

and artistic creative thinking ability. Cognitive psychology can play a significant negative predictive effect on the individual's degree of creativity, communication level and comprehensive impression of artistic creation., It can play a marginal and significant negative predictive effect on the cuteness and imagination level of individual artistic creation; (2) Cognitive style plays a moderating role in the relationship between cognitive psychology ability and artistic creative thinking ability, which is mainly manifested as Cognitive psychology ability has a significant predictive effect on the creativity, imagination, and communication level of field-dependent individuals, but has no predictive effect on the artistic creative thinking ability of field-dependent individuals.

**Table 1.** Test of cognitive style on the relationship between cognitive psychology ability and artistic innovative thinking ability.

Dimensio N	Change Quantity	First step			Second step			Third step			
		B	SE	0	B	SE	0	B	SE	0	
The degree of creation	Gender	0.06	0.09	-0.08	-0.06	0.09	-0.07	-	0.04	0.09	-0.06
	Age	0.03	0.04	0.08	0.03	0.04	0.09	0.04	0.04	0.11	
	Cognitive style	-	-	-	0.08	0.07	0.10	0.07	0.07	0.10	
	Cognitive psychology	-	-	-	-0.16	0.07	-0.22*	-	0.18	0.07	0.25*
	Cognitive style X cognitive psychology	-	-	-	-	-	-	0.14	0.07	0.20*	
	AF	-	0.33	-	-	3.01*	-	-	4.68*	-	
	-	-	0.01	-	-	0.05	-	-	0.04	-	

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## RESEARCH ON THE DESIGN AND DEVELOPMENT OF CULTURAL CREATIVE PRODUCTS FROM THE PERSPECTIVE OF CONSUMER PSYCHOLOGY

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**Background:** Consumer psychology is used by people to describe everything that can make you feel like, excited or obsessed. The original meaning of consumer psychology is that when readers see beautiful girl characters (comics), they have a kind of enthusiasm. state. Later, some girls dressed themselves in comparison with the appearance of beautiful girls in the comics, looking like teenage girls. With the popularity of this type of “consumer psychology”, “creative cultural products” have also sprung up on the market, and over time, a culture of urban consumer psychology has formed.

The structure and function of general products are not complicated, so product forms can be varied. Affected by consumer psychology, some products adopt bionic forms or imitate some cartoon and animation images, through exaggerated deformation and bright colors, to create humorous or cute and beautiful product images, which are characterized by good taste and cuteness. Sex, organicity, affinity, and nature can touch people's hearts and make people happy to accept them. Under the influence of personal subjective wishes, people have different associations and imaginations when they see objective things. Products with abstract shapes, unique designs and development, and emotional beauty can stimulate people's imagination and imagination more than rigid traditional products. Creativity allows people to increase work efficiency in a happy environment. According to market surveys, the individual and interesting products in the product store are selling very well.

This work attempts to combine the basic research of consumer psychology of human thinking with the research results of artificial intelligence, and uses the principle of analog generation model to develop a computer-aided design system “multi-source analog face generation system” and use this platform The fMRI experiment was carried out to explore the consumer psychology mechanism of human brain design and development thinking. The experiment uses the “design task” in the open-ends mode and the “control task” in the problem-solving mode as controls, and a total of 15 healthy adult subjects are collected with valid data. The data results show that the design task activates the medial prefrontal lobe, middle frontal gyrus, right superior temporal gyrus, anterior cingulate gyrus, bilateral hippocampus, and precuneus more

significantly than the control task. Based on previous research speculations, the medial prefrontal lobe may be more related to the representation of self-information in the design and development of cultural products, the temporal lobe may be related to the continuous generation and output of novel ideas, and the limbic system may be mainly related to the design and development of thinking activities. Related to the power driving role. In general, design and development thinking are the result of highly distributed processing involving multiple brain regions at the same time.

**Subjects and methods:** 251 pairs of data were collected, and the overall matching rate of the three rounds of data was 57.04%. The average age of the creative proponents participating in the survey was 29.88 years ( $SD = 3.79$ ), with 21.5% males and 78.5% females. In terms of education level, college degree accounted for 21.9%, bachelor degree accounted for 76.9%, master degree and above accounted for 1.2%. Their average service life in the organization is 5.83 years ( $SD = 3.47$ ), and the average service life in the current job position is 3.10 years ( $SD = 2.00$ ). They come from the Risk Management Department (11%) and the Operation Center (55%), Asset Management Department (11%), Customer Relationship Management Department (12%) and Customer Service Department (11%). The chi-square test results show that there is no significant difference between the lost sample and the final sample in creative quality ( $P > 0.05$ ) and creative implementation ( $P > 0.05$ ).

**Study design:** Work preference scale, there are 15 items in the intrinsic motivation tendency, using Likert's 6-point rating method, 1-6 means from "strongly disagree" to "strongly agree", self-evaluation by the creator of the idea. A typical entry is: "My participation in innovative proposal activities is driven by curiosity." We chose this scale for the following reasons:

(1) The work preference scale is highly reliable in the short-term (< 6 months), and has good stability in the long-term (> 6 months). (2) The work preference scale is suitable for measuring the motivational tendency of employees in the context of innovation. The Cronbach's  $\alpha$  coefficient of this scale in this study is 0.864.

According to the experimental design and the preprocessed fMRI data, the matrix design is carried out, and then the parameters of this matrix are estimated according to the GLM model, and then the corresponding statistical parameter map is obtained through the design contrast (design task > control task) and  $t$ -test ( Contrast map and  $t$ -value map), and finally set the threshold for the individual  $t$ -value map (such as  $P < 0.001$ , cluster size = 10) to get the individual activation map under the contrast condition.

**Methods of statistical analysis:** Using the contrast map of each individual for group analysis, using a two-tailed one-sample  $t$  test, the threshold is  $P < 0.01$  and the activation clumps are greater than 40 voxels ( $P < 0.05$  after AlphaSim correction, smooth kernel FWHM = 6 mm, using the whole brain mask), where AlphaSim correction is the probability threshold ( $P$  value) of the joint single voxel and the smallest clump (the number of voxels), and the Monte Carlo simulation method is used to determine the joint Threshold.

**Results:** The results of this study are completely consistent with the three-factor model of creativity proposed based on several brain injury patient research reports and some neuroimaging research reports. This model believes that creativity is the result of the functional connection between the three brain regions of the frontal lobe, temporal lobe and limbic system. A whole-brain analysis found that compared with control tasks, design tasks more significantly activated the following brain areas: medial prefrontal lobe, right superior frontal gyrus, right superior temporal gyrus, left anterior cingulate gyrus, bilateral hippocampus, The statistical results of the data information of the brain areas such as the left precuneus and the right caudate nucleus are shown in Figure 1.

The research results show that compared with general tasks, cultural product design and development tasks performed more activated brain areas including the medial prefrontal lobe, superior temporal gyrus, anterior cingulate gyrus, hippocampus, precuneus, and caudate nucleus. It suggests that design and development thinking may be related to the activities of multiple brain regions such as frontal lobe, temporal lobe, limbic system including cingulate gyrus and hippocampus. This result is consistent with previous research reports.

**Conclusions:** This research has made innovations and bold attempts in methodology. By combining the research results of artificial intelligence-assisted design-the analog generation model with the research on the consumer psychology mechanism of design and development thinking, the "three-source analog face generation" experimental platform suitable for the use of magnetic resonance instruments has been developed, and the design and development of cultural products Comparing the brain activation caused by the two tasks of face generation and conditional face generation, the results show that: compared with the limited generation task, the cultural product design and development task significantly activates the medial prefrontal lobe, superior temporal gyrus, and anterior cingulate. Gyrus, hippocampus, precuneus, caudate nucleus. The result is consistent with the "three-factor anatomical model of creativity". The medial prefrontal lobe may be related to more representations of self-information in the design and development of cultural products, the temporal lobe may be related to the continuous generation and output of novel ideas, and the limbic system may be mainly related to the driving force of the design and development

thinking activities. In general, design and development thinking are the result of highly distributed processing involving multiple brain regions at the same time.

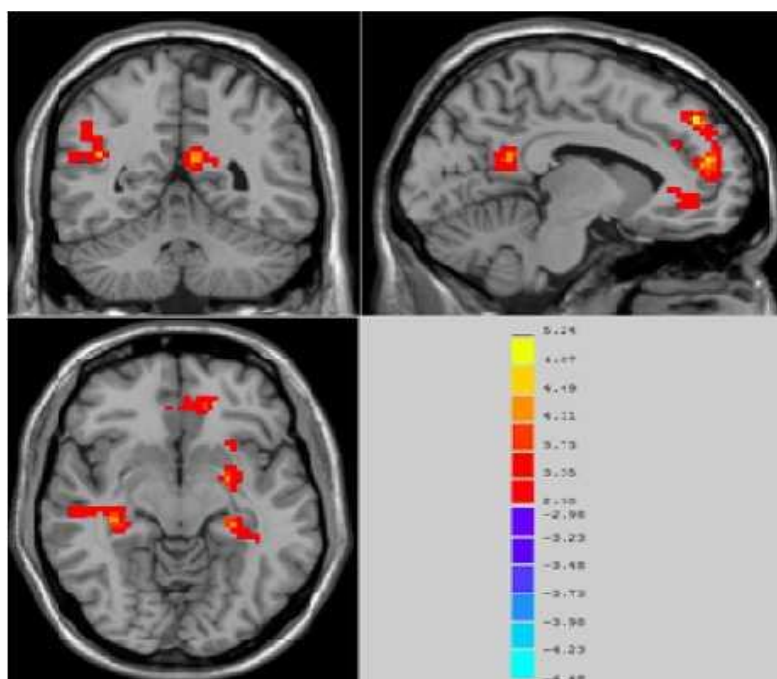


Figure 1. Statistics of cultural product creation on brain region activation data.

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## THE REFORM AND EXPLORATION OF HIGHER MATHEMATICS TEACHING FROM THE PERSPECTIVE OF PSYCHOLOGY

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**Background:** Many educational theoretical researches at home and abroad praise the implementation effect of performance evaluation, and at the same time, it basically stays at the stage of theoretical research, and normative empirical research is extremely lacking. There have been very few experimental studies, and cognitive abilities such as teaching reforms are often treated as the research as a whole, and most of them are completed in situational experiments. The researchers believe that only practical, traceable and analytical research can better reflect the impact of performance evaluation on the ability of teaching reform, and provide more valuable information and suggestions for teaching.

Based on the above research, the purpose of this research is to combine the background of my country's current curriculum reform, with the implementation of performance evaluation as the independent variable, the higher mathematics subject as the carrier, the higher mathematics teaching reform ability as the dependent variable, and the use of tracking research in a relatively long period of time, it examines the influence of performance evaluation on the ability of higher mathematics teaching reform and its development. Here, the reform of higher mathematics teaching is defined as "the task-solving process without knowing the reform method in advance". The theoretical model framework of advanced mathematics teaching reform believes that advanced mathematics teaching reform mainly includes steps such as understanding teaching, formulating reform plans, implementing plans and inspections; for decades, due to the completeness of the Polya model and its closeness to the reform process of advanced mathematics, It has always been a hotspot in advanced mathematics teaching research; Mayer's framework is known for focusing on the psychological mechanism of teaching reform. The influence of the model of higher mathematics teaching reform represented by it continues to expand.

According to the existing research data of performance evaluation and higher mathematics teaching reform, combined with the research purpose, the specific teaching of this research is whether the