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Development And Validation of a Creative Environment Test

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This study aims to develop and validate a creative environment test for university students that considers both the home and school environment. The creative home environment test was based on the theory of Lee and Lee (2019), while the creative school environment test was based on Lee et al. (2021). This test was divided into the home environment and the school environment to develop and improve creativity, and it considered components of both psychological and physical support within a creative environment. Psychological support in a creative environment refers to parents or teachers encouraging and supporting creative thinking and ideas, whereas physical support in a creative school environment includes the provision of free time and space, as well as opportunities for creative experiences. This test is a creative environmental test that can comprehensively measure the home environment and the school environment using a self-reported 5-point Likert scale to answer relevant questions. The sample comprised 320 university students after 316 subjects were excluded because of insincere data. Data were analyzed using descriptive statistics, correlation, reliability verification, an exploratory factor analysis, and a confirmatory factor analysis using SPSS 25.0 and AMOS 25.0. The reliability of the creative home environment was Cronbach .804, the reliability of the creative school environment was Cronbach .875, and the overall reliability was Cronbach .882, which showed that the internal consistency of the questions was good. The test validity was proven through an exploratory factor analysis and a confirmatory factor analysis.

Keywords: *creative environment; creative home environment; creative school environment; validity*

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Introduction

As technology develops, the Internet of things (IoT), big data, and artificial intelligence will increasingly be applied to various fields such as society, culture, education, and the economy. As a result, the pace of social change is expected to accelerate. To respond and adapt to such rapid social changes, flexible thinking, which is based on creativity, is necessary. Moreover, as the COVID-19 pandemic has created an online system in addition to the existing offline system, it is important to prepare countermeasures creatively.

Lee (2020) stated that creative talents must be able to inspect and converge rapidly changing social changes and cope with various problems using original thinking. In addition, diffusional thinking, problem-solving ability, and the ability to create innovative value through collaboration are required. As such, people who can create new and valuable ideas and outputs using empathy are necessary (Choi et al., 2011). Simultaneously, Lee (2020) emphasized creative competence and convergence capability that can cover various situations and actively cope with the rapidly changing society.

As the demand for creative thinking (including flexible thinking and diffusion thinking) increases, it is important to create an environment that can cultivate creativity. Lubart (2010) emphasized the importance of the environment and stated that individual creativity depends on the social situation and is achieved through interactions at both an individual and environmental level. Similarly, in his study on creativity, Csikszenmihalyi (1996) highlighted not only individual elements but also the environment and surrounding individuals. Therefore, the study of creativity has been expanded to include both individuals and their surrounding environment. In particular, a creative environment has a significant effect on the process and output of creativity (Garcês et al., 2016).

The creative environment refers to an environment that develops and cultivates creativity in individuals, which includes the home environment, the school environment, and the social and cultural environment. A creative home environment includes a physical environment that provides human interaction, time, space, and experiences that encourage children to think and act creatively. Such a creative home environment is the first important social environment that parents can develop to improve their children's creativity (Lee, 2019). The home environment has the greatest influence on an individual's creative tendency (Hwang, 2014) and can affect creative personality formation (Gablan & Abdelaziz, 2021).

A creative home is the most important kind of environment for cultivating creativity, as its effects continue well into adulthood (Kim & Yang, 2008). Sternberg and Lubart (1991) emphasized the importance of having an environment in which parents support, encourage, and reward their children’s creative ideas, and found that the physical aspect provides psychological benefits, as well as various tools necessary for the development of creativity. This finding is consistent with the work of Amabile (1989), who divided the impact of a creative home

environment into psychological and physical aspects. Csikzentmihalyi (1999) studied creative achievement and found that the experience of parents supporting and encouraging their children's curiosity and providing an opportunity for professionals to receive education within their home environment influenced children's expression of creativity. Frania (2010) similarly found that parents with creative characteristics had a positive impact on creating harmonious family relations and forming children's creative attitudes.

Amabile (1989) concluded that a creative home environment can induce inner motivation and further promote creativity by viewing it positively; at the same time, evaluation, compensation, and competition in an environment can hinder creativity. In addition, Amabile (1996) supports a creative family environment factor that respects the opinions of children and encourages them to express their creative ideas. Similarly, Tannenbaum (1999) also found that when psychological and physical aspects are divided in a creative home environment, parents' creative personality, rearing attitude, and atmosphere in the home have a great influence on children's creativity development.

If the importance of a home environment is emphasized as the first social environment an individual encounters, the school environment must also be of great importance. Ferrari et al. (2009) argued that the environmental factors that emphasize creativity in schools are important. As such, it is important to create creative environments in the areas of evaluation, culture, curriculum, individual skills, teaching and learning forms, teachers, skills, and tools. In the National Advisory Committee on Creative and Cultural Education (1999), NACCCE said that creatively teaching and teaching creativity when organizing activities in the classroom are major factors in developing learner creativity. Moon and Ha (1999) said that it is important to support and encourage students to independently solve creative problems without rejecting students who have unique behaviors.

Yeh (2004) highlighted the importance of providing a curriculum for teachers to support students' creative ideas, to help students perform creatively in classrooms, and to think creatively in school environments. Dan et al. (2013) said that it is important to use flexible space and time as a creative environment, use appropriate materials, engage in activities outside the classroom, give learners autonomy, provide trustworthy relationships between instructors and learners, provide opportunities to cooperate with peers, recognize learners' needs, be in a non-normal environment, and partner with external institutions. Gandini et al. (2005) believed that students should remove as many obstacles as possible so that they can freely walk around the space to develop creative ideas. Burnard et al. (2006) said that learners should be given enough time to immerse themselves in creative activities. Lin (2009) emphasized the role of teachers in creative school environments to encourage students in understanding and expressing their creativity in the learning process. In addition, innovative teaching methods should be developed and implemented to foster learners' creativity by understanding learning environments and the culture of the school system.

Addison et al. (2010) discussed the necessity of providing various and appropriate materials, tools, and resources to stimulate creativity. In particular, Bancroft et al. (2008) identified that materials that can make various shapes using various tools are important for developing creativity. Dillon et al. (2007) stated that time spent in outdoor environments can also promote creative development. Burgess and Addison (2007) said that the curriculum that gives learners control over their learning and balances the structure and freedom of learning improves creativity. Likewise, Cremin et al. (2006) also highlighted the importance of providing opportunities for learners to choose and execute activities. Wood and Ashfield (2008) emphasized that creative inquiry in classrooms and imagination opportunities should be provided to improve learners' creativity. Cumming (2007) found that the creative skills of learners can be further developed by playing games in the classroom. According to Rutland and Barlex (2008), the use of teamwork with peers in a creative environment can also effectively develop learners' creativity. Battersby (2008) highlighted the role of creative teachers in supporting learners' participation and creativity and conducting continuous research to bring out learners' potential.

From previous studies it was found that a creative home environment and a creative school environment had the greatest influence on creativity. Given this context, parents and teachers should understand creativity and try to develop and improve the latent creativity of children or learners. Hence, physical support is needed to provide psychological support between parents, children, teachers, and students, as well as to provide time, space, and opportunities. The measurement tools for a creative home environment or creative school environment exist, but their integrated test tools are insignificant. Therefore, this study was conducted to develop and validate a measurement tool for creative environments that can be useful in both home and school contexts; such a measurement tool can be applied to creative environments by integrating and testing it in a psychological support environment and a physical support environment. The study's research question was as follows: Is the reliability and validity of a creative environment test appropriate?

Method

Participants

In this study, 316 students from S, J, and A universities in Seoul and Gyeonggi-do were selected to verify the validity of the creative environment test. Table 1 shows the results of the frequency analysis of the subjects to understand their general characteristics.

Table 1. Demographic characteristics of participants

Variable		Frequency	Percentage
Age	20~22 years old	151	47.8
	23~25 years old	124	39.2
	Over 26 years old	41	13.0
Gender	Male	135	42.7
	Female	181	57.3
Residential area	Seoul	312	67.1
	Gyeonggi and Metropolitan Area	104	32.9
Major	liberal arts and social track	121	38.3
	physical sciences track	96	30.4
	physical sciences and IT track	99	31.3
Grade	1st	58	18.4
	2nd	86	27.2
	3rd	85	26.9
	4th	87	27.5
	Total	316	100.0

Research process

This study developed measurement items for creative environments by combining a creative home environment and a creative school environment based on the criteria of Lee and Lee (2019) and Lee et al. (2021), respectively. The creative environment test developed in this study was conducted online and offline, and its validity and reliability were verified through an exploratory factor analysis and a confirmatory factor analysis using the collected data.

The collected data were analyzed through SPSS 26.0 and Amos 26.0 programs. To understand the demographic characteristics of the subjects of this study, a frequency analysis was conducted, and the mean, standard deviation, skewness, and kurtosis were analyzed through the descriptive statistics of the test tools. Additionally, Cronbach's coefficient was calculated to understand the internal consistency of the test tool. The factor extraction method was performed using oblimin, a square rotation assuming the correlation between factors. To determine the suitability of the correlation matrix, a KMO scale and Bartlett test were conducted and analyzed. To identify the correlation of the factor structure, Pearson's correlation coefficient was calculated and analyzed. Following this, a confirmatory factor analysis was conducted on the measurement model to prove the concept's reliability, the discriminant validity, and the

convergence validity of the factor structure. The parameters were estimated by the maximum likelihood method, and the values showing the overall fit of the model among the absolute fit indexes were Root Mean Square Error of Approximation (RMSEA), Normed Fit Index (NFI), Increative Fit Index (IFI), Tucker and Lewis Index (TLI), and Comparative Fit Index (CFI). The suitability of the model covariance matrix and the sample covariance matrix was evaluated by applying the parametric fitness. Finally, to confirm the cross-validity of this research test tool, the invariance between the group-specific identity constraint models was examined, which confirmed they were safe. This means that the model of morphological identity without constraints between groups, the model of measurement identity with constraints that the factor coefficients are the same, and the model of factor covariance identity with constraints that the factor covariance mobility are the same were constructed, and the difference between the difference of the difference between the difference values of the KAISA and the overall fit index of the previous step model were compared at each step from the shape identity of the model to the measurement identity and factor covariance identity.

Results

Descriptive statistics analysis

After conducting a creative environment test, questionnaire analysis was conducted. The mean and standard deviation were calculated using items from the collected data, and the degree of distortion and kurtosis were confirmed to verify the normal distribution. In the analysis of the questions of the creative environment, the degree of why is the absolute value of the acceptance standard and the degree of kurtosis is the absolute value of the acceptance standard, so that the questions of the creative environment test meet the standard value at the appropriate level (Table 2).

Table 2. Descriptive Statistics Analysis of the Creative Environment Test

	Factor		*M*	*SD*	*Skewness*	*Kurtosis*
Creative Environment	Creative Home Environment	1	4.022	.848	-.575	-.283
		2	3.984	.874	-.600	-.016
		3	4.107	.943	-.856	.016
		4	3.705	1.197	-.767	-.295
		5	3.990	.937	-.865	.505
		6	3.332	1.272	-.318	-.917
		7	3.462	1.081	-.409	-.540
		8	3.465	1.102	-.384	-.584
		9	3.775	1.015	-.653	-.145
		10	3.974	.883	-.757	.417
		11	2.557	1.077	.280	-.815
		12	3.515	1.164	-.379	-.892
		13	3.313	1.181	-.105	-.958
		14	3.712	1.141	-.460	-.800
		15	3.370	1.056	-.297	-.417
		16	3.436	1.095	-.261	-.784
		17	3.522	1.136	-.303	-.913
		18	3.946	1.032	-.709	-.293
		19	4.186	.887	-.841	-.167
		20	3.778	1.021	-.553	-.639
	Creative School Environment	1	3.699	.877	-.595	.236
		2	3.588	.940	-.293	-.601
		3	4.053	.850	-.663	-.137
		4	3.696	1.015	-.534	-.526
		5	3.984	.940	-.567	-.531
		6	3.598	1.047	-.287	-.724
		7	3.496	1.037	-.369	-.492
		8	3.765	.892	-.656	.282
		9	3.721	.971	-.503	-.255
		10	3.803	.985	-.520	-.376
		11	3.651	1.041	-.554	-.262
		12	3.844	1.013	-.680	-.147
		13	3.566	1.074	-.320	-.663
		14	3.411	1.101	-.311	-.868
		15	3.443	1.115	-.332	-.730
		16	3.860	.952	-.672	.088
		17	3.493	1.142	-.396	-.647
		18	3.683	1.020	-.487	-.307

Inter-factor correlations

To develop the creative environment test, the Cronbach coefficient was calculated to confirm the test tool's internal consistency. The results are presented in Table 3.

Table 3. Reliability analysis of the Preliminary Creativity Environment Test (Cronbach α)

Domain	Factor	Item number	Cronbach α		
Creative Home Environment	Psychological Support Environment	1~10	.797	.859	.909
	Physical Support Environment	11~20	.776		
Creative School Environment	Psychological Support Environment	1~9	.795	.893	
	Physical Support Environment	10~19	.875		

Exploratory factor analysis

For the validity of the creative environment test tool, an exploratory factor analysis was conducted on 38 questions of the sub-factors of a creative home environment and a creative school environment. The factor extraction method was mainly performed using the principal axis decomposition method; the square rotation using oblimin, which assumed the correlation between the factors, was also performed. To determine the suitability of the correlation matrix, a KMO scale and Bartlett test were conducted. The results of the KMO test and Bartlett's Spherical Formation test to confirm the suitability of the correlation matrix for the creative environment test tool were judged to be suitable for factor analysis. According to Lee (2002), if the KMO value is .90 or higher, it is considered to be good for factor analysis. If it is .80 or higher, it is considered to be good for factor analysis, while if it is .70 or more it is appropriate for a factor analysis. The results of the final exploratory factor analysis are as follows (Table 4).

Table 4. Exploratory Factor Analysis Results for the Creative Environment Test

	Factor		1	2	3	4
	Creative	1		.789		
	Home	2		.559		
	Environment	3		.609		
		4		.654		
		5		.725		
Creative		9		.405		
Environment		10		.346		
		12				.410
		13				.508
		14				.426
		15				.733
		16				.695
		17				.609
	Creative	1			-.420	
	School	2			-.465	
	Environment	6			-.917	
		7			-.424	
		9			-.424	
		10	.522			
		11	.683			
		14	.629			
		15	.726			
		16	.722			
		17	.534			
		18	.590			
Eigen Value			6.372	2.260	1.207	1.403
Common Variance (%)			23.598	8.369	4.470	5.197
Cumulative Variance (%)			23.598	31.968	36.438	41.635
	KMO and Bartlett sphericity					
	Kaiser-Meyer-Olkin Measure of Sampling Adequacy				.855	
	Bartlett's test of sphericity		Approx. Chi-Square		3112.291	
			df		351	
			Sig.		.000	

The KMO test of this study was .855, which is higher than the 0.6 needed according to the suitability standard; furthermore, the correlation matrix of the question for the creative environment measurement is consistent with the factor analysis. Of the 38 questions used in the creative environment test, 13 questions were based on the creative home environment, and 14 questions were based on the creative school environment.

Confirmatory factor analysis

In this study, a confirmatory factor analysis was conducted to verify the validity of the creative environment measurement tool. To verify the difference between the theoretically assumed model and the sampled research model, the parameter was estimated using the maximum likelihood method. In addition, the fitness index of this study is the IFI, CFI, and TLI, which should be close to or above .90, and RMSEA which should be below .08. Our results of the fitness index are suitable for model matching (Table 5).

Table 5. Fitness Indices for Self-directed Learning Ability Test

	χ^2	df	IFI	TLI	CFI	RMSEA
research model	641.998	289	.908	.895	.907	.060
recommended standard			>0.9	>0.9	>0.9	<.08

When verifying the model fit of this study, the IFI was .908, TLI was .895, and CFI was .907, which was close to or above the recommended standard .90. In addition, RMSEA is less than the recommended standard of .08, thereby meeting the theoretical model.

In this study, we developed a creative environment test and tried to confirm its validity. To secure the validity, we compared the parameter estimate and confirmed the concept's reliability. The parameter estimates are as follows (Table 6).

Table 6. Fitness Indices for the Creative School Environment Test

Domain	Item	*B*	β	*S.E.*	*CR*	*C.R.*	*AVE*
Creative Home Environment	CHE9←CHPCS	.890	.634	.073	12.235***	.947	.783
	CHE5←CHPCS	.928	.737	.063	14.664***		
	CHE4←CHPCS	.822	.537	.083	9.890***		
	CHE3←CHPCS	.878	.685	.065	13.449***		
	CHE2←CHPCS	.773	.653	.061	12.690***		
	CHE1←CHPCS	1	.862				
	CHE17←CHPS	1.367	.715	.159	8.580***	.951	.798
	CHE16←CHPS	1.409	.757	.160	8.798***		
	CHE15←CHPS	1.336	.750	.152	8.766***		
	CHE14←CHPS	1.165	.613	.147	7.916***		
	CHE13←CHPS	1.117	.557	.128	8.758***		
	CHE12←CHPS	1	.514				
Creative School Environment	CSE9←CSPCS	1.706	.772	.185	9.243***	949	.790
	CSE8←CSPCS	1.492	.718	.167	8.931***		
	CSE6←CSPCS	1.452	.635	.174	8.340***		
	CSE3←CSPCS	1.296	.662	.152	8.552***		
	CSE2←CSPCS	1.041	.517	.143	7.287***		
	CSE1←CSPCS	1	.529				
	CSE17←CSPS	1.661	.719	.188	8.858***	.958	.821
	CSE16←CSPS	1.278	.661	.151	8.466***		
	CSE15←CSPS	1.814	.814	.194	9.364***		
	CSE14←CSPS	1.654	.762	.182	9.099***		
	CSE13←CSPS	1.560	.717	.176	8.846***		
	CSE12←CSPS	1.338	.658	.158	8.449***		
	CSE11←CSPS	1.315	.649	.130	10.088***		
	CSE10←CSPS	1	.506				

In the measurement model of this study, the reliability and validity were confirmed to ensure that the measurement items, which are observation variables, properly reflected the factors. The study also confirmed whether each standardization coefficient was significant according to the method of Fornell and Larcker (1981), and confirmed whether the standardization coefficient was 0.7 or higher, with a concept reliability of .7 or more. In addition, to confirm the convergent validity, the variance mean AVE was more than .5 and the correlation coefficient between factors was smaller than the square root of AVE, which confirmed the discriminant validity. The standardization coefficient was stable at around .5, the CR (concept reliability) showed the recommended standard value of .7 or higher (in the range between .947 and .958), and the average dispersion extraction AVE showed the recommended standard value .5 or higher (in the range of .783 to .821), proving the reliability of the development tool. In the confirmatory factor analysis of this study, the non-standardization coefficient model and the standardization coefficient model of the creative environment test are the same as seen in Figures 1 and 2.

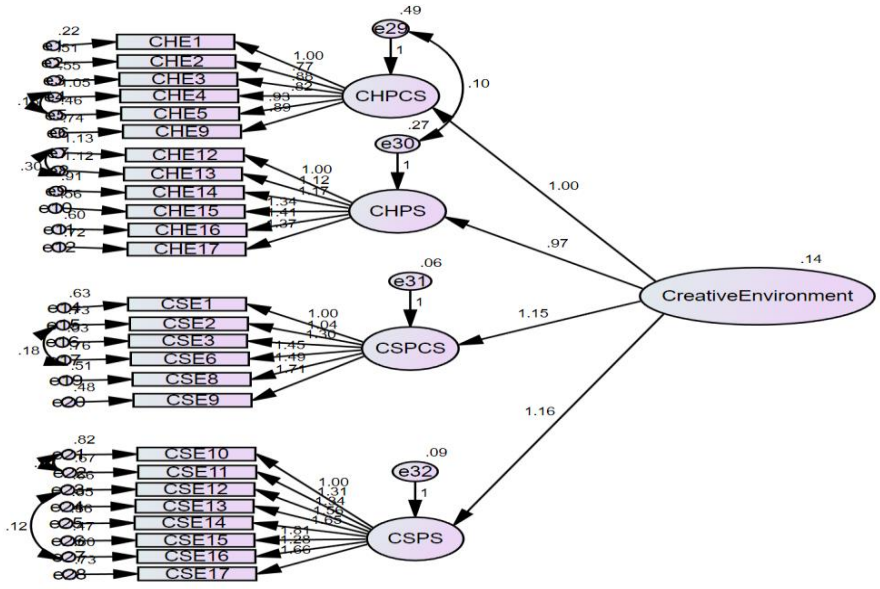

Figure 1. Unstandardized Coefficient

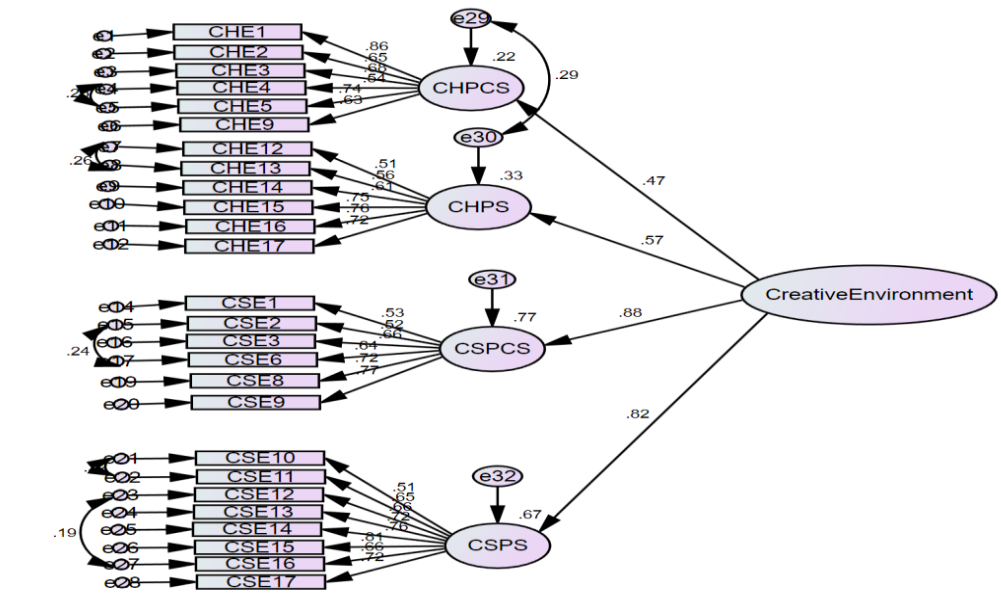

Figure 2. Standardized Coefficient

Discriminant validity between factors in the measurement tool

The correlation matrix of this study is as follows (Table 7). First, the correlation coefficients of each factor and AVE were compared with the correlation coefficients of the factors in the measurement tool.

Table 7. Discriminant Validity for the Creative Environment Test

	CHPCS	CHPS	CSPCS	CSPS
CHPCS	.783			
CHPS	.229	.798		
CSPCS	.211	.222	.790	
CSPS	.116	.252	.516	.821

Note: diagonal line is the AVE square root

The diagonal of the matrix table is the AVE value, which is larger than the correlation coefficient square of each factor when compared with the correlation square; therefore, the discriminant validity between the factors in the creative environment can be proved.

Table 8 shows the results of verifying the cross-validity of different genders across factors.

Table 8. Cross-validity of Finalized Items (Gender)

Model		*df*	*IFI*	*TLI*	*CFI*	*RMSEA*	
1	Unconstrained	578	.865	.845	.863	.053	
2	Measurement Weights	600	.862	.849	.860	.052	$\Delta\chi^2$= 31.432, df=22 p>0.05
3	Equivalent covariance	581	.865	.847	.863	.053	$\Delta\chi^2$= 1.496, df=3 p>0.05
4	Structural covariances	604	.860	.848	.858	.052	$\Delta\chi^2$= 42.425, df=26 P<0.05
5	Measurement residuals	640	.853	.850	.852	.052	$\Delta\chi^2$= 103.173, df=3 P<0.05

To verify whether the creative environment measurement tool of this study equally recognizes the main variables according to gender, the measurement identity test was conducted using a multiple group confirmatory factor analysis. As a result of examining the cross-validity between groups for gender, the study constructed a morphological homogeneity model without restrictions between groups, a measurement homogeneity model with constraints with the same factor coefficients, and a factor covariance homogeneity model with constraints with the same factor covariances, and then compared the differences between the overall fitness indexes at each stage. In the multi-group confirmatory factor analysis, it was confirmed that the measurement homogeneity of the factor coefficient between the latent variable and the measurement variable was secured, as well as the model form for gender.

Finalized items and reliability

The questionnaire's composition table and the reliability of the final question for the creative environment measurement tool are given in Table 9.

Table 9. Reliability of Finalized Items

Domains	Factor	Variable content	Item Number	Cronbach α
Creative Home Environment	Psychological support Environment	Parents encourage and support creative ideas. Parents are also creative role models.	1~6	.804
	Physical support Environment	It gives children free time and space to exhibit creative products. It gives them a chance to experience creative things.	7~13	.759
Creative School Environment	Psychological support Environment	Encourages children to think creatively, respects their creative opinions	14~18	.718
	Physical support Environment	Provides free time and space; offers a variety of experiences.	19~27	.875
	Total		27	.882

Final items about creative environments

The final items developed and validated in this study are presented in Table 10.

Table 10. Finalized Items of the Creative Environment

item		Not at all (1)	Not very much (2)	Normal (3)	Generally agree (4)	Very agree (5)
1	My parents respect my opinions.	**1**	**2**	**3**	**4**	**5**
2	My parents give me the authority to choose my own priorities when looking for a job.	**1**	**2**	**3**	**4**	**5**
3	My parents allow me to enjoy my hobby as much as I want.	**1**	**2**	**3**	**4**	**5**
4 (-)	My parents say "no" to everything first.	**1**	**2**	**3**	**4**	**5**
5	My parents give me time to decide on something for myself.	**1**	**2**	**3**	**4**	**5**

6	My parents encourage me to come up with a lot of creative ideas.	**1**	**2**	**3**	**4**	**5**
7	There is a space in my house where I can display the things I make.	**1**	**2**	**3**	**4**	**5**
8	In my house, there are many magazines, books, and materials related to the field I am interested in.	**1**	**2**	**3**	**4**	**5**
9	There are many things in my house that arouse my curiosity.	**1**	**2**	**3**	**4**	**5**
10	There is a means or way to express any new idea that comes to mind.	**1**	**2**	**3**	**4**	**5**
11	As a family, we enjoy a variety of hobby activities together.	**1**	**2**	**3**	**4**	**5**
12	My parents always try new things with a sense of challenge.	**1**	**2**	**3**	**4**	**5**
13	Some of our family members and relatives are well-informed when it comes to unique and new ideas that are different from others.	**1**	**2**	**3**	**4**	**5**
14	At school, my teacher respected me no matter what I said.	**1**	**2**	**3**	**4**	**5**
15	In class, students were allowed to choose their own learning or problem-solving methods.	**1**	**2**	**3**	**4**	**5**
16	The teachers tended to try new and challenging things related to the class.	**1**	**2**	**3**	**4**	**5**
17	At school, some teachers were good at thinking brilliantly .	**1**	**2**	**3**	**4**	**5**
18	The teachers tended to value creative achievements.	**1**	**2**	**3**	**4**	**5**
19	The school had a space where students could display their creations.	**1**	**2**	**3**	**4**	**5**
20	There was a workspace in the school where students could engage in creating new things.	**1**	**2**	**3**	**4**	**5**
21	There were programs at school where students could explore magazines, books, and materials in their areas of interest.	**1**	**2**	**3**	**4**	**5**
22	Schools were able to find places that could stimulate curiosity or give insight.	**1**	**2**	**3**	**4**	**5**

23	The school had materials and equipment that students could use to express their new ideas.	**1**	**2**	**3**	**4**	**5**
24	The school had various spaces for challenging activities, providing an appropriate environment for trying new things.	**1**	**2**	**3**	**4**	**5**
25	The school was equipped with teaching materials to find books or materials in related fields in consideration of the students' curiosity and interest.	**1**	**2**	**3**	**4**	**5**
26	In the classroom, students were free to move around so that they could have as many experiences as possible.	**1**	**2**	**3**	**4**	**5**
27	The school provided an environment in which students could share new and diverse information and materials.	**1**	**2**	**3**	**4**	**5**

Discussion and Conclusions

This study aimed to develop a tool to measure the creativity in home and school environments, and to verify the validity of the said tool. Therefore, this study is designed to simplify the measuring of the creative environment by integrating the existing creative home environment into the creative school environment.

This creative home environment contains both psychological and physical support. The psychological support environment allows children to positively recognize creativity by encouraging interactions and creativity among parents and children and producing creative outputs in the context of developing and improving creativity. Through the provision of this kind of support, children recognize the importance of creating, learning from parents who are creative, and showcasing creativity in their everyday life. In addition, the physical aspect of a creative home environment provides children with free time, a space to exhibit their work, and opportunities to have creative experiences.

Similarly, a creative school environment consists of psychological and physical support environments. Like the creative home environment, it is an environment that encourages teachers to think and act creatively in class, and fosters students' ability to think, speak, and act creatively. Teachers can also stimulate creativity by supporting students in creatively solving problems that they encounter during discussion activities or projects. Furthermore, the physical environment of a creative school environment ought to provide the tools, materials, and space for students to express their creativity. In addition, it provides time for students to think

creatively, and provides a space for them to exhibit their creative outputs.

This study aimed to develop a measurement tool for creative environments by integrating a creative home and school environment, such that children and students can develop and improve their creativity levels in different contexts.

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