

Original Article

# The Relationship between Risk-Taking Behavior and Sensation Seeking: The Mediating Effect of Mental Huagong in College Students

LI Bing-quan<sup>1</sup>, MAI Zhen-ke<sup>2</sup>

<sup>1</sup>LI Bing-quan, Educational Science School, Zhaoqing University, Guangdong Xinzhou Sixth Chan Patriarch Huineng Culture Research Association, Guangdong, China.

<sup>2</sup>MAI Zhen-ke, Educational Science School, Zhaoqing University, Guangdong, China.

<sup>1</sup>Corresponding Author : libq1221@163.com

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**Abstract** - Purpose: to explore the relationship between sensation-seeking and risk-taking behavior and construct a mediating model in order to in-depth study the risk-taking behavior of teenagers and improve relevant theories in this field by taking college students' level of their mental Huagong as the mediating variable. Method: 334 college students from various universities in Guangdong Province were selected to investigate using literature research, and a questionnaire survey and SPSS 22.0 was used to analyze the results. Result: (1) There is a significant positive correlation between the two each other of college students' sensation-seeking, mental Huagong, and risk-taking behavior. (2) There are significant differences in risk-taking behavior in gender, grade, and only child or not, and in college students' sense-seeking and mental Huagong level in grade, major category, or gender. (3) The level of mental Huagong of college students has a mediating effect between sensation-seeking and risk-taking behavior.

**Keyword** - Risk-taking behavior, Sensation seeking, Mental Huagong(心理化功), College student, Mediating effect.

## 1. Introduction

With the rapid development of the society, the society is full of uncertainty. Therefore, whoever wants to develop smoothly in such a society and realize self-value and social value would take certain risky behaviors from time to time, which requires them to have an appropriate risk-taking spirit, dare, and be good at taking risks. Risk-taking behavior refers to various choices made by individuals under uncertain circumstances, reflecting that individuals may take risky behaviors in the face of conflicts in order to achieve better results<sup>[1,2,3,4,5,6,7]</sup>.

Risk-taking behavior is the risky behavior that people are willing to make to achieve certain goals or meet certain needs. When one makes a behavioral choice before the risk-taking behavior, one is clearly aware that the consequences of the behavior may lead to very serious adverse results, and the possibility of such results is very high. (1) Risk-taking behavior is one's voluntary conscious and careful choice, risk takers can choose or not it at all. (2) The result may have a serious negative impact on the risk-taker. Otherwise, behavior with mild negative outcomes is not a risk-taking behavior. (3) The actor has a clear cognitive assessment of

a negative outcome that could seriously harm himself but is willing to take risks in order to get some kind of good result from his envisioning. (4) The negative outcome is probabilistic. (5) The benefit expected by the actor is greater or even far greater than the harm caused by possible negative results; the greater the risk, the greater the benefit<sup>[2,7,8]</sup>. Researchers believe that risk-taking is an activity in which potential losses and visible gains can reach a dynamic equilibrium<sup>[4,8]</sup>, so the risk-taker chooses to participate even though he knows that he must bear some kind of loss or even failure<sup>[1,2]</sup>.

According to the mode and its effect, risk-taking behavior can be divided into the positive and the negative. Positive risk-taking behavior is a kind of behavior that is beneficial to physical and mental health. Negative risk-taking behavior is a problem behavior that is detrimental to both physical and mental health. Foreign studies even go deeper into specific negative risk-taking behaviors such as unsafe sex, alcoholism, and drug abuse<sup>[2]</sup>.

During adolescence, risk-taking behavior tends to occur. According to the US CDC, 28% of sixth graders, 43%



of seventh graders, 54% of eighth graders, 65% of ninth graders, 76% of 10<sup>th</sup> graders, 79% of 11<sup>th</sup> graders, and 83% of 12<sup>th</sup> graders are alcoholics. The proportion of smoking adolescents is relatively high and increases with age: 52% in grade 9, 58% in grade 10, 60% in grade 11, and 65% in grade 12<sup>[1,2,3]</sup>. Many studies have also shown that risk-taking behavior in adolescents is significantly correlated with gender and grade<sup>[9,10]</sup>. Some studies have shown that boys' risk-taking behavior is stronger than girls' <sup>[6,11]</sup>; men are more likely to show risk-taking behavior and regard risk as a positive behavior.

Adolescent risk-taking behavior is investigated more in-depth so as to understand its internal mechanism better. Adolescents are more likely to take risks because of their low cognitive ability, which makes them unable to make correct judgments, resulting in greater risks<sup>[3]</sup>.

Since the risk may have setbacks or failures and other negative consequences, causing some loss and potential harm to the risk-taker, they need them to have mental Huagong to transform the negative consequences of risk-taking behavior into positive factors<sup>[12,13,14]</sup>. The higher and stronger the mental Huagong of the risk-taker, the less negative impact on him, and even not only no negative impact, but also a positive role.

Mental Huagong is a kind of mental kung-fu or competence that transforms negative or disadvantage into positive or favorable factors<sup>[15]</sup>. For example, turn pressure into motivation, adversity into the way to temper themselves, others' cynicism into enterprising drive, setbacks or failures into opportunities for growing wisdom (a fall into the pit, a gain in one's wit 吃一堑，长一智) or successful "mother" or step (Failure is the mother of success) and so on<sup>[12,14,16]</sup>.

People who lack or have a low level of mental Huagong often have negative minds such as flinch, inferiority, and self-denial as encountering setbacks or failures, which are able easily become an insurmountable obstacles in their life path. On the contrary, people with high mental Huagong usually take setbacks or failures encountered by them as opportunities to hone themselves, thus forming positive mentalities (taking setbacks or failures as opportunities to exercise and develop and seeing their positive aspects), attitudes (I can do, I can overcome difficulties, have the courage to face difficulties and hardships, etc.), responses (looking for opportunities, summarizing lessons, finding remedial measures, actively finding valuable things, etc.), etc., cultivating or enhancing the positive mental quality and increasing wisdom by positively dealing with setbacks or failures. Because of this, mental Huagong is regarded as one of the core mental competencies <sup>[17,18]</sup>, which is very important for people in a highly competitive society, especially college students<sup>[19]</sup>. Suppose today's college students want to adapt to the rapid changes in society, strengthen their mental Huagong, and find ample scope for

fully playing their abilities in the contemporary competitive and stressful society to realize the dual values of self-value and social value. In that case, they should constantly cultivate and strengthen their mental Huagong<sup>[12,14,16]</sup>.

Some studies have shown that the possibility of people's risk-taking behavior is closely related to their sensation-seeking. Sensation-seeking is a trait that seeks feelings or experiences of variation, strangeness, and complexity. People with high perception are keen to seek out fresh, intense feelings and experiences and a variety of different adventure activities<sup>[20]</sup>.

It has been shown that sensation seeking in high school and college students is highly correlated with their risk-taking behavior, and their levels of sensation seeking can effectively predict their various negative risks; that four types of risk-taking behavior - breaking the rules, sexual risk-taking, health risk-taking, and criminal risk-taking- are strongly associated with sensation-seeking<sup>[21]</sup>.

College students, for going to enter society, are confused and at a loss about how to adapt and integrate into society and how to solve possible conflicts. They have a high tendency of sensation-seeking and risk-taking behavior. However, they are unable to resolve the mental problems caused by the negative results of sensation-seeking and risk-taking behavior because of their low level of mental Huagong. In order to help them improve their levels of mental health, it is necessary to research the relationship between their sense-seeking, risk-taking behavior and mental Huagong.

Based on the above analysis, the following research hypotheses can be proposed. Hypothesis I: There is a significant positive relationship and a certain interaction between sensation-seeking and risk-taking behavior. Hypothesis II: Risk-taking behavior and sensation seeking are closely related and interact, while mental Huagong plays a mediating role.

## 2. Research Design and Process

### 2.1. Research Object

Taking college students as the research object, the questionnaire star was randomly selected to issue questionnaires. 361 questionnaires were issued and collected, 27 invalid questionnaires were excluded, and 334 valid questionnaires remained, with an effective rate of 92.52%. Among them were 83 freshmen, 82 sophomores, 79 juniors, 97 seniors, and 2 others: 167 boys and 176 girls. There were 191 only children and 151 non-only children—180 in rural areas and 163 in urban areas.

### 2.2. Research Tool

#### 2.2.1. Collage Students' Sensation Seeking Scale(CSSSS)

The Sensation Seeking Scale for Chinese undergraduates compiled by Zhao Shan etc. in 2004 was used<sup>[22,23]</sup>, which has 36 items and is composed of Thrill and

Adventure Seeking (TAS) and Disinhibition (Dis) factor, the internal consistency reliability of the two dimensions are 0.83 and 0.91 respectively.

2.2.2. Risk-Taking Behavior Scale(RBS)

The Multi-Domain Risk-taking Behavior Scale for Adolescents compiled by Shang Li etc. in 2011 was adopted<sup>[11,24]</sup>, which includes 33 items and is composed of four dimensions — social risk(SoR), safety risk(SaR), entertainment risk(ER), and morality risk(MR), The internal consistency reliability of each of them in the scale is 0.896, 0.962, 0.943 and 0.961 respectively.

2.2.3. College Students' Mental Huagong Scale(CSMHGS)

The College Students' Mental Huagong Scale (CSMHGS), compiled by Li Bing-quan and Wu Run-miao, has been adopted<sup>[16]</sup>, which includes 35 items and 5 dimensions—wisdom transformation(WT), mental attitude(MA), Yu-xin-li( 驭 心 力 YXL), emotional motivation(EM), and volition(Vo). Each coefficient of Cronbach's  $\alpha$  of 5 dimensions is 0.865, 0.891, 0.907, 0.828, and 0.754 respectively. The coefficient of Cronbach's  $\alpha$  of the total scale is 0.942.

2.3. Research Program

The network test method is adopted, and instructions are provided before each questionnaire. It is required that the test process should be completed independently and the test time of each questionnaire not exceed 15 minutes; otherwise, it is invalid.

2.4. Statistical Data Processing

SPSS 22.0 software was used for data entry and, sorting, and statistical analysis.

3. Research Results

3.1. The Results of Descriptive Statistics

The results(shown in Table 1) show the risk level of subjects in the high sensation-seeking group.

Table 1. Descriptive statistics

	Mean	SD	Median
<b>SoR</b>	9.720	4.479	8.000
<b>SaR</b>	23.390	11.326	18.000
<b>ER</b>	18.830	8.962	15.000
<b>MR</b>	23.640	11.111	18.000
<b>TAS</b>	37.660	18.981	29.000
<b>Dis</b>	33.190	17.073	23.000
<b>WT</b>	23.380	8.433	21.000
<b>MA</b>	28.800	10.345	28.000
<b>YXL</b>	31.320	11.674	26.000
<b>EM</b>	8.730	3.377	8.000
<b>Vo</b>	8.830	3.263	9.000

3.2. The Results of Common Method Deviation Test

The main ways to reduce the common method deviation are positive and negative scoring, emphasizing confidentiality, and professional testing. In this study, Harman's single-factor analysis method was used for factor analysis of all items. A total of three factors were extracted, and their variance contribution rates were all lower than 50%, indicating that the problem caused by common method bias was not significant.

3.3. The Difference Test of Each Variable and its Dimensions in Population Variables

The results (see Table 2) show that there are significant differences in risk-taking behavior(RB) by gender and only child or not. Specifically, the risk-taking behavior(RB) score of girls and only children is significantly higher than that of boys ( $t=-1.953$ ,  $p.0.001$ ) and non-only children( $t=2.024$ ,  $p.0.001$ ). There are significant gender differences in mental Huagong(MH), and female students' MH is obviously higher than male students. There is no significant difference in SS by gender or only-children or non. In addition, there is no significant difference in different family locations in the above factors.

Table 2. Demographic variation of each variable

		M±SD	t
	M	71.69±31.87	
	F	79.06±37.65	-1.953***
<b>MB</b>	Only	78.88±36.64	
	Non	71.19±32.69	2.024***
	Ru.	73.93±34.34	
	Ur.	77.17±35.95	-0.853
	M	66.43±34.43	
	F	75.05±36.87	-2.235
<b>SS</b>	Only	67.49±36.87	
	Non	73.81±34.56	-1.364
	Ru.	70.35±35.24	
	Ur.	71.40±36.73	-.270
	M	101.05±33.67	
	F	101.07±37.67	-.005***
<b>MH</b>	Only	104.21±35.36	
	Non	97.11±35.92	1.837
	Ru.	100.78±35.18	
	Ur.	101.37±36.44	-.153

Note: \* $p<0.05$ ,\*\* $p<0.01$ ,\*\*\* $p<0.001$ , The same below.

3.4. Difference Test

The results of the difference test using one-way ANOVA show that there are significant differences in RB, SS, and MH by different grades (see Table 3) and a significant difference in the MH by major category (see Table 4).

**Table 3. The difference tests of RB, SS, and MH in grade**

	Grade	M±SD	F
<b>RB</b>	1	74.89±33.345	4.888***
	2	88.66±38.788	
	3	73.67±33.240	
	4	66.79±32.164	
	Other	51.00±.000	
<b>SS</b>	1	63.53±32.450	2.803*
	2	73.89±39.556	
	3	65.57±34.908	
	4	78.3±35.160	
	Other	97.00±1.414	
<b>MH</b>	1	99.47±33.420	4.762***
	2	115.27±32.659	
	3	97.22±34.358	
	4	93.67±38.287	
	Other	95.5±50.205	

**Table 4. The difference test of RB, SS, and MH in professional categories**

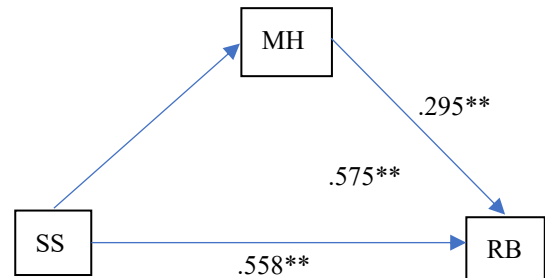
		M±SD	F
<b>RB</b>	Science	68.79±32.22	1.090
	Liberal arts	79.40±37.48	
	Engineering	80.48±37.25	
	Economy/management	75.74±33.84	
	Technical	74.52±35.27	
	Social Science	71.33±32.11	
	Other	50.50±0.71	
<b>SS</b>	Science	80.50±34.21	1.766
	Liberal arts	70.88±38.52	
	Engineering	69.7±36.71	
	Economy/management	63.32±31.39	
	Technical	63.37±33.27	
	Social Science	69.04±40.02	
	Other	95.50±0.71	
<b>MH</b>	Science	88.83±36.93	2.879*
	Liberal arts	110.07±35.05	
	Engineering	104.88±35.21	
	Economy/management	103.27±33.56	
	Technical	93.63±33.63	
	Social Science	99.79±34.46	
	Other	95.00±50.91	

**3.5. Correlation Analysis Matrix Table for each Variable and its Dimension**

Table 5 shows that there is a significant positive correlation between college students' SS, RB, and MH.

**Table 5. Correlation matrix analysis of each variable**

	RB	SS	MH
<b>RB</b>	1		
<b>SS</b>	.558**	1	
<b>MH</b>	.575**	.295**	1



**3.6 The Mediating Effect of College Students' Mental Huagong**

The intermediate effect testing process was adopted for testing<sup>[25,26,27]</sup>. Firstly, the data were processed centrally, and according to the research hypothesis, the role of college students' MH in the relationship between SS and RB was explored. The mediation effect was tested using the Bootstrap method of PROCESS software. Model 4 was selected, and the confidence interval was set to 95%.

The mediating effect between SS and RB of college students was tested by controlling gender, grade, family location, only-child or not, and major category. Then, it is tested whether college students' MH has an intermediary effect between SS and RB, and the results are shown in Table 6.

**Table 6. Intermediate Effect Test by Process Distribution Regression Method**

		Overall Fit Index			Sig.	
		R	R-sq	F	β	t
<b>RB</b>	<b>SS</b>	.558	.312	154.07	.545	.545
<b>MH</b>	<b>SS</b>	.295	.087	32.43	.416	.416
<b>RB</b>	<b>SS</b>	.704	.496	167.16	.427	.427
	<b>MH</b>				.212	.212

The PROCESS PROCEDURE for SPSS was adopted to test the existence of the mediation effect<sup>[28,29]</sup>. The bootstrap method was used to analyze the mediating model with risk-taking behavior as the dependent variable, sensation seeking as the independent variable, and mental Huagong as the mediating variable.

The results show that the mediating effect of mental Huagong is 0.130, the 95% confidence interval is [0.0839, 0.1780], and the confidence interval does not contain 0. The proportion of indirect effect in the total effect is 23.85%; that is, the mediating effect of mental Huagong between sensation-seeking and risk-taking behavior is obvious, playing an intermediary role of 23.85%.

**Table 7. Results of bootstrap mediation effect test**

Effect	Value	LLCI	ULCI
<b>Total</b>	0.545	0.459	0.632
<b>Direct</b>	0.416	0.338	0.493
<b>Indirect</b>	0.130	0.084	0.178

## 4. Analysis and Discussion

### 4.1. Analysis and Discussion of Differences in Demographic Variables of College Students' Risk-Taking Behavior, Sensation-Seeking Seeking, and Mental Huagong

#### 4.1.1. Analysis and Discussion of Differences in Demographic Variables of Risk-Taking Behavior

The results show that college students' risk-taking behavior is generally higher, which may be caused by the increasing speed of social development and the increasing uncertainty of the future society. This leads to a decreasing sense of security and the increasing possibility of risk-taking behavior.

The results show that college students' risk-taking behavior is significantly different in gender, only-children or not, and grade.

Girls' risk-taking behavior scores were significantly higher than boys', which contradicts the previous findings that boys' risk-taking behavior is stronger than girls'. The reasons may be as follows: (1) Due to the implementation of the family planning policy in China, today's college students are basically the only children, and their parents pay enough attention and expect their growth and development, thus stimulating girls' motivation to make achievements and careers, which is even stronger than boys'. (2) With the development of society, most occupations in society, especially high-tech occupations, no longer rely on the advantages of men. Some occupations even need the advantages of women, so women have a great opportunity to make contributions to society and are no longer mainly engaged in "internal" or "home" work. (3) With the social emphasis on women and the demand for a large number of human resources, it is necessary to release the productivity of a large group of women, which not only stimulates motivation but also provides women with many opportunities to make contributions. It is under the influence of the above factors that the number of female students is the majority, and even the majors that used to be mainly male students are beginning to occupy the majority.

The scores of only children's risk-taking behavior are significantly higher than non-only children's, which reason may be that only children are the most concerned members of the family, and families generally have higher expectations of them, which tends to cause them to exhibit stronger risk-taking tendencies. There are significant differences in risk-taking behavior among different grades of college students, whose scores ranked from highest to

lowest as sophomore, freshman, junior, senior, graduate, and above. Sophomore students have the highest score on risk-taking behavior, which may be due to the adjustment to college life after freshman year, the formal entry into college life, and the intense study life. In order to live a good college life, they may make all kinds of risky attempts. The low scores of seniors and above may be due to the fact that they are busy preparing for the upcoming society, regard safety as the main goal, and are less willing to take risks.

#### 4.1.2. Analysis and Discussion of Differences in Demographic Variables of Sensation-Seeking

The results show that there are significant differences in SS in different grades. The ranking order is senior>sophomore>junior>freshman. Freshmen's score is the lowest, which reason may be that freshman students have just entered the university and have to undergo a period of adjustment process. They did not have time to seek extraneous stimulus. Seniors scored highest, possibly because they are about to graduate and have less academic pressure, which makes them more likely to seek out new sensory stimulation. They are about to graduate into a more complex society than the campus, and in order to understand the society, they are likely to seek extraneous stimulus in the society. Sophomore students scored higher, probably because after the adaptation period of freshman year, they felt novel in many aspects of college life, were eager to feel and experience, and had a relatively strong tendency to seek extraneous stimulus. The low score of junior students may be due to the fact that after the experience of sophomore year, they have become more familiar with college life, no longer curious about many things. At the same time, the junior year has relatively more courses to learn or to obtain more credits, and the academic pressure is greater; there is not much time and energy to seek extraneous stimulus.

#### 4.1.3. Analysis and Discussion of Differences in Demographic Variables of College Students' MH

The results show that there are significant differences in college students' MH in gender, grade, and major category. Female scores of MH are significantly higher than males, which may be due to the fact that women under the upbringing in Chinese culture are more mentally resilience or femininity than men, able to make adaptive changes or adjustments according to situations like water, positively recognize hardships, setbacks or failures, make positive explanations, attributions and responses for them.

College students of different grades have significant differences in MH, and their scores are ranked from high to low as sophomore, freshman, junior, graduate degree or above, and senior. Sophomore students scored the highest, which may be due to the fact that they have adapted to college life after freshman year, begin to devote themselves to intense study, hold a positive attitude toward difficulties in study and life, and actively learn to solve various problems in college life. Senior students' scores are the

lowest. First, it may be because they do not know much about the society they are about to enter, are worried about whether they can stand in society, and have a certain sense of anxiety. Second, they realize that their college life is coming to an end and feel a little lost or regretful because of their nostalgia for college life.

There are significant differences in MH among students of different majors. In descending order of scores, they were liberal arts, engineering, economics/management, social science, other, technical, and science. Among them, liberal arts students have the highest level of mental Huagong, and science the lowest. This may be due to the differences in the way of thinking of students in different disciplines, the academic burden or pressure, and the learning content. The thinking mode of science students is mainly rational thinking, lacking jumping, flexibility, and adaptability. The thinking mode of liberal arts students is mainly jump, imagination, intuition, or inspiration, which is more flexible than science's and makes it easier to understand problems from another angle. Science's learn more difficult knowledge, and their academic burden or pressure is relatively heavy, which makes them have less time to engage in sports, music, art, literature, and other activities, so they have less ways to relieve pressure. But liberal arts students are not because of the nature of their subject studied; they are more likely to have time for sports, music, art, literature, and other activities, which are effective ways or means to relieve stress.

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## 4.2. The Mediating Effect of MH

College students' MH plays a certain mediating role between SS and RB. As mentioned above, SS and RB may often have negative factors or results. MH is the kung-fu to transform unfavorable into favorable factors so that MH determines the degree of transformation of negative factors in SS and RB. People with strong MH are able to make their positive roles reinforce each other by transforming negative into positive factors. On the contrary, people with low MH would make them inhibit each other from transforming the negative. Therefore, in order to make SS and RB play a positive role in the growth of college students, it is necessary to continuously cultivate and enhance college students' MH.

## 5. Conclusion

There was a significant positive correlation between SS, RB, and MH. There are significant differences in RB and SS by gender, grade, and only-child or not, and MH in gender, grade, and major types. MH plays a significant mediating role.

## Ethical Statement and Acknowledgement

The methods and tools used have been reviewed and approved by the Ethics Committee, and there are no academic ethics issues. The questionnaires or scales used in this paper are all approved by their authors. There is no problem of copyright or signing rights and no plagiarism or other academic misconduct.

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