

The Influence of College Students' Second Language Level on Divergent Thinking

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Abstract: Previous studies have discussed the influence of two language level on creativity from many perspectives. The research has devoted itself to finding the embodiment of bilingual advantages in creative thinking, and also discussed the cognitive mechanism of two language level on creativity, but the relevant conclusions have not been consistent. In this study, adapted from the Gilfort divergent thinking self-measurement table, the results showed that the second language level and divergent thinking were significantly positively correlated. After grouping the second language level according to the 27% extreme grouping standard, the high English level group and the low English level group were significantly different.

1. Introduction

This study discusses the relationship between two language level and divergent thinking separately. Different from the Torrans creative test chosen by the former, the Gilford divergent thinking self-evaluation scale was chosen to measure the divergent thinking ability index of the subjects. In order to improve the previous study, in terms of two language level, CET4 was selected as the response index of English level in this study^[1].

2. Research Purpose

The study aims to explore the relationship between horizontal divergent thinking. This study includes an experiment, in addition to the correlation between two language level and divergent thinking, but also examines the similarities and differences between two groups of subjects with (high and low) English level in divergent thinking^[2].

2.1 Research basis

English is not only a tool for our learning and communication under the trend of globalization, but also an important part of people's promotion of language and thinking research in the field of cognition. After many scholars have carried out pioneering research on second language and cognition, the theory of bilingual advantage has been continuously confirmed, and the author believes that there are still benefits of bilingualism that researchers have not found.

At the same time, the cultivation of innovative talents is also the focus of modern education

reform. How to improve innovation ability and cultivate students' creative thinking is very important.

Gilford pointed out that one of the ways to cultivate creative thinking is to train divergent thinking. He believes that the characteristic of divergent thinking is that when solving problems, thinking extends and spreads in different directions, creating a large number of different types and novel methods. This divergent cognitive style provides a source of innovation for human imagination^[3].

In a short time, fluency can make people produce many ideas and ideas, and also make people understand and absorb ideas faster. Versatility is the process of overcoming rigid thinking framework and expanding new directions to solve problems. Versatility makes divergent thinking spread in different aspects and directions, and by analogy after various comparisons, makes thinking show rich diversity. Unlike the former, uniqueness is the highest ability index in divergent thinking. Uniqueness is the ability of thinking to produce novel ideas different from ordinary people. Just like the word "uniqueness", it is the most difficult process in divergent thinking.^[4]

2.2 Study Design and Subjects

In this study, undergraduates who had taken cet-4 in a university in Guangzhou were selected as samples, and 213 questionnaires were collected and 200 valid questionnaires were collected. In the experiment, the participants' latest CET-4, or level 4, was used as an indicator of the English level. CET-4 is a national English proficiency test implemented by the Ministry of Education of China. It has good reliability and validity and can objectively reflect the English proficiency test of the subjects^[5].

The study independent variable was at the two-language level and the dependent variable was the divergent thinking score, using a one-factor within-subjects experimental design^[6].

2.3 Study Procedures and Materials

The study measured the divergent thinking of the participants, used the Gilford divergent thinking self-evaluation scale, and used the questionnaire star method.

There are 6 questions in the divergent thinking test, which are required to fill in within the prescribed time. The information filled in by the subjects will be divided into three dimensions of fluency, flexibility and uniqueness according to the scoring rules of the scale, and the cumulative total score is the divergent thinking test score. Test scores were performed in strict accordance with the scale scoring manual^[7].

After collecting and counting the scores, the English scores and divergent thinking ability scores were analyzed. In order to study whether divergent thinking ability varied significantly among different English levels, subjects were screened and grouped after verifying the correlation between second language level and divergent thinking. According to Yang Yilong et al., the 25% -27% grouping interval was the most effective. Therefore, after ranking the CET-4 scores, the top 50 subjects in 25% -27% were screened for high-level group; the 50 subjects in the last 25% -27% were screened for low-level group, and independent sample t-test was conducted to verify the difference^[8].

3. The results of the study

3.1 Description of the Statistics

Analysis of the study data was performed using spss16.0. Experiment 1 scale collects descriptive

statistics on the influence of divergent thinking. In Table 1, subjects' divergent thinking ability scores came from the sum of the three dimensions of fluency, flexibility and uniqueness.

Participants had the highest mean score for fluency, the second flexibility score and the lowest uniqueness score among the three scoring dimensions of the divergent thinking self-measurement table. The fluency score indicates that the participants generally have the ability to generate new ideas quickly and ensure the number of ideas; the flexibility score reflects the general ability to spread ideas in different directions; and the uniqueness score reflects the low ability to produce novel and abnormal ideas.

Table 1: Two Language Level and Divergent Thinking Test Results

	N	M±SD
English level	200	491.33±81.89
fluency	200	29.15±16.88
Flexible	200	12.65±7.15
uniqueness	200	7.58±5.35
divergent thinking	200	49.37±27.65

3.2 Correlation Analysis of Two Language Level and Divergent Thinking

In order to study the connection between the level of two languages and divergent thinking, the correlation analysis between the level of two languages and the three dimensions of divergent thinking and the total score of divergent thinking was conducted. The specific results are shown in Table 2.

The results showed that two language level was significantly positively correlated with fluency ($r = 0.45$, $p < 0.01$), with flexibility ($r = 0.56$, $p < 0.01$), and with uniqueness ($r = 0.55$, $p < 0.01$). However, the two-language level also showed a significant positive correlation with divergent thinking ($r = 0.52$, $p < 0.01$).

Table 2 Results of The Level and Divergent Thinking and Its Subfunction

	1	2	3	4	5
1 English level	-				
2 Fluidity	05.4**	-			
3 Flexible	06.5**	0.80**	-		
4 Unique	05.5**	05.7**	03.9**	-	
5 Divergent thinking	0.52**	0.96**	03.9**	0.89**	-

pour:** $p < 0.01$, *And $p < 0.05$, the same below

3.3 Ifferential Analysis of Divergent Thinking Ability of Subjects with Different Two Language Levels

In experiment 1,25% -27% extreme grouping method was conducted, and 50 people from English high group and English low group were selected. The independent t-test of the two subjects showed in Table 3 ($p < 0.01$), and the performance of high English group was significantly better than that of low English group.

Table 3 Independent Sample T-Test for English Proficiency

	High level of English group (N =50)	Low English level group (N =50)	Cohen 's d	t	p
Divergent thinking results	74.40±28.95	33.06±23.76	1.56	7.81	$p < 0.01$

4. Discussion

The experiment has proved that the English performance of the subjects has a significant impact on the divergent thinking performance, which is a positive correlation, that is, the higher the English level, the stronger the divergent thinking ability. The performance of divergent thinking in the high level group and the low level group differ significantly. The results support the study of the domestic scholar Yang Yilong et al. This study expands the influence of two language level on different dimensions of divergent thinking. The results showed that although the subjects showed different performance in different dimensions of divergent thinking, including high fluency score, moderate flexibility score and low uniqueness score, the Pearson correlation coefficient between the level of two dimensions was not different.

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