International Education Journal, 2005, 6(2), 194-199.
ISSN 1443-1475 © 2005 *Shannon Research Press*.
http://iej.cjb.net

The relationship between creative thinking ability and creative personality of preschoolers

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This study investigates the relationship between creative thinking ability and creative personality of preschoolers. Prior research showed that the correlation coefficient between creative thinking ability and creative personality of teenagers was very low (Hah, 1999), so this research was undertaken to validate the test and to examine how preschoolers would be influenced by sex and age variables. It was conjectured that these prior results would change if subjects were sampled from a much younger age pool, and so, a test instrument (the Integrated Creativity Test) to measure creative thinking ability and creative personality was developed and validated.

About 1,000 preschoolers aged 4 to 5 years old were sampled nationwide to verify the relationship between creative thinking ability and creative personality. Then the ICT was administered. The relations between creative thinking ability and creative personality were analysed according to total scores and factors. Creative thinking ability and creative personality were analysed according to sex and age.

Creative thinking, creative personality, preschoolers, measurement, validation

INTRODUCTION

People engage in unique thinking because of an intrinsic desire to find new and better things. This is called creative thinking. The power of a nation depends greatly on the quality of new knowledge and unique information. Our societies require creative thinking more and more than in the past. Because of social changes, the Republic of Korea is paying more attention to the development of creativity. Until now, there has not been enough educational support to educate children who have high creativity and special talents in regular schools, and they have been neglected. They must not be overlooked, but their latent ability and creativity should be developed and supported at the national level. In order to do so, first, there should be research conducted in the area of creative thinking and the development of educational programs for children.

Since Guilford addressed the definition of creativity in the 1950s, various other definitions have been presented (Guilford, 1950). Psychologists have considered creativity as a trait of character, creative process, creative environment, and inventive product. Researchers go on to say that when the traits of character, process, environment, and product interact with each other, creativity is mobilised (Isaksen, Murdock, Firestein and Treffinger, 1993). '101 creativity definitions' (Aleinikov, Kackmeister and Koenig, 2000), published recently, explained that methods to measure creativity are as various as the kinds of creativity.

In order to raise creative thinking and develop educational programs for children, we need to know what creativity is, how to measure it, and how it changes according to sex and age.

What is creativity? Creativity is an individual's ability to produce appropriate and novel things (Hennessey and Amabile, 1988; Ochse, 1990). What does 'appropriate' and 'novel' things mean?

Regarding this problem, Simonton (1988) proposed the 4P standard. 4P stands for product, person, thinking process, press or environment.

How can creativity be measured? There is no guarantee that children think creatively even if they have creative ability. Creative behaviour may not be generated if children fear new thinking or don't want to be creative. If so, which factors are identified to measure creativity construct? The abilities required in the creative thinking process include sensitivity, fluency, flexibility, originality, elaboration, and imagination. Characteristics related to creative behaviour are curiosity, run-a-risk, independence, task commitment, humour, and motivation, which are related to the cognitive process for accomplishment. Renzulli's three-ring model (Davis and Rim, 1994) considers above-average intelligence, creativity, and task commitment as important factors that explain giftedness. In this model, both creativity and commitment are much more important factors than intelligence. Terman (1925) said that creativity, achievement motivation, and emotion control ability play a more important role than intelligence.

If creativity is defined as the 'ability to make new and useful things', the socio-cultural context needs to be considered as a factor. Therefore, a study of creativity in the Korean cultural context was needed. From this viewpoint, the Volcano Model for Creativity Measurement, presented in Figure 1, was developed. This model attempts to mirror the creativity of children and inter-relates the elements of individual environment, creative thinking ability, creative personality, socio-cultural environment, and subject domain. Individual environment involves inheritance and home environment. Creative thinking ability involves fluency, flexibility, originality, and elaboration. Creative personality involves curiosity, independence, run-a-risk, and task commitment. Subject domain includes literature, art, mathematics, science, information, and communication. These are the components of the model that are required for creative products to erupt. The socio-cultural environment in this model is considered an important factor for new and appropriate products to be accepted into society.

An Integrated Creativity Test I: for Preschoolers, which measured preschoolers' creative thinking ability and creative personality, was developed on the basis of this Volcano Model. In order to identify the developmental trend of children's creativity, this test was administered to 4 to 5 year-old preschoolers. Two research questions were formulated as follows:

1. What will be the relation between creative thinking ability (language, drawing) and creative personality? What is the relation between the sub-factors of creative thinking ability (language drawing) and the sub-factors of creative personality?
2. How will creative thinking ability and creative personality change according to sex and age?

METHOD

Subjects

This study focused on 4 to 5 year-old preschoolers to investigate the relations between creative thinking ability and creative personality, and developmental tendency of ability and personality. In total, 716 subjects were sampled from:

- big cities (341 children), which included Seoul, Pusan, Kwangju, Suwon city,
- medium-sized cities (240 children), which included Wonjoo, Cheonan, Changwon, Anyang, Ansan city, and
- small cities (235 children), which included Seosan, Yeosoo, Icheon, Asan, Namyangju city.

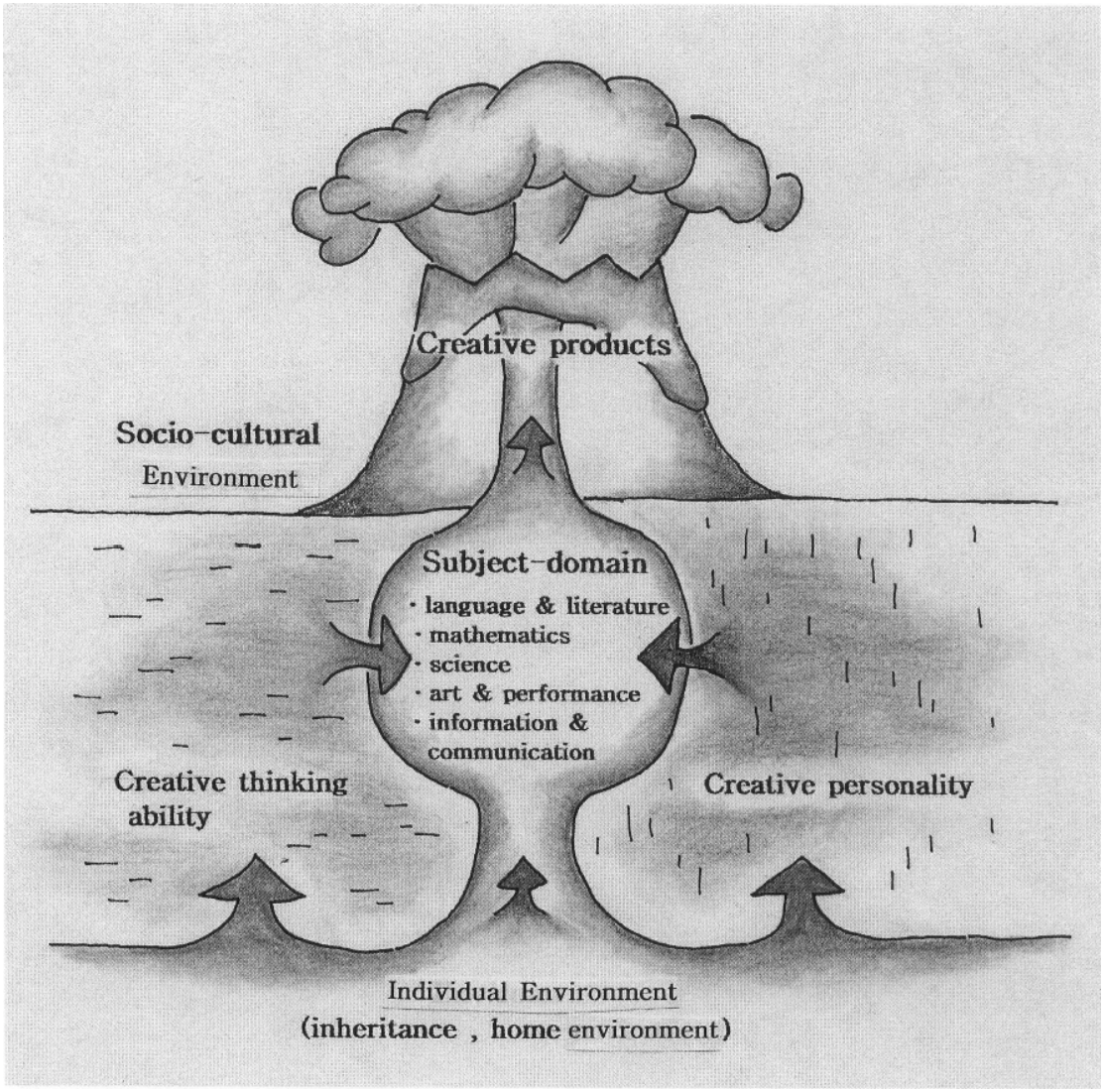

Figure 1. Volcano Model for Creativity Measurement

Instruments

Integrated Creativity Test/ for Preschoolers developed by Lee and Lee (2002) was used to measure creative thinking ability and creative personality. This test was developed on the basis of the Volcano Model for Creativity Measurement influenced by theoretical background of Guilford (1950) and Torrance (1970, 1972). This test for 4 to 5 year-old preschoolers is sub-divided into language, drawing, and personality domains.

The language domain consists of imagination, fluency, and originality factors. The drawing domain consists of continuation, connection and completion, new elements addition, theme, and unconventionality factors. The creative personality domain consists of curiosity, independence, run-a-risk, and task commitment factors. Language and drawing tests were scored 0 or 1 point per test item. Creative personality test items were scored on a scale of 1 to 5 points, as in the Likert scale.

PROCEDURE AND ANALYSIS

As stated previously, the Integrated Creativity Test 1: for Preschoolers was administered by trained teachers to 716 preschoolers over a three-month period. Only the creative personality test was sent home and answered directly by parents. The tests were scored by trained kindergarten

teachers and graduate students. The relations between creative thinking ability and creative personality were analysed according to total scores and factor scores. The scores were analysed using SPSSWIN 10.0 statistical package. Pearson's correlation coefficient was computed and an ANOVA performed.

RESULTS

This study investigated the relationship between creative thinking ability and creative personality. Pearson's correlation coefficient of 0.019, significant at the 1 per cent level, was found between creative thinking ability and creative personality.

What is the relation between the sub-factors (language domain: imagination, fluency, originality/drawing domain: completion, continuation and connection, new element addition, theme, unconventionality) of creative thinking ability and the sub-factors (curiosity, independence, run-a risk, task commitment) of creative personality?

Pearson's correlation coefficients were computed and presented in Table 1.

As presented in Table 1, imagination of the language domain correlated significantly to curiosity, independence, run-a-risk, and task commitment of creative personality, and fluency correlated significantly to three factors except run-a-risk. However, originality correlated significantly to only curiosity.

Table 1. The correlation coefficients between the sub-factors

	IM	F1	OR	CC	CO	NE	TH	UC	CU	IN	RR
IM											
FL	0.394**										
OR	0.204**	0.244**									
CC	0.111**	0.102**	0.106**								
CO	0.121**	0.161**	0.083*	0.316**							
NE	0.063	0.133**	0.021	0.048	0.322**						
TH	0.127**	0.139**	0.131**	0.276**	0.474**	0.329**					
UC	-0.034	0.138**	0.023	0.176**	0.394**	0.421**	0.433**				
CU	0.113**	0.144**	0.087*	0.116**	0.057	0.046	0.063	0.117**			
IN	0.112**	0.174**	0.069	0.118**	0.064	0.015	0.089*	0.089*	0.573**		
RR	0.087*	0.061	0.044	0.114**	0.042	0.007	0.051	0.073	0.623**	0.539**	
TC	0.138**	0.121**	0.065	0.119**	0.066	0.048	0.126**	0.103**	0.463**	0.571**	0.429**

IM=imagination, FL=fluency, OR=originality, CC=connection and continuation, CO=completion, NE=new elements, TH=theme, UC=unconventionality, CU=curiosity, IN=independence, RR=run-a-risk, TC=task commitment
*p<0.05,**p<0.01

In the drawing domain, continuation and connection highly correlated to all four creative personality factors. In particular, theme factor correlated to independence and task commitment, and unconventionality correlated significantly to curiosity, independence, and task commitment. However, completion and new elements addition did not correlate significantly to creative thinking ability.

How will creative thinking ability and creative personality factors vary according to sex and age? In order to investigate the differences in sex and age between 4 and 5 year-old preschoolers in creative thinking ability and personality, a t-test was administered and the results are shown in Table 2. There were significant differences in language, drawing, and total score of creative thinking ability according to sex, but no significant difference in creative personality. Girls displayed higher creative ability in both language and drawing than boys. The differences were statistically significant.

As presented in Table 3, there were significant differences in both creative ability and creative personality according to age. That is, 5 year-old preschoolers scored higher in the language and

drawing domains of creative thinking ability and creative personality than 4 year-old preschoolers. According to this result, the fact that creative ability and personality change is confirmed. Therefore, teachers need to develop individualised creativity programs according to age level and gender characteristics.

Table 2. The difference between creative thinking ability and personality by sex

			N	M	SD	df	t
Creative thinking ability	Language	Boys	348	6.12	6.01	714	-2.411 *
		Girls	348	7.54	9.33		
	Drawing	Boys	348	4.41	2.98	714	-2.876**
		Girls	348	5.05	2.95		
	Total	Boys	348	10.53	7.14	714	-3.078**
		Girls	348	12.59	10.38		
Creative personality		Boys	348	111.02	15.72	714	0.279
		Girls	348	110.68	16.12		

*p <0.05, ** p<0.01

Table 3. The difference between creative thinking ability and personality by age

			N	M	SD	df	t
Creative thinking ability	Language	4 year	342	6.10	6.42	680	-2.824*
		5 year	340	7.82	9.30		
	Drawing	4 year	342	4.36	3.00	680	-3.664**
		5 year	340	5.20	2.95		
	Total	4 year	342	10.46	7.48	680	-3.700**
		5 year	340	13.03	10.37		
Creative personality		4 year	342	108.60	15.76	680	-4.379**
		5 year	340	113.79	15.21		

*p<0.05, ** p<0.01

DISCUSSION

For the students sampled, this study confirmed the relations between 4 to 5 year-old preschoolers' creative thinking ability and creative personality, and their development. This research has implications for identifying gifted children and developing educational programs for gifted and talented children.

Firstly, the imagination factor and fluency factor in the language domain of creative thinking ability were related significantly to four factors of creative personality – curiosity, independence, run-a-risk, and task commitment. These results imply that we can substitute creative thinking ability test for creative personality test because of the complicated scoring method that obscures the validity.

Secondly, analysed by sex, there were significant differences in language, drawing, and total score of creative thinking ability but no difference in creative personality. This suggests that there is a difference in creative ability between boys and girls. Girls are more creative than boys in the preschool years.

Thirdly, analysed by age, there were significant differences in language, drawing, and total score of creative thinking ability and creative personality. This implies that there is a developmental trend in creative thinking ability and creative personality.

It was found that creative thinking ability was partly related to creative personality and that there was a difference between creative thinking ability and creative personality. This researcher believes that teaching 4 to 5 year-old preschoolers in educational programs designed with consideration of these study results will be much more effective than in the past.

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