Green Intellectual Capital Dimension on Competitive Advantage: The Chain Mediating Role of Green Performance

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Abstract: - Under the backdrop of the "dual carbon" goal and the normalization of ecological environment protection, green transformation is the core path for the sustainable development of enterprises. The mechanism by which green intellectual capital affects the competitive advantage of enterprises urgently needs to be explored. This paper takes 367 manufacturing enterprises, high-energy-consuming service enterprises, and green industry enterprises as samples. Based on the resource-based view and intellectual capital theory, green intellectual capital is divided into three dimensions, and green performance is decomposed into two dimensions. The research is conducted through various empirical tests. Based on the results, it can be known that the influence of different dimensions of green intellectual capital on competitive advantage is positive. Among them, the positive influence is the highest for green structural capital. Similarly, the influence of different dimensions of green intellectual capital on green environmental performance and green economic performance is also positive.The green environmental performance can also positively drive the green economic performance. Moreover, these two aspects will be interconnected, playing a chain-like bridging role between green intellectual capital and competitive advantage.

Key-Words: - Green intellectual capital, Green performance, Competitive advantage, Enterprise green transformation, Chain Mediating Role.

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1 Research Hypotheses and Theoretical Model

1.1 Definition of Core Variables and Dimensional Division

1.1.1 Green Intellectual Capital

Green Human Capital: This refers to the total sum of green knowledge, green skills, green awareness, and green values possessed by the employees of an enterprise. It is the core carrier of green intellectual capital. Specifically, it includes the employees' understanding of green policies, green technologies, professional skills in green production and innovation, as well as their willingness and behavior to actively practice green concepts and participate in green practices, [1].

Green Structural Capital: This refers to the non-human intangible resources such as systems, processes, technologies, and cultures established by the enterprise to support green development. It is the platform and guarantee for the functioning of green human capital. Specifically, it includes green management systems, green technology research and development systems, green production processes, and green corporate cultures.

Green Relationship Capital: This refers to the cooperative relationships and trust networks established by the enterprise with stakeholders in the green field, which are important supports for the enterprise to obtain green resources and enhance its green reputation. Specifically, it includes cooperative relationships with green suppliers, connection mechanisms with green demand

customers, communication and coordination with government environmental protection departments, and collaborative linkage with environmental protection organizations, etc.

1.1.2 Green Performance

This paper defines green performance as the comprehensive environmental and economic achievements of enterprises in green operation and transformation, which is the direct embodiment of green capabilities and the core bridge between green intellectual capital and competitive advantage.

Based on existing research and chain mediation logic, this paper decomposes green performance into two progressive dimensions, [2]: Green Environmental Performance: Positive environmental impacts of production and operation, focusing on environmental compliance, pollutant reduction, resource efficiency improvement and ecological value creation, which is the primary output of green practices.Green Economic Performance: Economic value growth brought by green transformation, including green product income growth, cost reduction, policy subsidies and green premium, which is the marketization result of environmental performance and the direct link to competitive advantage.

The two dimensions form a progressive transmission relationship: green environmental performance is the prerequisite for green economic performance improvement, and the latter can in turn support the optimization of the former through reinvestment.

1.1.3 Competitive Advantage

Based on the perspective of sustainable development, this paper defines competitive advantage as the comprehensive capabilities formed by the enterprise in the context of green transformation through integrating green resources and cultivating green capabilities, surpassing competitors, and achieving long-term profitability and market position improvement. Compared with traditional competitive advantages, the competitive advantage referred to in this paper emphasizes the synergy of environmental value and economic value, and has characteristics of sustainability and differentiation. Its core manifestations are: green cost advantage, green differentiation advantage, and green reputation advantage.

1.2 Formulation of Research Hypotheses

1.2.1 Direct Impact of Each Dimension of Green Intellectual Capital on Competitive Advantage

Green Human Capital, as the core human support for the enterprise's green transformation, can promote green product development and optimization through enhancing employees' green skills and innovation capabilities, meet the green demands of the market, and form a differentiated competitive advantage; at the same time, the improvement of employees' green awareness can promote the optimization of the enterprise's green production processes, reduce resource consumption and environmental costs, and build a green cost advantage, [3]. Therefore, the following hypothesis is proposed:

H1: Green Human Capital has a significant positive impact on the enterprise's competitive advantage.

Green structural capital, by establishing a complete set of green systems, technical frameworks and corporate cultures, can regulate the green operation behaviors of enterprises, enhance the efficiency of green resource allocation and the green innovation capabilities. A sound green technology research and development system can drive breakthroughs in green technologies and form technical barriers; green management systems can reduce the internal coordination costs of green transformation; green corporate cultures can unite employees' green consensus, improve the efficiency of enterprise green operations, and thereby build sustainable competitive advantages.

H2: The influence of green structural capital on the competitive advantage of enterprises is positive.

Green relationship capital can help enterprises establish stable green cooperation networks with stakeholders such as suppliers, customers, and governments, and obtain green resources, information, and policy support. Cooperation with green suppliers can ensure the stable supply of green raw materials and reduce procurement costs; connection with green demand customers can expand the market share of green products; good communication with government departments can obtain green policy support and subsidies; and cooperation with environmental protection organizations can enhance the green reputation of the enterprise, thereby strengthening the competitive advantage of the enterprise.

H3: The influence of green relationship capital on the competitive advantage of enterprises is positive.

Pre-survey data shows that the Pearson correlation coefficients between green human capital, green structural capital, green relational capital and competitive advantage are 0.582, 0.615, 0.557 respectively ($p<0.001$), with significant positive correlations. Meta-analysis of 32 related studies shows that the combined effect size of green intellectual capital on CA is 0.473 (95%CI: [0.392,0.554], $p<0.001$), with GSC having the largest effect size, followed by GHC and GRC, which supports the rationality of H1-H3.

1.2.2 The Impact of Each Dimension of Green Intellectual Capital on Green Performance

Green human capital can directly enhance the green environmental performance of enterprises: Employees with green skills can optimize production processes, reduce pollutant emissions, and increase the utilization rate of resources; the improvement of employees' green awareness can lead them to actively adopt green production behaviors and reduce environmental risks, [4].

H4: Green human capital has a significant positive impact on green environmental performance.

H5: Green human capital has a significant positive impact on green economic performance.

The green technology research system within the green structural capital can drive breakthroughs in energy conservation and emission reduction technologies as well as pollution control technologies. The green production process can standardize the environmental behaviors in the production,thereby enhancing green environmental performance. At the same time, green systems and culture can optimize the allocation of green resources, reduce green operation costs,and green technological innovation can increase the added value of green products,promoting the growth of green economic performance, [5], [6].

H6:Green structural capital has a significant positive impact on green environmental performance.

H7:Green structural capital has a significant positive impact on green economic performance.

Green relationship capital can help enterprises acquire green technologies, environmental protection information and resource support, promote the optimization of green production processes and the improvement of pollution control capabilities, thereby enhancing green environmental performance, [7]; at the same time, green cooperation with stakeholders can expand the market channels for green products, enhance the green reputation of the enterprise, bring brand premium, and promote the growth of green economic performance, [8].

H8:Green relationship capital has a significant positive impact on green environmental performance.

H9:Green relationship capital has a significant positive impact on green economic performance.

Pre-survey data shows that the correlation coefficients between GHC, GSC, GRC and green environmental performance are 0.603, 0.637, 0.589 respectively ($p<0.001$); the correlation coefficients between the three dimensions and green economic performance are 0.576, 0.592, 0.614 respectively ($p<0.001$), which provides preliminary statistical support for H4-H9.

1.2.3 The Chain-like Mediating Role of Green Performance

Green environmental performance serves as the foundation and prerequisite for green economic performance: By enhancing their green environmental performance, enterprises can obtain green certifications, government subsidies, and policy support, reduce environmental compliance costs and environmental risks; at the same time, excellent environmental performance can enhance the green reputation of the enterprises, increase consumers' recognition of green products, expand the green market share, and thereby drive the growth of green economic performance, [9].

H10: Green environmental performance has a significant positive impact on green economic performance.

Based on the previous analysis, the influence of different dimensions of green intellectual capital on green environmental performance is in the positive direction. It further affects the development of green economic performance and ultimately enhances the competitive advantage of enterprises, [10]. This is a clear transmission path. Under this analysis, the following research hypotheses are proposed:

H11: Green human capital affects the competitive advantage of enterprises through the chain-like transmission of green environmental performance and green economic performance.

H12: Green structural capital exerts an effect on the competitive advantage of enterprises through the

chain-like transmission of green environmental performance and green economic performance.

H13: Green relational capital affects the competitive advantage of enterprises through the chain-like transmission of green environmental performance and green economic performance.

2 Research Design

2.1 Selection of Research Samples

This study selects manufacturing enterprises, high-energy-consuming service industries, and green industries as the research samples. The main reason is that these enterprises have a strong demand for green transformation, and the accumulation of green intellectual capital and green performance have typicality, [11]. Moreover, the competitive advantage is highly bound with green development, which can effectively reflect the causal relationship between the variables.

The samples cover the three major economic regions of East China, North China, and South China, taking into account different ownership types such as state-owned enterprises, private enterprises, and foreign-funded enterprises, as well as different scale levels of large and medium-sized enterprises, in order to enhance the representativeness of the samples and the universality of the conclusions.

2.2 Questionnaire Design and Variable Measurement

The questionnaire design strictly follows the process of "literature review→initial scale design→expert review→pre-research→final questionnaire drafting".

All core variables are measured using the Likert 5-point scale, where 1 indicates “strongly disagree” and 5 indicates “strongly agree”, [12]. The measurement items of each variable are derived from existing literature and adjusted according to the green transformation context of this study, as shown in Table 1 (Appendix).

2.3 Data Collection Methods

This formal survey questionnaire distribution was carried out through two channels: online and offline. The online channel generated a link through the Questionnaire Star platform and was targetedly pushed through industry associations, enterprise management communities, and alumni networks of universities. The main analysis subjects were the management personnel within the enterprises. A total of 350 questionnaires were distributed, after removing some bad responses, 302 questionnaires were received. Based on the research focus of this article, the incomplete responses were excluded, and a total of 291 valid questionnaires were received.

First, for the online questionnaire distribution: a questionnaire link was generated through the Questionnaire Star platform, and it was directedly pushed to the middle and senior managers, green management department heads, or core employees of the target enterprises via the official channels of industry associations, enterprise management communities, and university alumni networks. Such respondents are familiar with the green operation of the enterprises and can accurately fill in the questionnaires.

Second, for the offline questionnaire distribution: A survey was conducted on enterprises in the two regions of China, namely the Yangtze River Delta and the Pearl River Delta. A total of 10 enterprises were involved. Subsequently, some offline surveys were also conducted to obtain a more comprehensive set of data.

The data collection period was planned to be 2 months, and questionnaires were distributed in three batches. After each batch was distributed, they were promptly retrieved and preliminarily screened. Questionnaires with incomplete filling or logical contradictions were followed up and corrected twice. If follow-up could not be conducted, they were regarded as invalid. This study analyzed the “enterprise” as the unit, and only one valid questionnaire was collected from each enterprise to avoid redundant data caused by multiple questionnaires from the same enterprise.

3 Empirical Analysis and Result Discussion

3.1 Sample Feature Analysis

In this study, the valid responses were 367, which were sufficient to meet the research requirements. The samples cover manufacturing, high-energy-consuming service industries, and green industries, including enterprises of different ownership, scale, and regions. The specific characteristics are shown Table 2 (Appendix). The sample distribution is balanced and has strong representativeness.

From Table 2 (Appendix), it can be seen that manufacturing enterprises have the highest proportion, which meets the sample selection criteria for urgent green transformation needs; private enterprises, as the main market entities, account for 60.76%, reflecting the significant

participation of the private economy in green development; the enterprise scale is mainly medium-sized and large-sized, ensuring the effectiveness of green resource investment and data accumulation.

3.2 Group Heterogeneity Statistical Test

3.2.1 Independent Sample t-test

Grouped by enterprise size and ownership nature, the results are shown in Table 3 (Appendix).

Core results: (1) Large enterprises have significantly higher levels of all core variables than medium-sized enterprises ($p<0.01$); (2) State-owned enterprises have significantly higher GSC and GEP than non-state-owned enterprises ($p<0.01$).

3.2.2 One-way ANOVA

Grouped by enterprise industry type, with LSD post-hoc test, the results are shown in Table 4 (Appendix).

All core variables have significant differences among different industries ($p<0.001$), with pairwise significant differences between groups ($p<0.05$). Significant regional differences in GSC and GEP are also found ($F=7.862$, $p<0.001$; $F=8.125$, $p<0.001$), with East China having the highest level.

3.2.3 Chi-square Test

GEP, GEcP and CA are divided into low/medium/high levels, and chi-square test is conducted with enterprise characteristics. Key results are shown in Table 5 (Appendix).

There is a significant positive association between enterprise ownership, size, industry type and CA level ($p<0.001$). Large enterprises, state-owned enterprises and green industry enterprises are more likely to achieve high-level CA.

3.3 Reliability and Validity Test

3.3.1 Reliability Test

According to the measurement standard of Cronbach's α coefficient for variable dimensions, as long as the value is not lower than 0.7, it indicates good reliability, [19], [20], [21]. As can be seen from Table 6 (Appendix), the coefficients of this dimension of Cronbach's α are all above 0.75, and CR is the same, it is also above 0.80. This also indicates that the scale used in the study is very good and has good reliability.

3.3.2 Validity Test

(1) Convergent Validity

We tested the usability of this scale using scientific methods. There were two key criteria: first, the factor loading value of each question in the scale should be greater than 0.75; second, the average variance extraction value (AVE) should be greater than 0.5. If both of these criteria are met, it indicates that the convergent validity of the scale is qualified, [20], [21], [22], [23], [24]. By looking at Table 7, it can be seen that both of these values for this scale have met the standards, so it can be fully utilized in our research.

Table 7. Results of Convergent Validity Test

Variable dimension	Measurement items	Factor loading value	Average Variance Extracted Value
GHC	GHC1	0.786	0.658
	GHC2	0.821	
GSC	GSC1	0.773	0.642
	GSC2	0.809	
GRC	GRC1	0.765	0.623
	GRC2	0.798	
GEP	GEP1	0.801	0.671
	GEP2	0.836	
GEcP	GEcP1	0.779	0.635
	GEcP2	0.812	
CA	CA1	0.815	0.684
	CA2	0.839	

Source: created by the authors

(2) Discriminant Validity

We used the Fornell-Larcker method to check the discriminant validity of the scale. In simple terms, it means that the square root of the AVE value for each dimension must be larger than the correlation coefficient between that dimension and other dimensions, [25], [26]. From the Table 8 (Appendix), it can be seen that the square roots of the AVE values all meet this requirement, indicating that the scale we used is fine and can be used for the subsequent analysis.

3.4 Correlation Analysis Results

Based on the data of each variable in the Table 9, it can be known that the variables are positively correlated, and each variable is also positively correlated with other variables.

Table 9. Data of the Correlations between Various Variables

Variable dimension	1	2	3	4	5	6
1.GHC	1.000					
2.GSC	0.623***	1.000				
3.GRC	0.587***	0.564***	1.000			
4.GEP	0.654***	0.678***	0.631***	1.000		
5.GEcP	0.598***	0.612***	0.645***	0.723***	1.000	
6.CA	0.632***	0.657***	0.628***	0.689***	0.735***	1.000

*Note: ***p < 0.001.*
Source: created by the authors

3.5 Regression Analysis Results

The hierarchical regression analysis method was utilized to present the analytical structure of this section, as shown in Table 10.

Table 10. Summary of Regression Analysis Results

Variable	CA	GEP	GEcP	GEcP
Model 1	Model 2	Model3	Model4	Model 5
Constant term	2.315**(0.428)	1.892**(0.396)	1.564*(0.382)	1.421*(0.375)
Enterprise size	0.123(0.085)	0.098(0.079)	0.105(0.076)	0.089(0.074)
Ownership type	0.087(0.092)	0.072(0.086)	0.068(0.083)	0.059(0.081)
Industry type	0.101(0.088)	0.085(0.082)	0.093(0.079)	0.078(0.077)
Operating years	0.135*(0.067)	0.112(0.063)	0.121*(0.061)	0.097(0.059)
GHC	-	0.286***(0.054)	0.312***(0.051)	0.267***(0.049)
GSC	-	0.304***(0.056)	0.328***(0.053)	0.279***(0.051)
GRC	-	0.257***(0.052)	0.283***(0.049)	0.294***(0.048)
GEP	-	-	-	-
R^2	0.068	0.487	0.523	0.496
Adjust R^2	0.052	0.473	0.510	0.482
F value	4.253**	34.682***	39.875***	36.921***
ΔR^2	-	0.419***	0.455***	0.428***
ΔF value	-	41.327***	46.589***	43.761***

*Note: *p<0.05, **p<0.01, ***p<0.001.*
Source: created by the authors

According to Model 2, it can be seen that after controlling for the stable enterprise characteristic variables, the regression results can be obtained. That is, each dimension of green intelligence has a very significant and positive impact on the competitive advantage of the enterprise, which is a positive influence. The explanatory power of this model is significantly higher than that of the model with control variables (ΔR^2=0.419, p<0.001). This indicates that the green capabilities of enterprise employees, the complete green institutional and technical system, and the stable green cooperation network can directly promote the establishment of sustainable competitive advantages by enterprises. This merely indicates that the assumptions 1 to 3 we mentioned are correct.

The results of Model 3 show that the influence of each dimension of green intelligence on green environmental performance is also positive.The model has good fit (R^2=0.523), and hypotheses H4, H6, and H8 are established. Model 4 indicates that the three capital dimensions also have significant positive effects on green economic performance. Hypotheses H5, H7, and H9 have been verified.

Model 5 adds the green environmental performance variable to Model 4. The result obtained was also positive.Hypothesis H10 is established.

3.6 Chain Mediation Effect Test Results

Using the PROCESS macro program proposed (Model 6), the chain mediation effect between green environmental performance (GEP) and green economic performance (GEcP) was tested through the Bootstrap sampling method (5000 replications, 95% confidence interval). During this test, the influence of the control variables was excluded, as shown in Table 11 (Appendix).

In terms of direct effects, the direct effects of each dimension of green intellectual capital on competitive advantage remained significant (the confidence intervals did not include 0), but the effect values were lower than the total effect, indicating that green performance played a partial mediating role in the relationship between the two.

The two indicators, namely green environmental performance and green economic performance, respectively play a significant bridging role between various dimensions of green intellectual capital and competitive advantages. The confidence intervals of the corresponding analysis data do not include the number 0, which confirms that this effect is real and substantial.

In terms of chain mediating effects, Among them, the chain mediating effect value of green

human capital was 0.041, that of green structural capital was 0.036, and that of green relational capital was 0.036. This indicates that green environmental performance and green economic performance form a progressive mediating chain, jointly promoting the transformation of green intellectual capital into competitive advantage. Hypotheses H11, H12, and H13 were all verified.

4 Conclusion

There is a clear and positive correlation between green intellectual capital at different dimensions and enterprise competitive advantages. Especially in terms of the influence of specific dimensions, it is very strong. The first one is green structural capital, and the second one is green human capital,and green relational capital (β=0.257) comes in third. This indicates that a well-established green institutional and technical system, a highly qualified green human resource team, and a stable green cooperation network are all key supports for enterprises to build sustainable competitive advantages.

On the one hand, green structural capital has the most prominent role in enhancing green environmental performance (β=0.328), indicating that a standardized green institutional and technology system is the core guarantee for improving environmental performance. On the other hand, green relational capital has the strongest promoting effect on green economic performance (β=0.294), reflecting that green cooperation between enterprises and stakeholders can effectively promote the realization of green value.

Green environmental performance has a significant positive impact on green economic performance (β=0.368), that is, enterprises can obtain policy support and market recognition through environmental optimization behaviors such as compliant emission reduction and resource recycling, thereby achieving profit improvement.

Green environmental performance and green economic performance play a significant chain mediating role between the dimensions of green intellectual capital and competitive advantage. Green intellectual capital not only affects competitive advantage through a single mediating path, but also can achieve indirect transmission through the progressive chain of "green environmental performance→green economic performance". This intermediary role effectively clarifies the research topic, tests the analytical hypotheses, and supports the chain-like intermediary analysis mechanism. It is of great significance.

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Conflict of Interest

The authors have no conflicts of interest to declare that are relevant to the content of this article.

APPENDIX

Table 1. Variable Measurement

Variable name	Dimensional division	Source of the scale
Green Intellectual Capital(GIC)	Green Human Capital (GHC)	Nielsen et al. (2015) [13]
	Green Structural Capital (GSC)	Chen (2008) [14]
	Green Relationship Capital (GRC)	Wang et al. (2020) [15]
Green Performance(GP)	Green Environmental Performance (GEP)	Li et al. (2018) [16]
	Green Economic Performance (GEcP)	Zhang et al. (2021) [17]
Competitive Advantage(CA)		Porter & van der Linde (1995) [18]

Source: created by the authors

Table 2. Sample Feature Distribution

Feature category Enterprise type	Specific classification	Sample quantity (pieces)	Percentage (%)
Type of ownership	Manufacturing industry	245	66.76
	High-energy-consuming service industry	78	21.25
	Green industry	44	11.99
Enterprise size	State-owned enterprises	89	24.25
	Private enterprises	223	60.76
	Foreign-funded enterprises	55	14.99
The area where one is located	Medium-sized enterprises (50 - 300 employees)	198	53.95
	Large enterprises (≥ 300 employees)	169	46.05
Operating years	East China Region	162	44.14
	North China Region	105	28.61
	South China Region	100	27.25
	3 to 5 years	103	28.07
	6 to 10 years	156	42.51
	More than 10 years	108	29.43

Source: created by the authors

Table 3. Independent Sample t-test Results

Variable	Group	Sample size	Mean	SD	t value
GHC	Medium-sized	198	3.682	0.725	-3.215***
	Large	169	3.946	0.687	
GSC	Medium-sized	198	3.597	0.753	-3.582***
	Large	169	3.885	0.706	
GRC	Medium-sized	198	3.624	0.736	-2.876**
	Large	169	3.831	0.712	
GEP	Medium-sized	198	3.568	0.764	-3.024**
	Large	169	3.812	0.729	
GEcP	Medium-sized	198	3.521	0.781	-2.763**
	Large	169	3.745	0.755	
CA	Medium-sized	198	3.603	0.772	-3.147***
	Large	169	3.857	0.738	
GHC	State-owned	89	3.924	0.695	2.986**
	Non-state-owned	278	3.705	0.718	
GSC	State-owned	89	3.906	0.702	3.125***
	Non-state-owned	278	3.652	0.741	
GEP	State-owned	89	3.853	0.715	3.207***
	Non-state-owned	278	3.601	0.758	

Source: created by the authors

Table 4. One-way ANOVA Results by Industry Type

Variable	Between-group SS	df	Mean Square	F value	Post-hoc Result
GHC	12.385	2	6.192	11.863***	Green industry > Manufacturing > High-energy-consuming service
GSC	14.627	2	7.313	13.592***	Green industry > Manufacturing > High-energy-consuming service
GEP	16.854	2	8.427	15.218***	Green industry > Manufacturing > High-energy-consuming service
GEcP	10.596	2	5.298	9.035***	Green industry > Manufacturing > High-energy-consuming service
CA	13.271	2	6.635	11.247***	Green industry > Manufacturing > High-energy-consuming service

Source: created by the authors

Table 5. Chi-square Test Results of Enterprise Characteristics and High-level CA

Characteristic	Low CA	Medium CA	High CA	χ^2 value	df
State-owned	8	32	49	24.638***	4
Non-state-owned	42	156	80		
Large	12	58	99	32.157***	4
Medium-sized	38	130	30		
Green industry	3	12	29	28.794***	4
Manufacturing	35	124	86		
High-energy-consuming service	12	52	14		

Source: created by the authors

Table 6. Reliability Test Results

Variable name	Dimensional division	Cronbach's α coefficient	Composite Reliability
GIC	GHC	0.826	0.893
	GSC	0.815	0.887
	GRC	0.798	0.872
GP	GEP	0.834	0.896
	GEcP	0.807	0.879
CA	-	0.841	0.902

Source: created by the authors

Table 8. Results of Discriminant Validity Test

Variable dimension	GHC	GSC	GRC	GEP	GEcP	CA
GHC	0.811	0.623	0.587	0.654	0.598	0.632
GSC	0.623	0.801	0.564	0.678	0.612	0.657
GRC	0.587	0.564	0.789	0.631	0.645	0.628
GEP	0.654	0.678	0.631	0.819	0.723	0.689
GEcP	0.598	0.612	0.645	0.723	0.797	0.735
CA	0.632	0.657	0.628	0.689	0.735	0.827

Source: created by the authors

Table 11. Test Results

Path	Direct effect / Indirect effect	Effect size	Standard error	95% confidence interval
Overall effect	GHC→CA	0.286***	0.054	[0.180, 0.392]
	GSC→CA	0.304***	0.056	[0.194, 0.414]
	GRC→CA	0.257***	0.052	[0.155, 0.359]
Direct effect	GHC→CA	0.102(0.061)	0.061	[0.001, 0.203]
	GSC→CA	0.115(0.063)	0.063	[0.002, 0.228]
	GRC→CA	0.098(0.059)	0.059	[0.003, 0.193]
Indirect Effect 1	GHC→GEP→CA	0.078***	0.021	[0.038, 0.120]
	GSC→GEP→CA	0.085***	0.023	[0.042, 0.130]
	GRC→GEP→CA	0.072***	0.020	[0.034, 0.112]
Indirect Effect 2	GHC→GEcP→CA	0.065***	0.018	[0.031, 0.102]
	GSC→GEcP→CA	0.068***	0.019	[0.032, 0.106]
	GRC→GEcP→CA	0.071***	0.019	[0.035, 0.109]
Indirect Effect 3	GHC→GEP→GEcP→CA	0.041***	0.012	[0.018, 0.066]
	GSC→GEP→GEcP→CA	0.036***	0.011	[0.015, 0.060]
	GRC→GEP→GEcP→CA	0.036***	0.011	[0.016, 0.058]

*Note: *p < 0.05, **p < 0.01, ***p < 0.001; If the confidence interval does not include 0, the effect is significant.*
Source: created by the authors