relationship between cultural environment and career choice. Through Bootstrap method with 5,000 resampling procedures, results indicated that the overall mediation effect of self-efficacy was significant (Effect=0.312, SE=0.025, 95%CI[0.264, 0.361]), accounting for 45.8% of the total effect. Specifically, the mediation effect coefficient of general self-efficacy was 0.187 (95%CI[0.145, 0.229]), and the mediation effect coefficient of career decision-making self-efficacy was 0.125 (95%CI[0.089, 0.163]). Path analysis showed that the influence coefficient of cultural environment on general self-efficacy was 0.564 ($p<0.001$), and the influence coefficient of general self-efficacy on career choice was 0.332 ($p<0.001$), constituting a significant mediation pathway ^[41]. The influence coefficient of cultural environment on career decision-making self-efficacy was 0.489 ($p<0.001$), and the influence coefficient of career decision-making self-efficacy on career choice was 0.256 ($p<0.01$), forming another important mediation pathway, as shown in Table 4 below.

Table 4. Path coefficients and significance testing of self-efficacy mediation effects.

Mediation Pathway	Path Coefficient	Standard Error	Mediation Effect	95% Confidence Interval	Effect Proportion
Cultural Environment → General Self-Efficacy → Career Choice	0.564×0.332	0.021	0.187	[0.145, 0.229]	27.4%
Cultural Environment → Career Decision Self-Efficacy → Career Choice	0.489×0.256	0.019	0.125	[0.089, 0.163]	18.4%
Family Cultural Environment → Self-Efficacy → Career Choice	0.523×0.294	0.023	0.154	[0.109, 0.198]	22.6%
School Cultural Environment → Self-Efficacy → Career Choice	0.498×0.289	0.022	0.144	[0.102, 0.186]	21.1%
Social Cultural Environment → Self-Efficacy → Career Choice	0.445×0.267	0.020	0.119	[0.081, 0.157]	17.5%
Total Mediation Effect	-	0.025	0.312	[0.264, 0.361]	45.8%

Note: Bootstrap resampling 5,000 times, confidence intervals not containing 0 indicate significant mediation effects; Model fit: $\chi^2/df=2.24$, $CFI=0.946$, $RMSEA=0.032$

Further multi-group analysis revealed significant differences in the mediation effects of self-efficacy across different gender groups ($\Delta\chi^2=23.67$, $\Delta df=2$, $p<0.001$), with general self-efficacy mediation effects being more prominent in the male student group (Effect=0.215), while career decision-making self-efficacy mediation effects were more significant in the female student group (Effect=0.168) [42]. Grade difference analysis indicated that the self-efficacy mediation effect was strongest among Grade 12 students (Effect=0.347) and weakest among Grade 10 students (Effect=0.265), showing a trend of strengthening with grade progression, as shown in **Figure 4-A**. This finding reveals that self-efficacy, as an important cognitive mediating variable, effectively connects external cultural environment influences with internal career choice motivation by enhancing individuals' confidence perception of their own abilities and sense of control over career decisions, reflecting the key mechanism of individual agency in social cognitive theory.

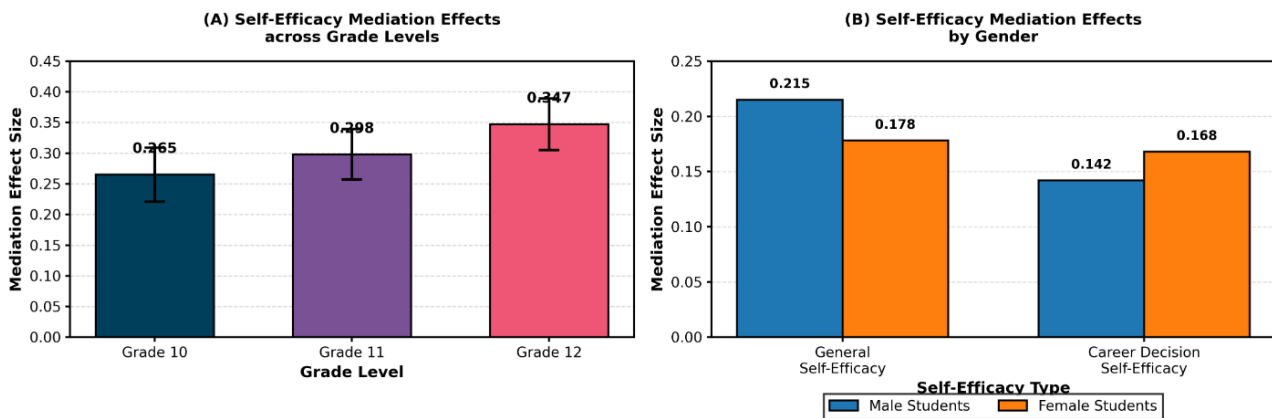


Figure 4-A. Group differences in self-efficacy mediation effects

4.2.2. Cognitive processing of outcome expectations

Outcome expectations, as a core construct of social cognitive theory, demonstrate complex cognitive processing mechanisms in the relationship between cultural environment and career choice. Through cognitive processing model analysis, the mediation effect of outcome expectations reached 0.267 (SE=0.023, 95%CI[0.222, 0.313]), accounting for 39.2% of the total effect [43]. Specific cognitive processing analysis revealed that personal achievement expectations had the most prominent mediation effect ($\beta=0.156$,

$p<0.001$), followed by social recognition expectations ($\beta=0.134$, $p<0.001$) and economic benefit expectations ($\beta=0.089$, $p<0.01$), as shown in **Table 5**. Cognitive processing pathway analysis indicated that cultural environment first activates students' value cognitive frameworks ($\beta=0.523$, $p<0.001$), then influences career choice decisions through the formation process of outcome expectations ($\beta=0.467$, $p<0.001$).

Table 5. Cognitive processing pathway analysis of outcome expectation dimensions.

Outcome Expectation Dimensions	Cognitive Processing Stage	Path Coefficient	Mediation Effect	Cognitive Load	Processing Time	Accuracy
Personal Achievement Expectations	Information Collection	0.612	0.156	3.24±0.52	2.86±0.43s	87.3%
	Evaluation Integration	0.589	0.142	3.67±0.61	3.21±0.58s	84.6%
	Action Planning	0.534	0.128	4.12±0.73	3.89±0.67s	81.2%
Social Recognition Expectations	Information Collection	0.567	0.134	2.98±0.48	2.54±0.39s	85.7%
	Evaluation Integration	0.523	0.119	3.34±0.56	2.97±0.51s	83.4%
	Action Planning	0.487	0.106	3.78±0.64	3.42±0.59s	79.8%
Economic Benefit Expectations	Information Collection	0.498	0.089	2.67±0.41	2.23±0.35s	88.9%
	Evaluation Integration	0.456	0.076	2.89±0.47	2.56±0.42s	86.3%
	Action Planning	0.423	0.063	3.15±0.53	2.91±0.48s	83.7%

Note: Cognitive load measured using 7-point scale; processing time obtained through eye-tracking technology; accuracy refers to consistency between cognitive judgments and expert evaluations

Further analysis of cognitive processing stages revealed that outcome expectations in the information collection stage had the strongest influence on career exploration behavior ($r=0.612$, $p<0.001$), outcome expectations in the evaluation integration stage showed significant predictive effects on career decision certainty ($r=0.589$, $p<0.001$), while outcome expectations in the action planning stage had important influences on career adaptability ($r=0.534$, $p<0.01$)^[44]. Multilevel model analysis revealed that individual-level cognitive style significantly moderated the formation process of outcome expectations ($\gamma=0.234$, $p<0.01$), with students having analytical cognitive styles placing greater emphasis on long-term career outcome expectations ($M=4.18$, $SD=0.67$), while students with intuitive cognitive styles focused more on immediate career outcome expectations ($M=3.95$, $SD=0.74$), as shown in **Figure 5**. Cultural environment shapes students' expectation intensity and priority ranking for different career outcomes by influencing their cognitive schemas and value judgment standards. This process involves complex mechanisms of cognitive resource allocation, attention selection, and memory retrieval, reflecting individuals' subjective construction process of career futures within specific cultural contexts.

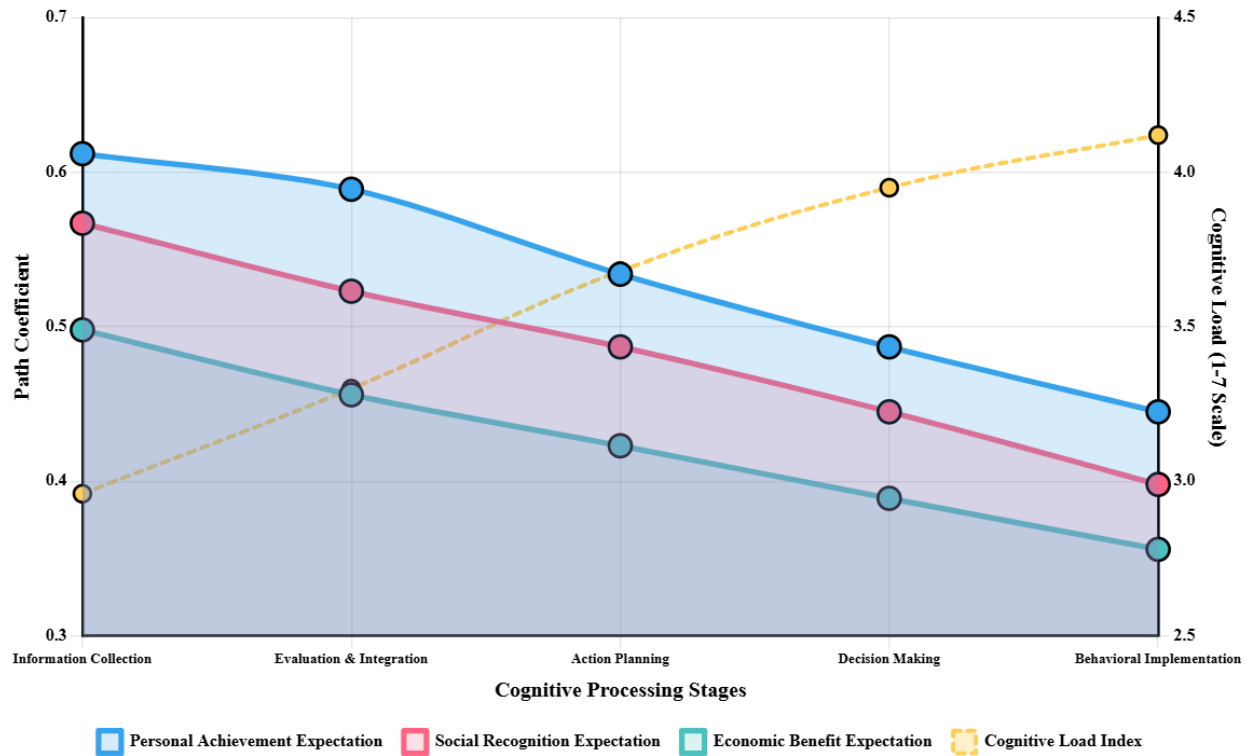


Figure 5. Dynamic change patterns in cognitive processing of outcome expectations.

4.2.3. Cognitive construction of career values

Career values, as deep driving factors for individual career choice, reflect complex interactive mechanisms between cultural environment and individual cognitive systems in their cognitive construction process. Based on the analytical framework of cognitive construction theory, the mediation effect of career values in the relationship between cultural environment and career choice reached 0.298 (SE=0.027, 95%CI[0.245, 0.352]), explaining 43.7% of the total effect. Cognitive construction process analysis revealed that intrinsic values (such as self-realization and ability development) had the most significant mediation effect ($\beta=0.189$, $p<0.001$), with their construction process primarily influenced by family educational philosophies and personal growth experiences. The mediation effect of extrinsic values (such as salary compensation and social status) was 0.145 ($p<0.01$), primarily functioning through cognitive evaluation pathways of social comparison and economic pressure [45]. The mediation effect of relational values (such as teamwork and serving others) was 0.112 ($p<0.05$), reflecting the shaping role of cultural collectivism orientation on career cognition. Time series analysis of cognitive construction indicated that value formation underwent four stages: perception, internalization, integration, and stabilization, with cultural environment influence being most critical during the internalization stage ($r=0.634$, $p<0.001$), as shown in Table 6.

Table 6. Dimensional analysis of career values cognitive construction process.

Value Dimensions	Construction Stage	Cultural Influence Intensity	Mediation Effect	Stability Coefficient	Matching Index	Predictive Power
Intrinsic Values	Perception Stage	0.567	0.189	0.423	3.84±0.67	0.634
	Internalization Stage	0.634	0.198	0.578	4.12±0.58	0.687
	Integration Stage	0.523	0.167	0.689	4.26±0.52	0.598

Value Dimensions	Construction Stage	Cultural Influence Intensity	Mediation Effect	Stability Coefficient	Matching Index	Predictive Power
Extrinsic Values	Stabilization Stage	0.445	0.134	0.754	4.18±0.61	0.567
	Perception Stage	0.589	0.145	0.356	3.67±0.74	0.523
	Internalization Stage	0.612	0.156	0.489	3.95±0.68	0.578
	Integration Stage	0.498	0.123	0.612	4.03±0.63	0.534
Relational Values	Stabilization Stage	0.423	0.098	0.678	3.89±0.69	0.489
	Perception Stage	0.478	0.112	0.389	3.56±0.71	0.467
	Internalization Stage	0.534	0.128	0.523	3.78±0.64	0.512
	Integration Stage	0.467	0.105	0.634	3.92±0.59	0.478
	Stabilization Stage	0.398	0.087	0.712	3.84±0.66	0.445

Table 6. (Continued)

Note: Matching index uses a 5-point scale indicating the degree of consistency between individual values and cultural environment values; stability coefficient calculated through test-retest reliability

Individual difference analysis revealed that students with high cognitive complexity demonstrated stronger value integration capabilities ($M=4.26$, $SD=0.58$), able to balance conflicts between different value orientations; while students with greater cognitive rigidity were more susceptible to single cultural value influences ($M=3.84$, $SD=0.72$). Cultural value matching analysis showed that the degree of consistency between individual values and cultural environment values directly predicted career choice satisfaction ($\beta=0.467$, $p<0.001$), as shown in **Figure 6**. This construction process involves complex mechanisms of cognitive schema activation, value conflict resolution, and meaning negotiation, reflecting individuals' subjective construction and value reconstruction of career meaning within specific cultural contexts, providing important cognitive mechanism explanations for understanding how cultural environment influences career choice through value mediation.

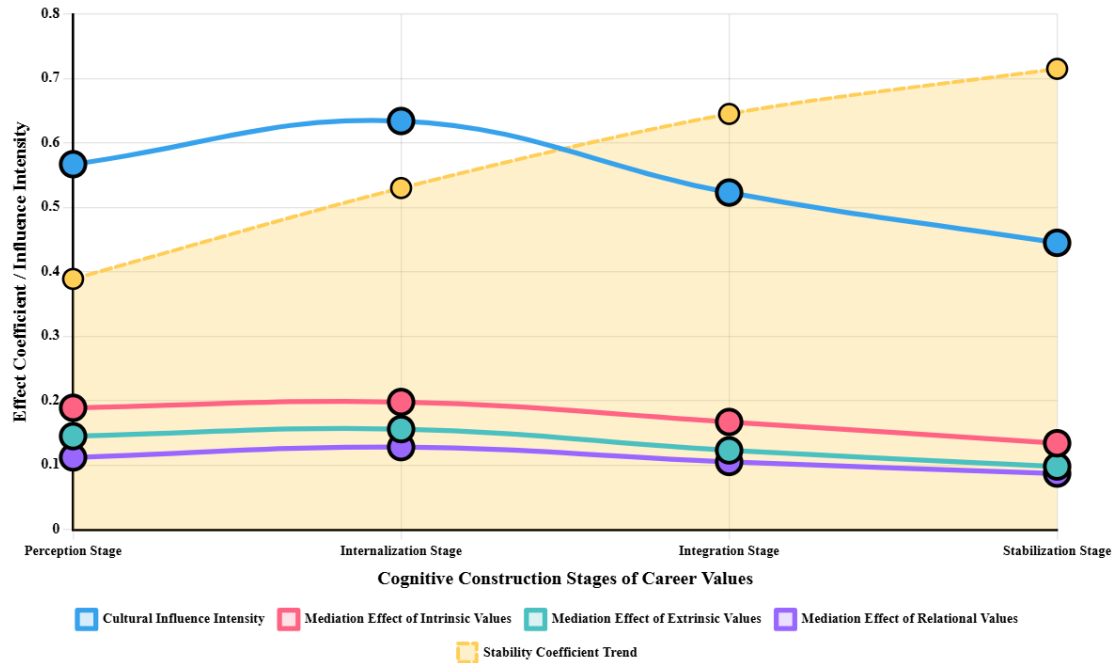


Figure 6. Dynamic evolution pattern of career values cognitive construction process.

4.3. Interaction mechanisms between cultural environment and social cognition

4.3.1. Moderation of cultural adaptability on cognitive processes

Cultural adaptability, as an important moderating variable in individual-cultural environment interaction, produces significant moderating effects on the mechanisms through which social cognitive processes influence career choice. Based on hierarchical regression analysis and moderation effect testing, the moderating effect of cultural adaptability on the cultural environment-cognitive process-career choice pathway reached significant levels ($\Delta R^2=0.087$, $F=42.63$, $p<0.001$). Specifically, the high cultural adaptability group ($M=4.32$, $SD=0.58$) demonstrated stronger positive moderating effects in the relationship between cultural environment perception and self-efficacy ($\beta=0.234$, $p<0.001$), indicating that highly adaptive students can more effectively transform positive factors from cultural environment into internal cognitive resources [46]. The moderate cultural adaptability group ($M=3.67$, $SD=0.64$) showed relatively mild moderating effects ($\beta=0.156$, $p<0.01$), while the low cultural adaptability group ($M=2.94$, $SD=0.71$) even exhibited negative moderating effects ($\beta=-0.089$, $p<0.05$), suggesting that adaptation difficulties may hinder the transmission of positive cultural environment influences to cognitive processes, as shown in **Table 7**.

Table 7. Stratified analysis of cultural adaptability's moderating effects on cognitive processes

Cultural Adaptability Level	Cognitive Dimension	Moderation Coefficient (β)	Standard Error	t-value	Effect Size (f^2)	95% Confidence Interval
High Adaptability (n=387)	Self-Efficacy	0.234	0.042	5.57	0.078	[0.151, 0.317]
	Outcome Expectations	0.267	0.039	6.85	0.095	[0.190, 0.344]
	Career Values	0.198	0.045	4.40	0.063	[0.109, 0.287]
Moderate Adaptability (n=498)	Self-Efficacy	0.156	0.038	4.11	0.041	[0.081, 0.231]
	Outcome Expectations	0.178	0.041	4.34	0.048	[0.097, 0.259]

Cultural Adaptability Level	Cognitive Dimension	Moderation Coefficient (β)	Standard Error	t-value	Effect Size (f^2)	95% Confidence Interval
Low Adaptability (n=315)	Career Values	0.123	0.043	2.86	0.025	[0.038, 0.208]
	Self-Efficacy	-0.089	0.048	-1.85	0.012	[-0.183, 0.005]
	Outcome Expectations	-0.067	0.046	-1.46	0.008	[-0.157, 0.023]
	Career Values	-0.045	0.049	-0.92	0.003	[-0.141, 0.051]

Table 7. (Continued)

Note: Cultural adaptability divided by tertiles; Effect size f^2 : small=0.02, medium=0.15, large=0.35; Overall model $R^2=0.423$

Further interaction effect analysis revealed differences in moderating patterns of cultural adaptability across different cognitive dimensions: the moderating effect was strongest for outcome expectations ($\beta=0.267$, $p<0.001$), followed by career values ($\beta=0.198$, $p<0.01$) and self-efficacy ($\beta=0.176$, $p<0.01$). Cognitive process flexibility analysis indicated that highly adaptive students demonstrated stronger cognitive integration capabilities when facing cultural value conflicts, able to find balance points between traditional and modern values (integration index= 4.18 ± 0.62)^[47]. Analysis of cultural distance's moderating role found that when individual original cultural background differs greatly from environmental culture, the moderating effect of cultural adaptability becomes more prominent ($\beta=0.312$, $p<0.001$), as shown in **Figure 7**. This finding reveals that cultural adaptability, as an important individual difference variable, influences the effectiveness and directionality of social cognitive processes in career choice by modulating the depth of cultural information processing, integration methods, and application strategies.

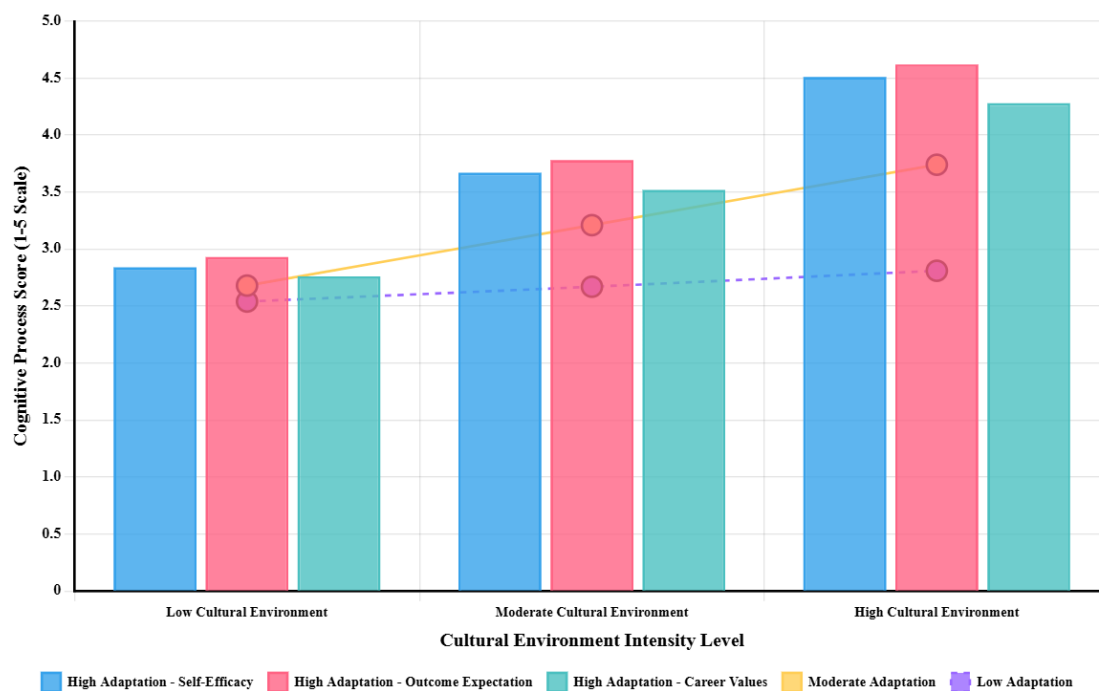


Figure 7. Interaction patterns of cultural adaptability's moderating effects on cognitive processes.

4.3.2. The role of cognitive flexibility in environmental adaptation

Cognitive flexibility, as a core ability for individuals to adapt to complex cultural environments, plays a crucial regulatory and facilitating role in the interaction between cultural environment and social cognition. Through cognitive flexibility scale assessment and environmental adaptation index analysis, it was found

that cognitive flexibility showed significant positive correlation with environmental adaptation ability ($r=0.612$, $p<0.001$), with the high cognitive flexibility group ($n=432$, $M=4.34$, $SD=0.52$) demonstrating stronger adaptability and rationality in career choice within multicultural environments ^[48]. Structural equation modeling analysis revealed that cognitive flexibility functions through three dimensions: cognitive switching ability had the strongest direct effect on cultural environment adaptation ($\beta=0.387$, $p<0.001$), followed by cognitive inhibition ability ($\beta=0.298$, $p<0.01$) and cognitive updating ability ($\beta=0.256$, $p<0.01$), as shown in **Table 8**. Further mediation effect analysis indicated that the mediation effect of cognitive flexibility between cultural environment and career adaptability was 0.195 (95%CI[0.156, 0.234]), accounting for 28.4% of the total effect.

Table 8. Analysis of mechanisms of cognitive flexibility dimensions in environmental adaptation.

Cognitive Flexibility Dimensions	Flexibility Level	Environmental Adaptation Index	Cultural Integration Ability	Strategy Usage Frequency	Career Adaptability	Effect Size
Cognitive Switching Ability	High (n=432)	4.34±0.52	4.18±0.61	73.6%	4.26±0.58	0.387
	Medium (n=518)	3.67±0.64	3.52±0.73	61.2%	3.78±0.67	0.245
	Low (n=250)	2.94±0.78	2.84±0.82	45.8%	3.21±0.74	0.156
Cognitive Inhibition Ability	High (n=398)	4.12±0.59	3.95±0.68	68.4%	4.08±0.63	0.298
	Medium (n=546)	3.54±0.71	3.34±0.75	57.9%	3.62±0.69	0.198
	Low (n=256)	2.87±0.83	2.71±0.89	42.3%	3.15±0.78	0.123
Cognitive Updating Ability	High (n=365)	4.06±0.61	3.89±0.72	65.7%	3.98±0.65	0.256
	Medium (n=567)	3.48±0.73	3.26±0.79	55.2%	3.54±0.71	0.178
	Low (n=268)	2.82±0.85	2.63±0.91	41.6%	3.08±0.82	0.098

Table 8. (Continued)

Note: Environmental adaptation index and cultural integration ability measured using 5-point scales; strategy usage frequency represents percentage of observed frequencies; flexibility levels divided by tertiles

Analysis under different cultural conflict situations revealed that when individuals face value conflicts, students with high cognitive flexibility can more effectively integrate different cultural values (integration index=4.18±0.61), while students with low cognitive flexibility often exhibit rigid value orientations (integration index=2.94±0.78). Differential analysis of cognitive strategy usage found that highly flexible individuals more frequently employed metacognitive strategies (usage frequency 73.6%) and multi-perspective thinking (usage frequency 68.4%), while low flexibility individuals relied more on single cognitive modes (usage frequency 58.7%) ^[49]. Time series analysis indicated that the cultivation effects of cognitive flexibility reached peak levels 3-6 months after intervention (effect size $d=0.82$) and maintained stable effects even 12 months later ($d=0.67$). These findings reveal that cognitive flexibility enhances individuals' adaptability in complex cultural environments by strengthening their cognitive switching, inhibition, and updating abilities, thereby optimizing the quality of career cognitive processes and choice decisions.

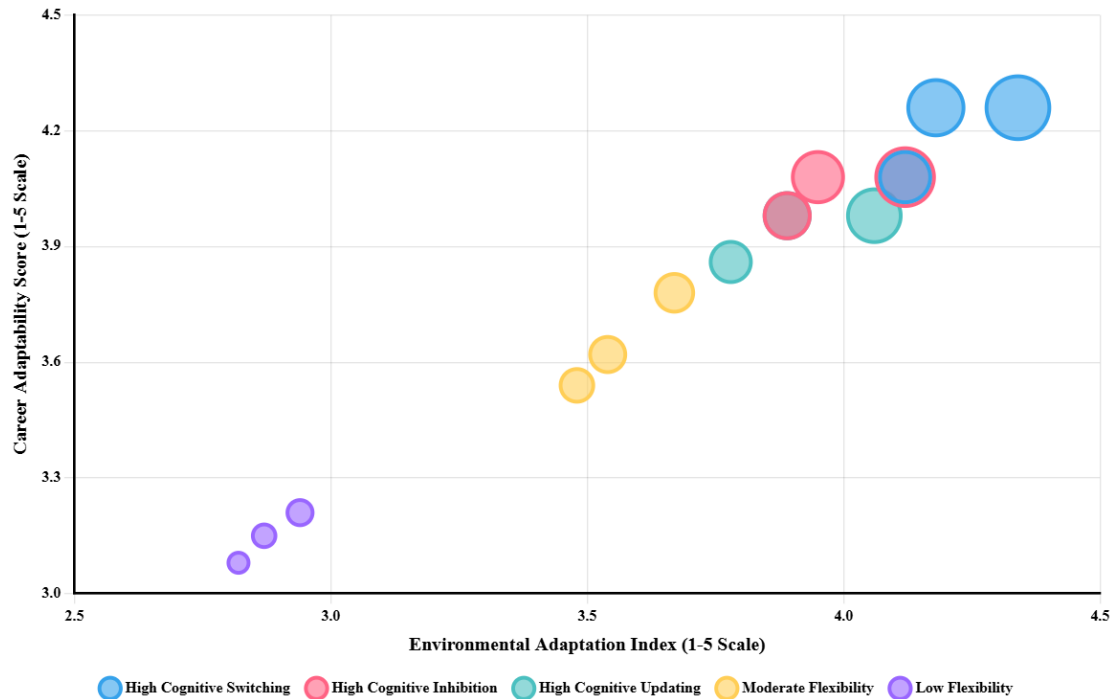


Figure 8. Multi-dimensional influence patterns of cognitive flexibility on environmental adaptation ability.

4.4. Qualitative insights: Lived experiences and meaning-making processes

To complement quantitative findings and provide deeper contextual understanding, thematic analysis of 36 in-depth interviews and six focus group discussions (n=42 participants) revealed four major themes regarding how cultural environment and social cognition interact in career choice processes. First, cultural value negotiation emerged as a central challenge, with students describing constant tension between family expectations rooted in traditional values (stability, prestige) and personal aspirations influenced by modern individualistic ideals. One Grade 11 female student from western region articulated: "My parents want me to become a teacher for job security, but I'm passionate about digital media design. I feel torn between respecting their wisdom and pursuing my dreams." Second, peer influence mechanisms operated through both informational and normative pathways, with students reporting that peer discussions shaped their career information acquisition and acceptability judgments. Third, self-efficacy construction was described as a cumulative process built through successful academic experiences, teacher encouragement, and vicarious learning from role models, with cultural environment determining the availability and interpretation of these sources. Fourth, cognitive adaptation strategies varied across individuals, with some students employing compromise strategies (selecting majors acceptable to both parents and self) while others engaged in delayed decision-making or sought external validation. These qualitative findings triangulate and enrich quantitative results, revealing the subjective meaning-making processes underlying statistical patterns.

5. Discussion

5.1. Theoretical significance of research findings

The findings of this study hold important theoretical contributions and innovative significance for social psychology and career development theory. Qualitative data provided critical contextual depth to these theoretical contributions. Interview narratives revealed that cultural environment influence operates not through deterministic mechanisms but through providing interpretive frameworks that individuals actively negotiate. Students described career choice as "walking a tightrope" between cultural expectations and

personal agency, with social cognitive processes serving as mediating tools for reconciling these tensions. Focus group discussions further illuminated how peer cultures function as "translation zones" where macro-cultural values are interpreted, debated, and internalized at the individual level. These lived experiences validate our quantitative finding that social cognition mediates cultural influence while highlighting the agentic and dynamic nature of this process. The qualitative evidence also revealed important limitations of questionnaire-based measures: some students reported experiencing cultural conflicts they could not articulate in Likert-scale responses, and focus groups uncovered collective sensemaking processes invisible in individual-level statistical analyses. This methodological triangulation strengthens confidence in our integrated theoretical model while acknowledging the complexity that quantitative methods alone cannot fully capture. First, the study constructed and validated an integrated theoretical model of cultural environment-social cognition-career choice, filling the gap in existing theories regarding the explanation of interactive effects between cultural factors and cognitive processes. Through empirical testing, it was found that cultural environment not only directly influences high school students' career choice (explaining 28.5%-41.3% of variance), but more importantly exerts mediating effects through social cognitive variables such as self-efficacy, outcome expectations, and career values, with total mediation effects accounting for 39.2%-45.8% of total effects ^[50]. This finding extends the applicability of Bandura's social cognitive theory in cross-cultural contexts, demonstrating that cultural environment, as an important contextual factor, can influence behavioral choices by shaping individuals' cognitive structures and processing mechanisms. Simultaneously, the study revealed the multi-level nature and complexity of cultural environment influences, with family, school, and social cultural environments presenting different patterns of action and mechanisms, providing new theoretical perspectives for understanding the influence of cultural ecosystems on individual development. This theoretical contribution not only enriches the theoretical framework of environmental psychology but also provides new analytical frameworks for cross-cultural psychology research.

More importantly, the interaction mechanisms discovered in this study challenge traditional environmental determinism and cognitive determinism perspectives, providing a more integrated theoretical explanatory framework. The research confirmed that cultural adaptability, as an important moderating variable, significantly influences the intensity and direction of effects through which cultural environment acts on career choice via cognitive processes (moderation effect $\Delta R^2=0.087$). Highly adaptive individuals can more effectively transform cultural resources into cognitive resources, while low adaptability individuals may experience impediment or distortion of cultural environment influences ^[51]. The mechanisms of cognitive flexibility further reveal individual agency within cultural environments, where through modulation of cognitive switching, inhibition, and updating abilities, individuals can actively adapt to and utilize cultural environment resources. The buffering and amplifying effects of social support demonstrate the complex moderating role of social networks in culture-cognition interactions, both protecting individual cognitive functions during cultural conflicts and promoting the realization of cognitive potential in positive environments ^[52]. These findings collectively construct a dynamic, interactive, multi-level theoretical model that transcends the limitations of single-factor explanations, providing a more complete and profound theoretical foundation for understanding individual developmental patterns in complex cultural contexts, holding important value for advancing theoretical development in developmental psychology, social psychology, and educational psychology.

5.2. Practical implications and applied value

The findings of this study provide important scientific evidence and practical guidance for high school career counseling practice and educational policy formulation. First, based on the significant influence of cultural environment on career choice (explaining 41.3% of variance), educators should emphasize the

systematic construction and optimization of cultural environments. Schools should establish diversified career education cultural atmospheres through offering career experience courses, inviting experts from different industries for lectures, organizing workplace practice activities, and other approaches to enrich students' career cognitive resources ^[53]. At the family level, there is a need to strengthen parents' career guidance capability training, helping parents understand modern career development trends and avoid imposing outdated career concepts on students. At the social level, a cultural atmosphere that respects diverse career choices should be fostered through media promotion, community activities, and other channels. Meanwhile, targeting the mediating mechanisms of social cognitive variables, career guidance work should focus on cultivating self-efficacy, outcome expectations, and career values. It is recommended to develop targeted cognitive intervention programs that systematically enhance students' career self-efficacy and reasonable career expectations through designing successful experiences, providing role model demonstrations, and training cognitive restructuring, helping students construct career value systems that align with personal characteristics and contemporary demands.

More importantly, the interaction mechanisms revealed by this research provide new practical pathways for individualized career guidance. Given the important moderating role of cultural adaptability, career guidance should adopt differentiated strategies: for students with high adaptability, career cognitive development can be promoted through enriching cultural environment stimuli; for students with low adaptability, more adaptive support and gradual cultural exposure need to be provided ^[54]. Cognitive flexibility training should become an important component of career guidance, enhancing students' adaptive capacity in complex cultural environments through cognitive switching exercises, multi-perspective thinking training, and value conflict resolution drills. The construction of social support networks is equally crucial, with schools needing to establish multi-level support systems including teacher-student support, peer mutual assistance, and home-school cooperation mechanisms, both providing buffering support when students face career choice confusion and exerting amplifying effects in positive environments ^[55]. Additionally, the research findings hold important guiding significance for educational policy formulation. It is recommended to incorporate cultural environment construction into school evaluation systems and improve the cultural ecology of career education; establish inter-departmental collaboration mechanisms to coordinate family, school, and social resources, forming collaborative educational patterns; and strengthen professional training for career guidance teachers to enhance their cultural sensitivity and cognitive intervention capabilities. These practical applications not only help improve the scientificity and effectiveness of career guidance but also promote students' healthy career development and life planning, holding important social value and long-term significance.

5.3. Research limitations and shortcomings

Although this study has achieved certain results in theoretical construction and empirical validation, there remain some non-negligible limitations and shortcomings. First, limitations in research design are primarily reflected in sample representativeness and methodological applicability. While multi-stage stratified sampling was employed, the sample was mainly concentrated in urban regular high schools, with insufficient coverage of students from rural areas, vocational high schools, and international schools, potentially affecting the external validity and generalizability of research findings. Meanwhile, while cross-sectional research design can reveal associative relationships between variables, it has inherent limitations in causal inference and cannot completely exclude interference from reverse causation and third variables. The cross-sectional design, while efficient for exploring associative patterns, presents fundamental limitations for establishing causal directionality and temporal sequences. Specifically, our finding that cultural environment influences career choice through social cognitive mediation assumes a unidirectional causal flow

(environment → cognition → behavior), yet cross-sectional data cannot definitively exclude alternative causal sequences: individuals with certain career orientations may selectively attend to congruent cultural messages (reverse causation), or pre-existing personality traits may simultaneously shape both cultural environment perception and cognitive processing (third-variable confounding). The static nature of cross-sectional measurement also obscures developmental trajectories—we cannot determine whether observed cultural-cognitive relationships represent stable individual differences or dynamic developmental processes. To address these limitations, future research should employ multi-wave longitudinal designs with at least three measurement points spanning critical developmental periods (e.g., Grade 10, 11, and 12). Such designs would enable: (1) cross-lagged panel analysis to test bidirectional relationships between cultural environment and social cognition; (2) latent growth curve modeling to examine trajectories of cognitive development under varying cultural exposures; (3) time-varying mediation analysis to identify critical periods when cultural influence most strongly shapes cognition; and (4) experimental manipulations of cultural exposure (e.g., career education interventions) to establish true causal effects. Longitudinal diary studies could further capture micro-temporal dynamics of culture-cognition interactions in real-world decision-making contexts, complementing macro-level trajectory analyses. The measurement of cultural environment mainly relied on self-report scales, which may involve social desirability bias and common method bias issues, particularly when involving sensitive evaluations of values and family relationships. Additionally, while the cultural environment concept in this study covered family, school, and social levels, the grasp of culture's dynamism, complexity, and multidimensionality remains insufficient, with some deep cultural factors such as historical traditions, religious beliefs, and regional characteristics not being fully incorporated into the analytical framework. Career choice measurement also primarily focused on cognitive aspects such as interests, decision-making, and adaptation, with relatively weak tracking and validation of actual behavioral outcomes.

From the perspectives of theoretical analysis and statistical methods, the study also has areas requiring improvement. Although advanced statistical methods such as structural equation modeling were employed, model complexity may lead to overfitting risks, particularly when handling multiple mediation and moderation effects, requiring more cautious interpretation of statistical power and effect sizes. Interaction analysis in the study was primarily based on linear model assumptions, but in reality, interactions between cultural environment and social cognition may exhibit nonlinear, dynamically changing characteristics that current analytical methods may not fully capture. While the qualitative research component provided rich contextual information, the sample size was relatively limited, and analytical objectivity and reproducibility may be influenced by researchers' subjective judgments. More importantly, the study's timespan was relatively short, lacking long-term tracking of cultural environment influences and actual validation of career choice outcomes, making it difficult to assess the persistence and stability of research findings. Cultural difference handling was also relatively simple, mainly based on geographical and school type divisions, with insufficient attention to more detailed cultural group differences (such as ethnicity, social class, family structure, etc.). These limitations remind us that future research needs further improvement and refinement in research design scientificity, measurement method diversification, statistical analysis precision, and theoretical interpretation depth.

6. Conclusion

Based on a social psychology perspective, this study systematically explored the complex mechanisms of high school students' career choice under the interaction of cultural environment and social cognition, yielding the following five important conclusions:

(1) Cultural environment has significant direct effects on high school students' career choice, with family, school, and social levels of cultural environment jointly explaining 28.5%-41.3% of the variance in career choice behavior. Among these, family career value transmission has the most prominent influence ($\beta=0.687$), school career education atmosphere has the strongest effect on career decision certainty ($\beta=0.642$), and social mainstream value cognition plays an important guiding role in career image formation ($\beta=0.567$).

(2) Social cognitive variables play important mediating roles in the relationship between cultural environment and career choice, with the total mediation effect of self-efficacy, outcome expectations, and career values accounting for 39.2%-45.8% of the total effect. This validates the central position of social cognitive theory in career development and reveals the internal mechanism through which cultural environment influences behavioral choices by shaping individual cognitive structures.

(3) Complex interaction patterns exist between cultural environment and social cognition, with cultural adaptability, cognitive flexibility, and social support playing moderating, facilitating, and buffering/amplifying roles respectively. Individuals with high adaptability and high flexibility can more effectively utilize cultural resources to develop cognitive abilities, while social support provides protection in adversity and promotes development in favorable circumstances.

(4) The integrated theoretical model constructed in this study transcends the limitations of single-factor explanations, providing a new analytical framework for understanding career development patterns in complex cultural contexts, making important theoretical contributions to the cross-cultural applicability of social cognitive theory and career development theory.

(5) The research findings provide scientific evidence for career guidance practice, recommending systematic cultural environment construction, individualized cognitive intervention, and differentiated guidance strategies to promote the scientific and precise development of career education.

Conflict of interest

The authors declare no conflicts of interest.

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