

Influence of Family Cultural Capital on Learning Effectiveness: The Role of Learning Attitudes as Mediating Variables

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Abstract

Disparities in family cultural capital impact learning effectiveness. In many regions, differences in resources hinder academic potential for some, while favoring others. In China, uneven economic development, rural-urban gaps, and education system disparities amplify this issue. While efforts are made to address this, challenges persist in achieving equitable family cultural capital distribution, affecting education quality and students' futures.

The article explores the relationship between family cultural capital, learning attitudes, and academic performance among Chinese university students, based on Self-Determination Theory and Social Cognitive Theory. Our research, based on a sample of 1062 university students, multivariate linear regression models further confirmed these relationships. Family cultural capital positively influenced learning attitude, supporting H2. Learning attitude positively affected learning effectiveness, supporting H3. Additionally, family cultural capital positively influenced learning effectiveness, supporting H1. The introduction of learning attitude as a mediator reduced the direct impact of family cultural capital on learning effectiveness, demonstrating the mediating role of learning attitude (H4). These findings underscore the importance of family cultural capital and learning attitude in shaping university students' Learning effectiveness.

The research illuminates the intricate interplay between family cultural capital, learning attitude, and learning effectiveness among university students. By confirming the impact of family cultural capital and learning attitude on learning effectiveness and recognizing the mediating role of learning attitude, the study provides crucial insights for educators and policymakers. Emphasizing family involvement, enhancing cultural capital awareness, and fostering strategies to

improve learning attitude are pivotal in creating a conducive and supportive learning environment for all students.

Keywords: family cultural capital; learning attitude; learning effectiveness

Introduction

International disparities in family cultural capital are widespread. For example, regional disparities exist in some countries and regions, where places with lower levels of family cultural capital have limited knowledge, values, and cultural resources passed down through families, which can affect students' Learning effectiveness (Chen & Wang, 2013). In these areas, students may lack opportunities to access a rich learning environment and experiences, limiting their learning potential (Breinholt & Jæger, 2020). Conversely, regions with higher family cultural capital can provide more learning support, giving students a better chance of achieving higher learning effectiveness (Li & Tan, 2019). Gender disparities also influence the distribution of family cultural capital. In some countries and regions, there are differences in the transmission of family cultural capital between genders. Women may receive fewer learning resources and opportunities within their families, leading to relatively lower Learning effectiveness. This gender inequality can hinder women from fully developing their academic potential, subsequently affecting their future careers and social status (Yi & Ting, 2019). In contrast, the transmission of family cultural capital may place a greater emphasis on males, providing them with more opportunities for quality education (Hu, 2016). Income disparities also play a role in determining the distribution of family cultural capital. In some countries and regions, families with lower income levels may be unable to provide rich learning resources and cultural activities for their children. This can create barriers for these children in their learning, limiting their Learning effectiveness (Esquierdo, 2021). Conversely, families with higher incomes can offer more learning opportunities and resources to their children, enhancing their learning advantages (Tian & Liang, 2019). Racial disparities in the transmission of family cultural capital are also significant. In some countries and regions, minority groups may find it challenging to access education resources and learning opportunities aligned with the mainstream culture due to language and cultural differences (Eryilmaz & Sandoval-Hernández, 2021). This cultural and language barrier restricts the transmission of their family cultural capital and impacts their learning effectiveness. In contrast, families of the dominant culture are more likely to transmit knowledge and values that align with the school culture, increasing students' learning opportunities (Sieben & Lechner, 2019). Social status disparities also shape inequalities in

family cultural capital. In some countries and regions, families of higher social classes and status have the ability to provide rich learning resources and opportunities, enabling their children to achieve better Learning effectiveness. Families of lower social classes and status may face limitations and cannot provide the same level of learning support, restricting the development of their children's learning potential (Brown–McKenzie, 2023). This social status disparity results in an unequal distribution of Learning effectiveness among students, exacerbating societal inequalities.

The phenomenon of unequal family cultural capital in China is complex and involves various aspects. For example, regional disparities exist due to China's uneven economic development. Different regions have unequal distribution of family cultural capital, with families in affluent areas being able to transmit richer knowledge, values, and cultural resources, while families in impoverished areas have relatively less family cultural capital (Liang & Li, 2012). There are also disparities in family backgrounds in China, with significant urban–rural gaps. Children in some impoverished rural areas have limited exposure to rich cultural experiences due to family constraints, which can affect the accumulation of their family cultural capital, subsequently influencing their learning opportunities and academic achievements (Zhao & Fan, 2014). Additionally, China's education system exhibits differences between elite schools and ordinary schools. Elite schools are often better equipped to provide high–quality learning resources and cultural enrichment, affecting the accumulation of family cultural capital among students (Zhang et al., 2016). Unequal admission systems also contribute to disparities in family cultural capital. China's university entrance examination (the Gaokao) determines students' admission opportunities, but policies vary between provinces, leading to differences in students' admission chances. Furthermore, some families use strategies like paying "admission fees" to bypass the Gaokao and gain direct entry into prestigious universities, exacerbating the inequality in family cultural capital (Zhao & Fan, 2014). These are some of the primary aspects of unequal family cultural capital in China. While the Chinese government is working to address these issues, tackling the problem of unequal family cultural capital remains a long–term challenge.

Despite the expansion of higher education in China, high–quality educational resources are still scarce (Tian & Liang, 2019). Schools are divided into various tiers, such as "985" universities, "211" universities, regular undergraduate institutions, and colleges, leading to educational disparities (Zhang, 2022). The exacerbation of wealth inequality results in a relatively stable proportion of high–status family students in elite universities. Although China's family education levels are gradually improving, issues persist, such as parents overly emphasizing intellectual

education while neglecting moral education, focusing on talents at the expense of basics, and conveying knowledge without embodying it. These problems remain serious and deserve attention (Niu, 2017). The reasons for these issues include insufficient depth in academic research, inadequate government support, and incomplete policies and regulations, which have hindered family education from becoming a mature public endeavor in China's socialist modernization process. Therefore, this paper aims to explore the impact of family cultural capital on academic performance, investigate the underlying reasons and mechanisms, and disseminate the research findings to Chinese parents to promote the improvement of family education in China.

This paper discusses the uneven distribution of family cultural capital internationally, with a specific focus on its manifestation in China. In China, this inequality is evident in various aspects, including regional economic disparities, urban–rural divides, discrepancies in educational resource allocation, and differences in university admission systems. Despite the expansion of higher education in China, the scarcity of high–quality educational resources persists, leading to hierarchical distinctions among schools. Additionally, family education in China faces issues such as an excessive emphasis on intellectual education over moral education, a focus on talents at the expense of foundational knowledge, and a disconnect between knowledge transmission and practical application. Therefore, this research aims to explore the impact of family cultural capital on academic performance, investigating the underlying causes and mechanisms. Ultimately, the study aims to disseminate its findings to Chinese parents to promote the enhancement of family education in China.

Research Motivation

Family cultural capital encompasses aspects of knowledge transmission, cultural background, and educational values within a family (Zhang, 2022). Individuals from families with higher cultural capital often develop positive attitudes towards learning, viewing education as valuable, which directly influences students' motivation and willingness to learn (Sippola et al., 2022). Students from families with higher cultural capital typically have easier access to rich educational resources, engage in discussions on intellectual topics, and experience various cultural encounters (Jiang & Zhou, 2021). These enriching experiences contribute to enhancing students' cognitive skills and overall competencies, thus laying the foundation for better Learning effectiveness (Ollier–Malaterre et al., 2019).

In summary, exploring the relationship between family cultural capital and Learning effectiveness among university students is of significant importance for understanding the impact

of students' learning behaviors and achievements. This can aid the educational sector in designing more effective teaching strategies, family support, and policy measures to enhance students' learning experiences and outcomes, thereby creating more opportunities for their future development. Therefore, the primary research motivation of this paper is to investigate the relationship between family cultural capital and learning effectiveness among university students.

Learning attitude represents an individual's general inclination towards learning, encompassing their cognitive and emotional perceptions of interest, value, and importance in learning (Qing-xia & Nai-liang, 2023). Family cultural capital significantly influences the educational environment and values within the family (Breinholt & Jæger, 2020). Cultural heritage, knowledge transmission, and the emphasis on education within the family directly shape students' learning attitudes (Wang & Liu, 2016). By examining the relationship between family cultural capital and learning attitudes, it is possible to raise awareness within families regarding their vital role in cultivating positive learning attitudes in children. Parents can become more conscious of their significance in shaping their children's attitudes towards education and provide targeted support and guidance. In conclusion, investigating the relationship between family cultural capital and learning attitudes among university students helps gain a deeper understanding of the mechanisms through which families influence students' attitudes towards learning. It also aids the educational sector in devising more effective educational strategies and family support measures to foster positive learning attitudes, thereby enhancing students' motivation and Learning effectiveness. Therefore, the secondary research motivation of this paper is to study the relationship between family cultural capital and learning attitudes among university students.

Understanding the relationship between learning attitudes and Learning effectiveness can provide crucial guidance to educators, helping them design better teaching strategies and methods to promote students' positive learning attitudes and achieve better Learning effectiveness (Wijaya et al., 2020). Learning attitudes often foreshadow students' motivation and enthusiasm for learning, which in turn influences their learning behaviors (Elfaki et al., 2019). Therefore, investigating the relationship between learning attitudes and Learning effectiveness can help predict students' learning achievements more accurately, facilitating timely interventions and support for students. Research on the relationship between learning attitudes and Learning effectiveness enriches the field of education, expanding both its depth and breadth and providing new theoretical and empirical support for fields such as educational psychology. Thus, the tertiary

research motivation of this paper is to explore the relationship between university students' learning attitudes and learning effectiveness.

Learning effectiveness are often influenced by multiple factors, including family background, individual traits, and learning attitudes (Hokpanna et al., 2022). Revealing the mediating role of learning attitudes in the relationship between family cultural capital and Learning effectiveness can help comprehensively analyze the process of learning effectiveness considering various factors. Understanding how family cultural capital shapes learning attitudes to impact Learning effectiveness can provide deeper insights into the cognitive and emotional effects of learning attitudes on academic achievements (Lyu et al., 2019). Recognizing the mediating role of learning attitudes in the relationship between family cultural capital and Learning effectiveness can help uncover the influence of learning attitudes on learning effectiveness across different family backgrounds (Brown–McKenzie, 2023). This can facilitate the development of educational policies tailored to students from diverse backgrounds, promoting educational equity. In conclusion, exploring the mediating relationship between university students' learning attitudes and Learning effectiveness in the context of family cultural capital helps gain a deeper understanding of the mechanisms underlying the formation of Learning effectiveness. It also provides more targeted guidance for educational practices and supports the promotion of educational equity. Therefore, the quaternary research motivation of this paper is to investigate the mediating relationship between university students' learning attitudes and learning effectiveness in the context of family cultural capital.

Research Question

In summary, this paper aims to explore the factors influencing learning effectiveness among university students using a literature review and questionnaire survey method. It also delves into the mechanisms affecting learning effectiveness among university students. The paper poses the following four research questions:

RQ 1: What is the relationship between family cultural capital and learning effectiveness among university students?

RQ 2: What is the relationship between family cultural capital and learning attitudes among university students?

RQ 3: What is the relationship between learning attitudes and learning effectiveness among university students?

RQ 4: What kind of mediating relationship exists between learning attitudes among university students in the context of family cultural capital and learning effectiveness?

Literature Review

Family Cultural Capital and Learning Effectiveness

According to the theory of family cultural capital, different families possess varying levels of cultural capital, which directly impacts students' learning environments and socialization, leading to differences in students' growth outcomes (Wang & Liu, 2016). Beyond factors such as economic status and social background, family cultural upbringing plays a crucial role in students' academic achievements and personal development (Jiang & Zhou, 2021). These differences manifest prominently in terms of cultural consumption and performance. Bourdieu and Wacquant (1992) pointed out that students from families with cultural upbringing exhibit distinct patterns of cultural consumption and performance in various fields, thereby achieving higher academic results. Yang (2016) emphasized that even families from lower occupational classes can promote their children's academic performance by strengthening appropriate educational expectations and leveraging advantages such as family cultural capital. This implies that family cultural capital encompasses not only financial support but also family values, cultural heritage, and the emphasis placed on education (Shang, 2016). The transmission of family cultural capital involves not only material resources but also the inheritance of family educational expectations and values (Zhou & Yu, 2016).

The importance of family cultural capital is also reflected in the educational environment within families. For instance, Teachman (1987) pointed out that parents' material resources and the arrangement of the home environment, such as the number of books, computers, personal desks, or study rooms dedicated to improving the family's reading environment and fostering their children's academic achievements, reflect the characteristics of family cultural capital. This suggests that emphasizing knowledge accumulation and cultural transmission in the family environment contributes to improving students' academic achievements (Ollier-Malaterre et al., 2019). Lyu et al. (2019) found a close relationship between parents' educational levels, occupational status, income levels, and family cultural capital. Specifically, the higher parents' levels of education, occupational status, and income, the richer the family's cultural capital. This implies that family background to a certain extent determines the level of family cultural capital,

and enriched family cultural capital further influences children's academic and educational achievements (Wu et al., 2022).

In conclusion, the theory of family cultural capital underscores the crucial role of family cultural upbringing and values in students' learning. This influence is not only reflected in the investment of material resources but more critically in the transmission of educational expectations and values within the family. The extent of family cultural capital directly affects students' academic success and overall development. This theory provides an essential perspective for understanding differences in students' academic performance and highlights the importance of nurturing and transmitting family cultural capital. This, in turn, promotes the realization of equitable education. This study proposes the following research hypothesis:

H1: Family cultural capital positively influences learning effectiveness among university students.

Family Cultural Capital and Learning Attitudes

Cultural capital is a significant concept that refers to the abilities an individual inherits from their family during the socialization process, including language, values, knowledge, and cultural skills. These abilities significantly influence an individual's academic success and overall development (Wang & Liu, 2016). Lehl et al. (2020) further expanded the concept of cultural capital into three forms: embodied state, objectified state, and institutionalized state. This analysis provides a more comprehensive perspective, aiding in a better understanding of how cultural capital affects students' learning attitudes and effectiveness. The embodied state refers to specific knowledge, skills, and behavioral patterns that individuals acquire through family cultural transmission in their daily lives (Brulé & Gaikwad, 2021). This includes language proficiency, communication styles, habits, and more. The content of cultural transmission within a family significantly influences an individual's performance in school and society (Sieben & Lechner, 2019). For instance, a student from a family that values reading and knowledge exploration may exhibit greater confidence and enthusiasm in academic fields because they were encouraged to explore knowledge and think critically from a young age.

The objectified state refers to the visible outcomes and resources resulting from the embodied state (Yi & Ting, 2019). This includes books, computers, artworks, and other tangible resources that a family possesses. These resources enrich an individual's life and provide them with more learning opportunities and academic support (Eryilmaz & Sandoval-Hernández, 2021). For example, a family with an abundance of books and technological devices may make it easier

for their children to access knowledge and information, thereby cultivating a better learning attitude. The institutionalized state refers to the opportunities and resources individuals gain within the education system, including the schools, teachers, peers, and related educational policies and opportunities they encounter (Jiang & Zhou, 2021). Families with rich cultural capital often have the means to provide their children with better schools and educational resources, directly impacting the child's learning experience and academic achievements (Breinholt & Jæger, 2020).

In summary, family cultural capital significantly influences university students' learning attitudes. The combined effects of the embodied state, objectified state, and institutionalized state result in students exhibiting different learning attitudes and academic outcomes. Therefore, the education sector and society should emphasize the cultivation and transmission of family cultural capital to create positive learning environments for each student and promote their holistic development. Thus, this study proposes the following research hypothesis:

H2: Family cultural capital positively influences the learning attitudes of university students.

Learning Attitudes and Learning Effectiveness

University students' learning attitudes have a significant positive impact on their Learning effectiveness. Learning attitude refers to the attitude, emotions, and behaviors individuals exhibit during the learning process, encompassing aspects such as learning motivation, interest, and cognitive strategies. A positive learning attitude contributes to improved Learning effectiveness, as it motivates university students and fosters their strong learning motivation (Wijaya et al., 2020). When students are interested in the subject matter and recognize the importance of learning, they are more likely to invest more energy and time into their studies (Weng et al., 2020). Positive learning motivation can ignite students' intrinsic drive, making them more patient and resilient in overcoming challenges during the learning process, thereby enhancing Learning effectiveness (Huang et al., 2020).

A positive learning attitude aids in enhancing university students' attention and concentration (Elfaki et al., 2019). When they find learning engaging and satisfying, they are more capable of staying focused, avoiding distractions, and procrastination (Korkmaz, 2012). High levels of concentration contribute to a deeper understanding of learning materials, strengthening memory and comprehension, consequently leading to improved Learning effectiveness. A positive learning attitude equips university students with greater resilience (Yulianti & Sulistiyawati, 2020). Challenges and setbacks are inevitable during the learning process, but a positive attitude helps them recover more quickly from failures and extract lessons from them. They view setbacks as

opportunities for growth rather than reasons to give up, thus persistently pursuing their learning goals (Chou et al., 2021).

A positive learning attitude continually accumulates and generates a positive cycle during the learning process (Ernawati et al., 2022). As university students achieve certain Learning effectiveness, they gain more confidence and satisfaction, which further enhances their motivation and enthusiasm. This positive cycle continuously propels them towards higher Learning effectiveness. A positive learning attitude nurtures university students' self-regulation abilities (Brandt et al., 2019). They become more self-aware in monitoring their learning progress, making timely adjustments to their study plans and strategies to adapt to different learning contexts and requirements. This self-regulation ability contributes to more efficient learning, resulting in better Learning effectiveness. A positive learning attitude helps maintain university students' emotional stability and a healthy mindset (Albus & Seufert, 2021). They are often better at managing learning stress, reducing anxiety, and alleviating nervousness, creating a more conducive learning environment. Emotional stability and a healthy mindset ensure that university students can consistently invest in learning, leading to better Learning effectiveness.

In summary, this paper proposes the following hypothesis:

H3: University students' learning attitudes positively influence their Learning effectiveness.

The Mediating role of Learning Attitudes between Family Cultural Capital and Learning Effectiveness

According to the theory of individual self-system development (Connell & Wellborn, 1991), individuals are influenced by various factors during their growth, encompassing the needs for competence, autonomy, and relatedness. These needs guide individuals' participation in various activities, thus affecting the development of their emotions, skills, behaviors, and social adaptation abilities. Within this theoretical framework, the research conducted by Shi et al. (2013) explored the impact of family socioeconomic status on students' Learning effectiveness while also focusing on the role of self-efficacy. Firstly, the research indicates that family socioeconomic status has a direct impact on students' Learning effectiveness (Ollier-Malaterre et al., 2019). Family socioeconomic status reflects the economic situation and social status of the family in which an individual resides. This factor influences the educational resources, learning environment, and learning support that a family can provide, thereby affecting an individual's Learning effectiveness (Lyu et al., 2019). For instance, students from more financially stable families may have easier

access to quality learning resources, such as attending tutoring classes or purchasing study materials, thus achieving better academic performance.

Furthermore, an individual's self-efficacy is influenced not only by family socioeconomic status but also by various other factors, such as the educational environment and social support (Brown-McKenzie, 2023). Individuals gradually form assessments and confidence in their abilities through interactions and feedback from their surrounding environment. This confidence, in turn, influences their attitude, commitment, and behavior towards learning. Therefore, family socioeconomic status may affect an individual's Learning effectiveness by influencing their self-efficacy (Eryilmaz & Sandoval-Hernández, 2021).

In summary, based on the theory of individual self-system development, family socioeconomic status directly affects students' learning effectiveness, and self-efficacy plays a crucial mediating and moderating role within this relationship. An individual's self-efficacy is influenced by family socioeconomic status as well as other environmental factors, and this confidence impacts their learning attitude, commitment, and behavior, ultimately influencing the achievement of Learning effectiveness. Therefore, an individual's self-efficacy serves as a significant link between family socioeconomic status and Learning effectiveness. Thus, this research proposes the following hypothesis:

H4: Family cultural capital indirectly influences Learning effectiveness through learning attitudes.

Research Framework

Self-Determination Theory emphasizes both intrinsic and extrinsic motivation of individuals towards their behaviors and learning goals (Deci & Ryan, 2012). Intrinsic motivation refers to engaging in an activity out of interest and satisfaction, while extrinsic motivation involves engaging in an activity due to external rewards or punishments. This paper considers family cultural capital as a potential external factor that may influence learning motivation. Social Cognitive Theory focuses on the social nature of learning, emphasizing the importance of interaction with others and social learning (Luszczynska & Schwarzer, 2015). This paper views learning attitudes as a result of social learning because they may be influenced by family cultural capital and may also be shaped through interactions with family members, peers, and teachers. Achievement Motivation Theory explores individuals' motivation to pursue success and avoid failure in learning and tasks (Anderman, 2020). Learning effectiveness can be seen as a measure of learning success, and learning attitudes can affect an individual's pursuit of success. Family cultural capital may influence

an individual's achievement motivation because family educational values and expectations can impact an individual's desire for success. Learning Motivation Theory involves both intrinsic and extrinsic motivation for learning (Huitt, 2001). In this context, family cultural capital may influence learning attitudes by affecting an individual's intrinsic motivations (e.g., interest and satisfaction) and extrinsic motivations (e.g., family expectations).

In summary, family cultural capital may influence the learning effectiveness of university students through multiple pathways. Firstly, a supportive family cultural environment can nurture intrinsic motivation in individuals, making them more willing to engage in learning. This intrinsic motivation can lead to the formation of positive learning attitudes, where individuals believe that learning is crucial for personal development. Individuals have confidence in facing learning tasks and believe that putting in effort will lead to success, thus encouraging them to participate more actively in learning activities. Finally, family cultural capital may guide individuals to wholeheartedly invest in learning by influencing their learning motivation. A positive family cultural environment can stimulate intrinsic interest in learning, making individuals more willing to invest time and energy, ultimately achieving better Learning effectiveness.

In conclusion, this research model involves factors from multiple psychological theories and explains the formation of Learning effectiveness from the perspective of family cultural capital. By influencing learning attitudes, family cultural capital ultimately leads to improved Learning effectiveness. This comprehensive theoretical explanation provides in-depth insights into the learning behaviors and effectiveness of university students, offering valuable implications for educational practices and policy-making. Refer to Figure 1 for the illustration.

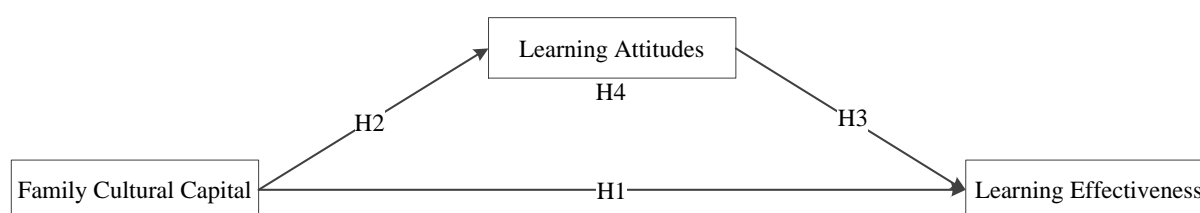


Figure 1 Research Framework

Research Methods and Design

Research tools

Family Cultural Capital: In the model, family cultural capital is an exogenous observed variable, consisting of three dimensions: institutionalized capital, objectified capital, and embodied

capital. Following Bourdieu's (2007) definition of family cultural capital and referring to the research scales on family cultural capital by scholars such as Hu (2016), Wang and Liu (2016), and Liu (2019), the content for "Family Cultural Capital Situation" was developed, ensuring good internal consistency among the three modalities of family cultural capital. There are a total of 15 measurement items, with 5 items for institutionalized capital, 5 items for objectified capital, and 5 items for embodied capital. A Likert 5-point scale was used, with higher scores indicating a higher perceived level of family cultural capital by the respondents. The Cronbach's α was 0.904, $\chi^2/df=2.229$, CFI=0.935, GFI=0.912, indicating that the scale possesses reliability and validity.

Learning Attitude: The definition of "learning attitudes and strategies" draws upon the "Motivated Strategies for Learning Questionnaire" (MSLQ) developed by Pintrich (1991). The learning attitudes scale used in this study was primarily based on learning attitude scales compiled by researchers such as Korkmaz (2012) and Hervás-Gómez et al. (2017). The questionnaire items were organized and summarized into a single dimension, comprising a total of 8 measurement items. A Likert 5-point scale was employed, with higher scores indicating a higher perceived level of learning attitudes by the respondents. The Cronbach's α was 0.915, $\chi^2/df=2.348$, CFI=0.966, GFI=0.938, demonstrating that the scale possesses reliability and validity.

Learning Effectiveness: The Learning effectiveness scale used in this study was primarily based on Learning effectiveness scales developed by researchers such as Terenzini (1989), Trigwell and Prosser (1991), and Naik et al. (2020). The questionnaire items were organized and summarized, followed by expert validation and a pilot test. It consists of a single dimension with a total of 5 measurement items. A Likert 5-point scale was utilized, where higher scores indicate a higher perceived level of Learning effectiveness by the respondents. The Cronbach's α was 0.861, $\chi^2/df=2.738$, CFI=0.937, GFI=0.901, demonstrating that the scale possesses reliability and validity.

Analysis strategy

In terms of data analysis, we employed the Partial Least Squares (PLS) method for our study. This approach allows researchers to determine the relationships between conceptual interest factors and each underlying measurement (Pavlou and Fygenson, 2006). The PLS method possesses the capability to assess measurement model parameters and structural path coefficients (Barclay et al., 1995). Compared to other model fitting techniques like LISREL, the PLS method emphasizes prediction and data analysis, providing explanatory power by maximizing the

explained variance within the structure (Barclay et al., 1995). Considering the predictive demands of this study, PLS is considered a suitable statistical analysis tool (Barclay et al., 1995).

By employing the PLS method, we could delve into relationships between concepts and quantitatively assess structural paths. The strength of this method lies in its emphasis on explanatory power, aiding in a better understanding of relationships between variables in the study. Moreover, the PLS method meets our needs for predictive analysis, assisting in revealing the contribution of variables to the effectiveness within the model.

Research Results

Sample

A total of 1,099 questionnaires were collected in this study. After excluding 37 invalid questionnaires with identical or inconsistent responses, there remained 1,062 valid questionnaires, resulting in an effective rate of 96.63%.

In terms of gender, there were 567 female university students, accounting for 53.39% of the total, while there were 495 male university students, making up 46.61% of the total, the balance in gender distribution ensures the comprehensiveness and representativeness of the study's effectiveness. Regarding age, there were 279 freshmen, constituting 26.27% of the total; 281 sophomores, comprising 26.46% of the total; 260 juniors, accounting for 24.48% of the total; and 242 seniors, making up 22.79% of the total, this comprehensive coverage across different student grades helps capture perspectives and experiences across various age groups, making the research outcomes more comprehensive and applicable. The sample structure of this survey is highly representative and aligns with the actual distribution of university students. This aids in ensuring the comprehensiveness and credibility of the conclusions drawn from our study.

Common method bias

Questionnaire surveys in social sciences, especially self-rating scales, will have the problem of homologous variance. To test whether there is a serious homologous variance phenomenon in the scale, it is necessary to analyze the data. In the unrotated exploratory factor analysis, observe that the sum of squares of the extraction loading of the first factor is less than 40%, which means that the problem of homologous variance is not serious. Indicates that the scale does not have serious homologous variance problems.

Correlation analysis

Correlation analysis was used to test the linear relationships between two variables. As shown in Table 1, there is a significant positive correlation between family cultural capital and learning attitude ($r = 0.501$, $p < 0.05$). Family Cultural Capital also exhibits a significant positive correlation with learning effectiveness ($r = 0.487$, $p < 0.05$), and there is a significant positive correlation between learning attitude and learning effectiveness ($r = 0.455$, $p < 0.05$). These findings provide preliminary support for the research hypotheses.

Table 1 Correlation analysis

Variable	M	SD	FCC	LA	LE
FCC	3.652	0.794	–		
LA	3.744	0.757	0.501**	–	
LE	3.720	0.720	0.487**	0.455**	–

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; FCC=Family Cultural Capital; LA=Learning Attitude; LE=Learning Effectiveness

Hypothesis test

To test the relationships between family cultural capital, learning attitude, and learning effectiveness, we conducted a multiple linear regression analysis and followed the causal stepwise regression testing method proposed by Baron and Kenny (1986), as shown in Table 2.

Model Ma–1 used learning attitude as the dependent variable and family cultural capital as the independent variable. The standardized regression coefficient indicates a positive impact of family cultural capital on learning attitude ($\beta = 0.376$, $p < 0.001$), supporting H2. Model Mb–1 used learning effectiveness as the dependent variable and learning attitude as the explanatory variable. The standardized regression coefficient shows that learning attitude has a positive impact on learning effectiveness ($\beta = 0.458$, $p < 0.001$), supporting H3. Model Mc–1 used learning effectiveness as the dependent variable and family cultural capital as the explanatory variable. The standardized regression coefficient indicates a positive impact of family cultural capital on learning effectiveness ($\beta = 0.381$, $p < 0.001$), supporting H1. Model Mc–2, based on Mc–1, introduced the mediator variable learning attitude. This means that by comparing the coefficients

of family cultural capital on learning effectiveness between Mc-2 and Mc-1, we can see that with the introduction of the mediator variable learning attitude in Mc-2, the coefficient of family cultural capital on learning effectiveness decreases from 0.381 to 0.277. This suggests that adding the mediator variable reduces the impact of family cultural capital on learning effectiveness. According to the causal stepwise regression testing proposed by Baron and Kenny (1986), the results indicate that learning attitude mediates the relationship between family cultural capital and learning effectiveness, supporting H4.

Table 2 Regression Analysis Summary Table

	LA		LE	
	Ma-1	Mb-1	Mc-1	Mc-2
FCC	0.376***		0.381***	0.277***
LA		0.458***		0.352***
R ²	0.473	0.461	0.378	0.504
Adj R ²	0.441	0.437	0.337	0.470
F	12.331***	22.223***	18.623***	27.688***

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; FCC=Family Cultural Capital; LA=Learning Attitude; LE=Learning Effectiveness

The total effect is represented as $ab + c'$. Here, c' stands for the direct effect after incorporating the mediating effect, while ab represents the mediating effect, also known as the indirect effect (Baron & Kenny, 1986; MacKinnon et al., 2012). Hence, it can be calculated that the indirect effect of Family Cultural Capital on Learning Effectiveness through Learning Attitude is $0.376 * 0.458 = 0.172$, and the proportion of Learning Attitude's mediating effect is $0.172/0.458 = 37.55\%$, as shown in Table 3.

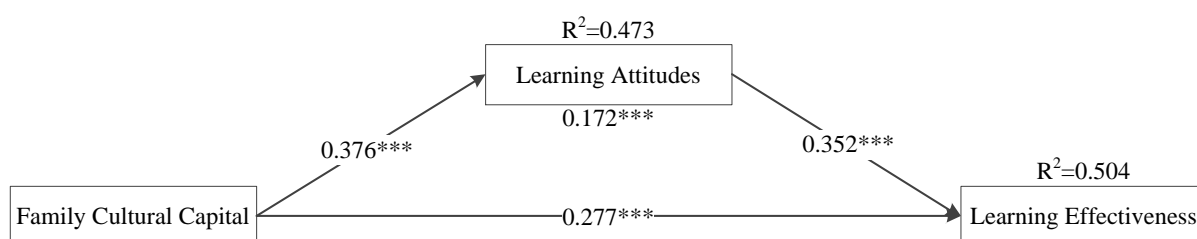
Table 3 The Results of the Mediation Analysis

Effect	Path	β	SE	p
Indirect Effect	FCC→LA→LE	$ab=0.376*0.458=0.172$	0.053	0.000
Direct Effect	FCC→LE	$c=0.458$	0.045	0.000
Total Effect	FCC→LA→LE	$ab + c'=0.172+0.277=0.449$	0.039	0.000

The mediating effect proportion of Learning Attitude: $0.172/0.458=37.55\%$

Note: FCC=Family Cultural Capital; LA=Learning Attitude; LE=Learning Effectiveness

In summary, through regression analysis, this study identified several key relationships: a positive correlation between university students' family cultural capital and learning efficiency (addressing RQ1); a positive association between university students' family cultural capital and learning attitude (addressing RQ2); a positive link between university students' learning attitude and learning effectiveness (addressing RQ3); and a partially mediating role of university students' learning attitude in the relationship between family cultural capital and learning effectiveness (addressing RQ4). The results are illustrated in Figure 2.

**Figure 2** Research Framework Results Diagram

Discussions

In the discussion of our study, we delve into the findings and implications of our research regarding the relationships between family cultural capital, learning attitude, and learning effectiveness among university students.

Firstly, our study confirmed the positive correlations between family cultural capital and both learning attitude and learning effectiveness. This aligns with the existing literature that

highlights the significant role of family cultural resources in shaping students' attitudes and achievements (Jiang & Zhou, 2021; Lyu et al., 2019; Ollier–Malaterre et al., 2019; Wu et al., 2022). These findings underscore the importance of recognizing the multifaceted nature of cultural capital, encompassing tangible and intangible assets that families provide, including values, expectations, and educational support.

Moreover, our results indicated that learning attitude positively influenced learning effectiveness, aligning with well-established theories emphasizing the motivational aspect of learning (Chou et al., 2021; Huang et al., 2020; Wijaya et al., 2020). Students who exhibit greater enthusiasm and dedication to their studies tend to attain higher academic achievements. This reaffirms the value of fostering an environment that encourages active participation and intrinsic motivation among students.

Furthermore, our study unveiled the mediating role of learning attitude in the relationship between family cultural capital and learning effectiveness. This suggests that cultural capital's influence on learning effectiveness operates, at least partially, through its impact on students' engagement with their studies (Brown–McKenzie, 2023; Connell & Wellborn, 1991; Eryilmaz & Sandoval–Hernández, 2021; Shi et al., 2013). Recognizing this mediating mechanism can inform educational interventions and policies aimed at enhancing students' academic performance.

In conclusion, our research underscores the intricate interplay between family cultural capital, learning attitude, and learning effectiveness in the university setting. These findings offer valuable insights for educators, institutions, and policymakers seeking to promote academic success and create a supportive learning environment for students.

Recommendation

The findings of this study offer several valuable insights for educational management and policy development. Here are some key management inspirations drawn from our research:

Importance of Family Involvement: Educational institutions should recognize the pivotal role of families in students' academic success. Encouraging family involvement in a student's educational journey can have a significant impact on their Learning effectiveness. Schools and colleges can organize workshops and programs to engage parents and guardians in their children's education, emphasizing the importance of instilling a positive learning attitude at home.

Cultural Capital Awareness: Educational institutions should promote awareness among both educators and students regarding the concept of cultural capital. Understanding that cultural

capital extends beyond economic factors to include values, expectations, and support systems is crucial. This awareness can lead to more targeted interventions to bridge potential disparities in students' backgrounds.

Enhancing learning attitude: Institutions should focus on strategies to enhance students' learning attitude. Encouraging active participation, creating a stimulating learning environment, and emphasizing the relevance and applicability of the curriculum can contribute to increased engagement. Student clubs, peer mentoring programs, and extracurricular activities can also be effective in fostering engagement.

Measuring and Assessing Engagement: Educational institutions should consider implementing measures to assess and monitor students' learning attitude regularly. This can involve surveys, feedback mechanisms, or analytics tools to gauge student participation and motivation levels. These assessments can inform timely interventions for students who may be disengaged or struggling academically.

Supporting Mediation: Recognizing the mediating role of learning attitude in the relationship between family cultural capital and learning effectiveness, institutions can develop targeted programs aimed at improving students' engagement levels. This can involve workshops on study skills, time management, and stress reduction techniques, ultimately enhancing students' ability to translate their cultural capital into effective learning strategies.

In conclusion, this research underscores the significance of family cultural capital and learning attitude in shaping students' academic achievements. By integrating these insights into educational management practices and policies, institutions can create a more inclusive and supportive learning environment, ultimately contributing to improved educational outcomes for all students.

Conclusion

The study reveals the substantial influence of family cultural capital on students' learning effectiveness and attitudes. It emphasizes that beyond economic status, family cultural upbringing significantly impacts academic achievements and personal development. The research identifies three dimensions of family cultural capital—institutionalized, objectified, and embodied. These dimensions encompass knowledge, resources, and social skills transmitted within families, showcasing their importance in shaping students' learning experiences. Positive learning attitudes significantly contribute to enhanced learning effectiveness. The study underlines the crucial role of

learning attitudes, including motivation, concentration, resilience, and self-regulation, in fostering better academic outcomes. Learning attitudes mediate the relationship between family cultural capital and learning effectiveness. Understanding that learning attitudes act as a bridge between family cultural capital and academic success offers insights into improving educational strategies.

Based on the findings, the study proposes recommendations to enhance awareness, empower family cultural capital, and diversify educational approaches, aiming for a more inclusive and effective educational system. This research contributes significant insights into the intricate relationship between family cultural capital, learning attitudes, and learning effectiveness among university students. The knowledge obtained serves as a foundation for fostering equitable educational practices and policy-making to support students' holistic development.

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