The Impact of the Creative Atmosphere of a Group and Individual Motivation on a University Student's Creative Personality

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Abstract

The objective of this study is to explore the impact of the creative atmosphere that fall under a group's characteristics and the motivations that fall under the individual learner's characteristics on a university student's creative personality. The results of the research show that of the creative atmosphere, as motivation and enjoyment increases by 1, individual creative personality increases by 2.814, and of individual motivations, as external motivations increased by 1, individual creative personality increased by 2.341. Therefore, to improve the creative personalities of university students in the future, this study suggestions developing group-based educational programs and utilizing strategies to induce external motivation.

Keywords: Creative atmosphere of a group, Individual motivation, Creative personality of a university student, Creativity education

1. Introduction

Today's social environment demands creativity more than any other ability, and because of this, the role of university education has become to cultivate creative talents [1]. In fact, creative contribution is not only socially valuable but as it also can be an important advantage for individuals, it can be claimed that it is natural for universities to strive to improve the creative abilities of students [2]. In addition, many organizations have recently introduced a teamwork-based system to improve the effectiveness and efficiency of work tasks [3][4], and there is increasing interest on the effect of the group's creative atmosphere on individual creativity [5][6][7]. However, it is difficult to find research regarding the group's and individual's characteristics and individual creativity. Therefore, this study seeks to explore the creative atmosphere, related to group characteristics, and how motivation influences individual creative personalities, related to the learner's individual characteristics.

2. Research content and method

2.1. Research target

The research targets of this study were 112 students attending the 2 general education classes on creativity in 2016 from N University. The general characteristics of the research targets are presented in [Table 1]. These students participated in group activities since March.

Data collection was conducted in the first week of June 2016. Individual creativity tests, individual motivation tests, and group creative atmosphere tests were conducted without a time limit as a self-examination test.

Table 1. Characteristics of research target

Major	N(%)	Year	N(%)	Gender	N(%)
Humanities	36(32.2)	1	33(29.5)	Male	71(63.4)
Health and Medicine	26(23.2)	2	27(24.1)	Female	41(36.6)
Sciences & Engineering	25(22.3)	3	20(17.9)	Total	122(100.0)
Creative Arts	25(22.3)	4	32(28.6)		
Total	112(100.0)	계	112(100.0)		

2.2. Research tools

2.1.1. Group atmosphere of a group

For the creative atmosphere of a group, the recent version of the Creative Climate Questionnaire developed by Ekvall, the Situational Outlook Questionnaire (SOQ) was utilized [8]. Based on the measured results, a factor analysis was performed among the 16 questions. The results and reliability of the rotated factors are presented in [Table 2], and the group creative atmosphere sub-factors are re-named for each question.

Table 2. Factor analysis results and reliability of group creative atmosphere test

Question Number	Renaming	Cronbach α
1, 3, 4, 5, 10, 15	Support·Trust	.881
2, 7, 9, 12, 13, 14, 16	Motivaion·Enjoyment	.876
6, 8, 11	Communication	.887

2.2.2. Individual motivation

The Work Preference Inventory, developed by Amabile et al. to evaluate the motivations of children, was adapted to fit the Korean situation [9]. Based on the measured results, factor analysis was performed on 22 questions. The results and reliability of the rotated factors are presented in [Table 3], and the sub-factors of individual motivation are renamed according to its question number.

Table 3. Factor analysis results & reliability of individual motivation test

Question Number	Renaming	Cronbach α
2, 5, 6, 8, 9, 10, 14, 16, 18, 20, 22	Internal Motivation	.863
1, 3, 4, 7, 11, 12, 13, 15, 17, 18, 21	External Motivation	.824

2.2.3. Individual creative personality

In order to measure creative personality, we used a questionnaire developed to measure the creative personality of university students [10]. Based on the measured results, a factor analysis was performed on 35 questions. The results and reliability of the rotated factors are

presented in [Table 4], and the sub-factors of individual creative personality were renamed for each item. Introversion, emotional instability, and isolation were modified to extroversion, emotional stability, and connectivity due to reverse scoring.

Table 4. Factor analysis results & reliability of individual creativity test

Question Number	Renaming	Cronbach α
1, 2, 4, 7. 8, 12, 19 20, 21, 23, 25	Openness	.870
3, 5, 6, 24	Task Commitment	.896
9, 10, 13, 14, 15, 16, 17, 26, 29, 33	Sociability	.836
27, 30, 34, 35	Self-Conviction	.865
11, 18, 22, 31, 32	Independence	.818

2.3. Method of analysis

The group's creative atmosphere, individual motivation, and individual creative personality are interval scales. A multiple regression analysis using optimal scaling was conducted to determine the effects of a group's creative atmosphere and individual motivation on the individual creative personality. In addition, a multiple regression analysis was performed to analyze the effect of the sub-factors of a group's creative atmosphere and individual motivation on individual creative personalities. The analysis was processed using SPSS 23.0 for Windows.

3. Analysis results

3.1. Influence of group's creative atmosphere and individual motivation on individual creative personality

The mean and standard deviation of the group creative atmosphere of university students, individual motivation, and the creative personality of university students are presented in [Table 5]. The results of examining the correlation between the independent variable of group creative atmosphere and individual motivation show no correlation of .090, thus no problems of multicollinearity were present.

Table 5. The mean and standard deviation of the group creative atmosphere, individual motivation, and individual creative personality

Category	N	Mean	Standard Deviation
Group's Creative Atmosphere	112	58.20	4.28
Individual Motivation	112	64.15	6.71
Individual Creative Personality	112	113.87	12.32

A regression analysis was conducted to test the effect of individual motivation of university students and group atmosphere of creativity of university students on creative personality (see [Table 6]) First, the coefficient of determination (R^2), which is one of the measures of how well the estimated regression lines fit the observed values from the sample data, is .096. In other words, the regression analysis reveals that 9.6% of the variation of individual creative personality, which is a dependent variable, is explained by the independent variable of individual motivation and the creative atmosphere of university students. Next, the F value of the regression model of creative atmosphere was 3.223 and judged to be significant.

As tolerance values are all 0.1 or above, and the variance inflation factor (VIF) values are all smaller than 1.0, this means there is no multicollinearity. In addition, the Durbin-Watson value was 1.884, satisfying the independence assumption, and the results of examining the scatter plot and P-P plot showed they satisfied the homoscedasticity and linearity.

Table 6. Regression analysis results of the group creative atmosphere and individual motivation's creative personality

Category	β value	Standardized β value	F	Multicollinearity Statistic	
				Tolerance	VIF
Constant term	56.157	-	3.130**	-	-
Creative Atmosphere	.848	.295	3.223**	.992	1.008
Individual Motivation	.131	.071	.777	.992	1.008
*p<.05 **p<.01 ***p<.001					

The result of this analysis, the multiple regression equation is expressed by the standardized β coefficient (standardized β value) as follows.

$$Y(Individual\ Creative\ Personality) = 56.157 + .848X_1(Group\ Creative\ Atmosphere)$$

The creative atmosphere of the group is significant when other variables are included in the regression equation. In addition, as the sign is positive (+), it can be said that the higher the creative atmosphere of the group, the higher the creative personality of the individual. If the other variable values are the same, as the creative atmosphere of the group increases by 1, the individual creative personality increases by .848. However, individual motivation is not significant when other variables are included in the regression equation.

3.2. Effect of group creative atmosphere and individual motivation's sub-factors on individual creative personality

[Table 7] shows the constituent factors of university students' group creative atmosphere of support, trust, challenge, enjoyment, and communication, the constituent factors of individual motivation of internal motivation and external motivation, and the mean and standard deviation of the dependent variable of creative personality.

Table 7. Constituent sub-factors of creative atmosphere and individual motivation and the mean and standard deviation of creative personality

Sub-factor	N	Mean	Standard Deviation
Support·Trust	112	23.0982	1.42664
Challenge·Enjoyment	112	24.4196	3.03623
Communication	112	10.6786	2.41696
Internal Motivation	112	33.8125	3.82154
External Motivation	112	30.3393	5.45672
Individual Creative Personality	112	113.8661	12.32115

First, the coefficient of determination (R²), which is one of the measures to measure how well the estimated regression line fits the observed value from the sample data, is .173. In other words, the regression analysis shows that 17.3% of the variation of the creative personality, the dependent variable, is explained by the independent variables of support and trust, challenge and pleasure, communication, internal motivation, and external motivation. Next, the F value of the challenge and pleasure regression model is 2.814, and the F value of the external motivation regression model is 2.341, all of which were found to be significant. In order to investigate the collinearity more rigorously, we examined the tolerance limits and the variance inflation factors (see [Table 8]) Tolerance values are all 0.1 or higher, and the variance inflation factor (VIF) values are all smaller than 1.0, meaning it can be seen that there is no multicollinearity. In addition, the Durbin-Watson value was 1.884, satisfying the independence assumption, and the degree of scattering and the P-P plot were examined and showed it satisfied homoscedasticity and linearity.

Table 8. Regression analysis results of constituent sub-factors of group creative atmosphere and individual motivation on individual creative personality

Category	β Value	Standardized β Value	F	Multicollinearity Statistic	
				Tolerance	VIF
Constant term	56.706		2.671**		
Support·Trust	1.319	.153	1.678	.942	1.062
Challenge·Enjoyment	1.035	.255	2.814**	.951	1.051
Communication	.412	.081	.900	.970	1.031
Internal Motivation	.508	-.157	-1.745	.958	1.043
External Motivation	.468	.207	2.341*	.996	1.004
* p<.05 ** p<.01 *** p<.001					

The result of this analysis, the multiple regression equation is expressed by the standardized β coefficient (standardized β value) as follows.

$$Y(individual\ creative\ personality) =$$

$$56.157 + 2.814X_1(challenge·enjoyment) + 2.341X_2(external\ motivation)$$

Of the sub-factors of group creative atmosphere, challenge enjoyment and one of the sub-factors of individual motivation, external motivation, were significant when other variables were included in the regression equation. Also, as the sign is positive, the higher the challenge enjoyment and the higher the external motivation, the higher the individual creative personality. If the other variables are equal, as the challenge enjoyment increases by 1, the individual creative personality increases by 2.814, and as external motivation increases by 1, the individual creative personality increases by 2.341. However, support trust, communication, and internal motivation are not significant when other variables are included in the regression equation. As a result of comparing of the standardized coefficients (standardized β value), it can be seen that of the group creative atmosphere, challenge·enjoyment, followed by external motivation, has the greatest influence on individual creative personality.

4. Conclusions

As the creative atmosphere of the group increases by 1, the creative personality of the individual increased by as much as .848, and as the motivation/enjoyment increased by1, the creative personality of the individual increased by 2.814. In addition, of the individual motivations, when external motivation increased by 1, the creative personality of the individual increased by 2.341. Contrasting with previous research that reported internal motivation explained most aspects of creativity, it can be said that Korean university students are influenced by external motivations. In addition, although previous studies viewed creative atmosphere as a factor inducing internal motivation, the results show that activities provided to group members to 'encourage motivation and enjoy creating creative ideas' stimulate external motivation and impacts the increase of creative personalities. Therefore, to improve the creative personalities of university students in the future, this study suggestions developing group-based educational programs and utilizing strategies that induces external motivation.

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