
RELATIONSHIP BETWEEN CREATIVITY, INTELLIGENCE AND SELECTED SOCIO- DEMOGRAPHIC VARIABLES¹

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Is creativity related to intelligence? What about socio-demographic variables like age, sex, socio-economic status and the like? Torrance (1967) concluded from a review of literature that the best estimate of the correlation between creativity and intelligence was about .20 when verbal IQ measures are employed and .06 when non-verbal intelligence measures are employed. Getzels and Jackson (1962), Socrates (1980), Walloch and Kogan (1965), Urbina (1972), Steiner (1987), and Torrance (1967) for example found that creativity is relatively independent of intelligence. However, Chadha and Sen (1981), Lualhati (1978), Sanchez (1984) Nguyen (1970), Kogan and Pankove (1974), Socrates (1988), Seltz (1964) in Lindgren (1983), and Parrot and Strongman (1985) all reported positive correlations between IQ and creativity. Phatack, Passi, Sharma (in Jarial 1981) reported similar results as Chadha and Sen (1981), while Mehdi, Raina, Phatima and Bedi in Jarial (1981) noted a slight negative relationship between creativity and intelligence among an urban population. They were not able to establish any significant relationship between creativity and intelligence. These conflicting findings only seem to suggest that IQ cannot be relied upon as a sole predictor of creative performance in school.

With respect to cognitive characteristics, Ausubel (1969) found the highly creatives to be perceptive, insightful, original, independent in judgement, open to new experiences, skeptical, verbally facile,

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flexible, open-minded, tolerant of ambiguities, wide-ranging in interest, preferring complexity, less interested in small details and in the practical or concrete, and more interested in theoretical ideas and symbolic transformations. He claims that these findings agree with those of Drevdahl (1956), Drevdahl and Cattell (1958) and Mackinnon (1960, 1961, 1962).

Taylor and Barron (1963) likewise noted that the creatives are mentally quick, alert and talkative while Socrates (1988) observed that they tend to receive more scholarship and academic honors; to be elected to school office; have high scholastic aptitude for college work, are better in abstract reasoning in Science and English; and better in the production of well-integrated imaginative stories.

Johnson's study (1985) examined stages of cognitive development and the IQ differences in creative thinking potential among children from the preoperational, concrete operational and early formal operational stages. Significant stage main effects were found for verbal fluency, verbal originality and figural elaboration; significant interaction effects were found for figural fluency and figural flexibility. The results suggest that certain indicators of creative thinking potential may follow U-shaped developmental patterns starting from the appearance of behavior, a later decline or absence of that behavior and then into subsequent reappearance.

This paper tries to examine further the veracity of earlier findings that being "intelligent" does not necessarily mean being "creative" or vice-versa. It also attempts to explore relationships existing among certain socio-demographic variables (i.e., age, sex, place of origin, curriculum year, school type, satisfaction with academic training, parents' education, occupation and family income, socioeconomic status) and creativity.

Sample

The Ss of this study were 482 graduate and undergraduate students enrolled in five institutions - Ateneo de Manila University, De La Salle University, Mindanao State University, Philippine Normal College and University of the Philippines during the schoolyear 1987-88. They were selected by a group of 47 nominators (on the basis of creative output) to participate in a study on creativity. Their mean age was 19.5 years with 210 or 43.67% males

and 272 or 56.47% females. They were distributed across 13 fields of specializations (see breakdown in Table 1).

Table I - Frequency and Percentage Distribution of Respondents by Sex and Broad Areas of Specialization

Area	Male		Female		Total	
	No.	%	No.	%	No.	%
Architecture	9	1.9	11	2.3	20	4.1
Behavioral Sciences (Psycho, Philo, Hist)	9	0.6	32	6.6	35	7.3
Commerce (Bus.Mgt/ Acctg/Mktg/Econ)	22	4.6	24	5.0	46	9.5
Computer Science/ Computer Eng'g.	51	10.6	27	5.6	78	16.2
Communication Arts/ Languages	10	2.1	8	1.7	18	3.7
Education	9	1.9	61	12.7	70	14.5
Engineering	35	7.3	4	0.8	39	8.1
Fine Arts	14	2.9	7	1.5	21	4.4
Home Economics	2	0.4	22	4.6	24	5.0
Mass Communications	11	2.3	9	1.9	20	4.1
Math/Statistics	5	1.0	19	3.9	24	5.0
Music/Theater Arts	14	2.9	9	1.9	23	4.8
Natural Sciences (Bio, Zoo, Physics, Chem, Agri)	15	3.1	26	5.4	41	8.5

Professional Group (Mixed)	10	2.1	13	2.7	23	4.8
Total	210	43.6	272	56.4	482	100

Instruments & Procedure

To obtain data on the student's creative potential, intellectual capacity and socio-personal background, the following instruments were administered: (1) Torrance Test of Creative Thinking Figural B; (2) Cattell's Culture Fair Intelligence Test Scale 3 Form A and (3) Students Information Sheet.

The administration of the above instruments came only after the Ss had been identified by the 47 nominators. Data were subjected to computer analysis. Pearson r was used to establish relationships between creativity and socio-demographic and intellectual variables. Analysis of variances were done using the T-test. T-tests indicated whether differences between two groups were significant.

Intelligence Profile

The CFIT Scale was administered on the subjects in order to get their IQs. This section presents the results of that measure.

Table II - Data Obtained for Subjects on CFIT Scale 3-A

Sample	N	X	IQ	S.D.	PR*
Architecture (Arc)	20	30.60	128	4.27	96
Commerce (Com)	47	30.25	124	4.08	93
ComSci/ComEng'g (CS/CE)	78	31.96	131	3.75	97
ComArts/Lang (CA/LA)	18	24.44	106	5.84	65
Education (Ed)	70	26.91	116	5.08	84
Engineering (Eng'g)	39	31.35	128	4.51	96
Fine Arts (FA)	21	29.09	121	4.64	90
Home Econ (HE)	24	27.37	116	4.48	84
Mass Comm (MC)	20	31.30	128	3.37	96
Math/Stat (Math)	24	29.70	124	4.72	93
Music/Theatre Arts (Mus)	23	27.47	116	5.50	84

Nat Sciences (NS)	41	28.36	117	5.88	86
Beh Sciences (BH)	35	25.71	113	6.25	79
Professional Group (PG)	23	26.82	116	4.66	84

Based on CFIT Scale 3-A and as shown in Table II and Figure 1, the average IQs of sample groups range from 106-131. The Computer Science/Computer Engineering majors seem to be the most intelligent with an average IQ of 131 (PR = 97). Closely following are the students of the colleges of Architecture, Engineering and Mass Communications with an average IQ or 128 (PR = 96) each. The rest, in descending order have the following average IQs: Mathematics/Statistics and Commerce, 124 (PR = 93); Fine Arts, 121 (PR = 90); Natural Sciences, 117 (PR = 86); the Professional Group, Music/Theatre Arts, Home Economics and Education Students, 116 (PR = 84); Behavioral Sciences 113 (PR = 79) and Communication Arts/Languages, 106 (PR = 65). On the whole, the research samples' IQs based on their performance on CFIT Scale 3-A is above average.

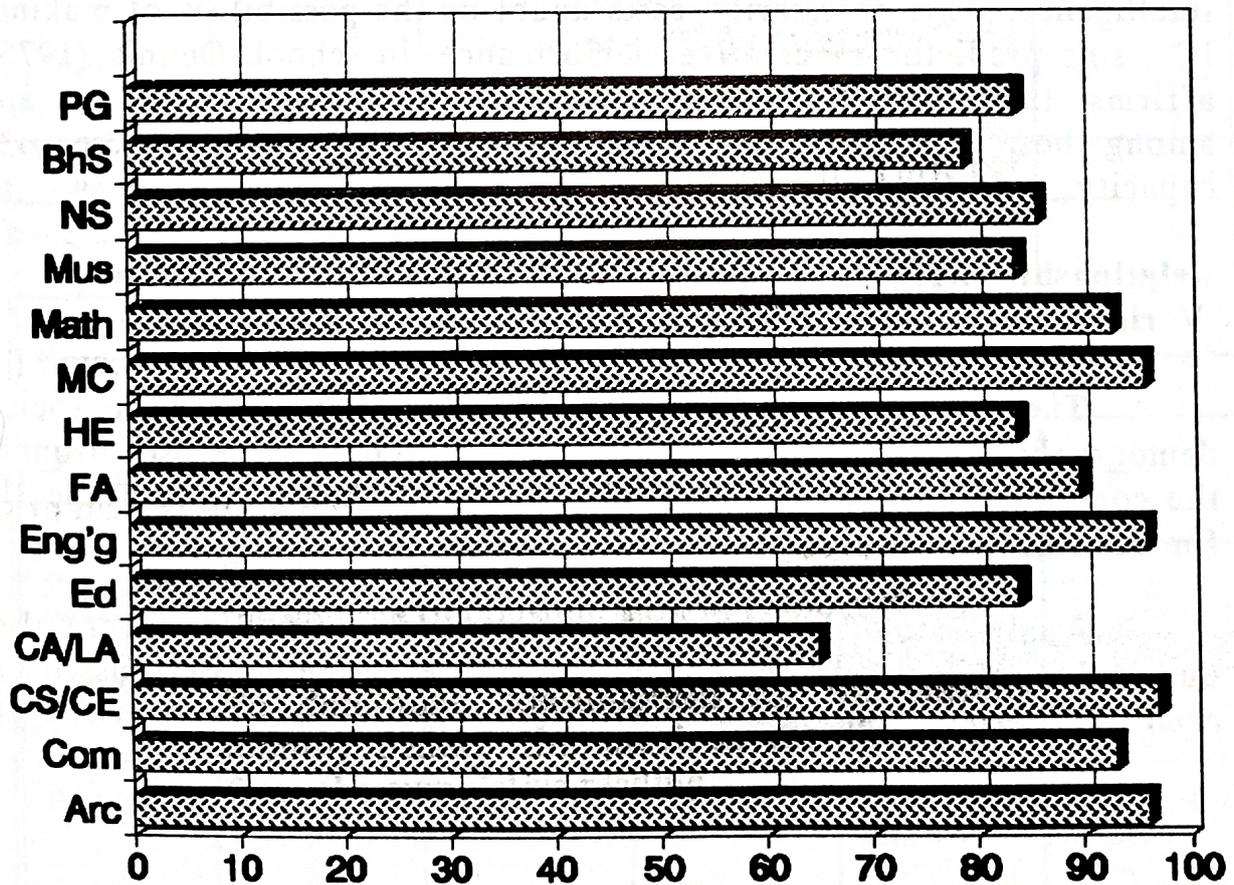


Fig. 1 - CFIT scores of the Research Sample

Relationship Between Creativity and Intelligence

Pearson r 's between the subjects' creativity scores on the TTCT and intelligence scores on the CFIT were computed to determine the relationship between these two variables.

As shown in Table III a significant positive relationship was registered between CFIT score and originality among Computer Science students, and between CFIT score and elaboration among Engineering students as well as the whole sample.

The findings indicate that the more creative individual in this study is also more intelligent, especially as far as the ability to develop, embroider, embellish or carry out elaborate ideas is concerned. Similar results can be seen in Johnson (1985), Urbina (1972), Chadha and Sen (1981), Lualhati (1978), Sanchez (1984), and Socrates (1988) among others. However, Paget (1980) Mehdi, Raina Phatima & Bedi in Jarial (1981), Wallach and Kogan (1965) failed to establish any significant relationship between creativity and intelligence. This necessarily casts doubt on the possibility of making IQ a sole predictor of creative performance in school. Dennis (1975) affirms that while it remains true that creative individuals are among those with high intelligence, the relationship between creative capacity and IQ is not straightforward.

Relationship Between Creativity and Some Socio-Demographic Variables

The relationships between the TTCT scores and the socio-demographic variables under study were determined likewise through the computation of Pearson r 's. Results are summarized in Table III for each of the group and for the whole sample.

Analyses of variance through the F-tests and T-test were also undertaken. Results of these analyses are presented and discussed in each appropriate section.

Table III - Significant Correlations Obtained at $P < .01$ Between Creativity and Socio-demographic Variables and Intelligence by Sample Groups and All Combined

	FLU (r)	FLEX (r)	ORIG (r)	ELAB (r)	TOTAL(r)
Archi	-	-	age -.67	-	-
Commerce	-	-	-	family income -.40	-
CA/Lang	-	school .73	school -.57 mother's educ .55 mother's occpn .58	father's educ .57 mother's occpn .57	father's educ .61 mother's occpn .61
Computer Science	-	-	sex -.36 age .30 CFIT .38	-	sex -.28
Education	-	-	-	SES .29 school -.54	school .38
Eng'g	-	-	school .52 satis w/ academic trng -.45	SES .42 school -.54 sex .43 CFIT .42	-
Fine Arts	-	-	-	-	-
Home Eco	mother's educ .52	mother's educ .52	-	-	-
Mass Com	-	-	-	-	-
Math/Stat	-	-	age .48	-	-
Music	satisfactory w/acad trng -.59	-	school .49	-	-
Natural Sciences	place of origin -.27	age -.45 year -.51	-	family income .52	-
Behavioral Sciences	-	-	-	SES .42 family income .52	-
Prof Grp	-	-	-	SES .43 father's educ .60 mother's occpn .55	SES .50 father's educ .68 mother's occpn .56

All	year -.13	age -.18	year. -.17	CFIT .12 father's occpn .21 father's educ .24 mother's educ .17 mother's occpn .22 family income .15 SES .17	year -.13
Combined		year -.19			father's occpn .16 father's educ .16 mother's educ .16 mother's occpn .16 SES .13 family income .10

Age

Positive relationships were registered between age and originality among the Computer Science and Math groups. Negative correlations were registered between age and originality among the Architecture group and with flexibility among the Natural Science group. Considering the whole sample, a negative relationship was registered between age and the dimension of flexibility.

Similar findings are shown by the results of the ANOVA (Table IV) which yielded significant differences by age in the dimensions of fluency and flexibility.

These findings indicate that among certain disciplines, specifically Mathematics and Computer Science, the older subjects tend to be more original. However, among the Architecture students, the younger ones are the more original.

Generally, however, across specializations, it seems that the younger subjects in this study are the more creative, especially in the dimension of flexibility. It seems they are more able to produce a variety of ideas, to shift from one approach to another, or to use a variety of strategies than their older counterparts.

Acharyulu's (1984) study found a statistically significant age by sex disordinal interaction and the effect of age on creativity was positive for boys and negative for girls. Mari & Karayani (1982) likewise report a significant interaction between age levels and sex differences. It was found that the older children become, the less they maintain attitudes conducive to the expression of creative potentialities. The younger the children are (within school age) the more ready and openminded they are to accept the new and to involve in "non-predetermined result" activity.

Sex

Sex correlated positively with elaboration among Engineering students but correlated negatively with originality and TTCT score among Computer Science students. No other significant relationships were registered, either positively or inversely, with the other dimensions of creativity or among the other groups being studied.

Table IV - One-Way Analysis of Variance by Age

Creativity Dimension	Source of Variation	D.F.	Sum of Squares	Mean Squares	F-ratio	F Prob.
Fluency	Between groups	4	498.8475	124.7119	3.375	0.0097
	Within groups	476	17568.8779	36.9094		
	Total	480	18067.7227			
Flexibility	Between groups	4	628.1458	157.0365	6.289	0.0001
	Within groups	476	11886.0254	24.9706		
	Total	480	12515.1680			
Originality	Between groups	4	618.6031	154.6508	0.971	0.4199ns
	Within groups	476	75371.3020	158.3431		
	Total	480	75989.8750			
Elaboration	Between groups	4	4539.0441	1134.7610	0.859	0.4884ns
	Within groups	476	628746.3086	1320.8955		
	Total	480	633285.3125			
Total	Between group	4	24072.9747	6018.2422	1.834	0.1212ns
	Within groups	476	1562378.3750	3282.3074		
	Total	480	1586451.0000			

Again, the foregoing results are borne out by the T-test results, showing a significant T-value of 2.16 ($p < .05$) between the male and female samples in the originality dimensions (Table V).

Although the Engineering female students showed greater ability to elaborate, the results of this study show that the male subjects tend to be more creative than their female counterparts, especially on the other creativity dimensions, although the differences in these are not statistically significant.

Velez's (1981) study showed that although in fluency the girls get higher scores than the boys, there was no significant difference in the overall performance between the sexes on TTCT. Mari & Karayani (1982) report that among Arab subjects there is a consistent pattern of sex differences favoring males over females in both verbal and figural creativity scores. However, studies which have extended over a ten-year period in the same locale show that the gap between the sexes is gradually narrowing. Raina (1969) has found similar results in India. Her (1980) study showed that there was an absence of significant difference between the sexes on either the three dimensions on the total creativity score on the verbal form. Overall differences among the three dimensions and total scores were in favor of the girls. On the figural form, scores remained higher for girls on the three dimensions and total creativity scores. Though the differences were statistically insignificant, the boys scores edged the girls' in originality while the girls were a shade higher than the boys in flexibility. Fortez (1973), Katiyar & Harial (1985), Sinpa & Taylor (1980) and Comeau (1980) found no significant relationship between creativity and sex among their subjects. Torrance (1985) has also noted that the gap between the sexes does not exist in verbal performance as much as it does exist in figural form. Jacobvitz (1988) who investigated the relationships among specific measures of ability, creativity and motivation for a vocational-technical school population also found no significant difference in mean scores between the sexes for measures of creativity and motivation.

Table V - T-Test Results Obtained for Males and Females on TTCT Figural B

TTCT Dimension		N	Mean	SD	SE	T-Value	IF	2-tail prob
Fluency	Male	210	15.8571	6.662	0.450	1.02	480	0.309
	Female	272	15.2831	5.690	0.345			
Flexibility	Male	210	12.6619	5.629	0.388	0.55	480	0.583
	Female	272	12.4044	2.667	0.283			
Originality	Male	210	32.1429	12.301	0.849	2.16*	480	0.031
	Female	272	29.6581	12.698	0.770			
Elaboration	Male	210	78.7143	37.717	2.603	1.67	480	0.095
	Female	272	73.1434	35.021	2.123			
Total	Male	210	210.8000	49.501	3.416	1.40	480	0.163
	Female	272	133.4301	62.776	3.806			

*Significant at $p < .05$

School and School Type

The type of school where a subject is enrolled was found to correlate positively with flexibility among Communication Arts students, and with originality among Engineering and Music/Theatre Arts students. It correlated negatively with originality among the Communication Arts group, with elaboration among Education and Engineering groups, and with TTCT score among Computer Science students.

The one-way ANOVA (Table VI) shows significant differences among schools in the dimensions of originality and elaboration, with F-values of 3.03 ($p < .05$) and 16.737 ($p < .001$), respectively. Differences in total TTCT score, with F-value of 10.406 is also very significant ($p > .001$).

The T-test results (Table VII) also show significant differences between subjects from public and private schools on elaboration and total TTCT score.

The above findings indicate that creative performance varies from school to school. The students from public schools were found to be more creative than their counterparts from private schools. As far as schools are concerned, the more creative respondents are those from the University of the Philippines, De La Salle University, and Mindanao State University. This result finds confirmation in Socrates (1980) with respect to the University of the Philippines as a school where creatives abound but is contradicted in Gupta's (1978) study where pupils in private schools obtained significantly higher mean scores on the verbal creativity dimensions of fluency, flexibility, originality than their counterparts in government schools. Sharma and Naruka (1985) found their public school subjects excelling in four type of fluencies--word, ideational, associational and expressional and explain that it may be due to independence of environment prevailing in their schools as contrasted to conventionality and heterogeneity of group in intellectual calibre obtaining in other schools.

Table VI - One-Way Analysis of Variance by School

TTCT Dimension	Source of Variation	D.F.	Sum of Squares	Mean Squares	F-ratio	F-prob
Fluency	Between groups	4	111.8771	27.9693	0.742	0.5636
	Within groups	477	17975.8914	37.6853		
	Total	481	18087.7656			
Flexibility	Between groups	4	53.3415	13.3354	0.510	0.7287
	Within groups	477	12480.9263	26.1655		
	Total	481	12534.2656			
Originality	Between groups	4	1884.4836	471.1208	3.030*	0.0174
	Within groups	477	74165.3672	155.4829		
	Total	481	76049.8125			
Elaboration	Between groups	4	77950.9209	19487.7266	16.737***	0.000
	Within groups	477	555410.0977	1164.3816		
	Total	481	533361.0000			
Total	Between groups	4	127334.0662	31833.5156	10.406***	0.000
	Within groups	477	1459174.5000	3059.0659		
	Total	481	1586508.0000			

*Significant at $p < .05$

***Significant $t < .001$

Table VII - T-Test Results Obtained for TTCT Dimensions by School Type

TTCT Dimension		N	Mean	SD	EE	T-Value	DF	2-tail prob.
Fluency	Public	351	15.5442	6.189	0.330	0.06	480	0.949
	Private	131	15.5038	6.000	0.524			
Flexibility	Public	351	12.3362	4.846	0.259	-1.27	480	0.204
	Private	131	13.0000	5.732	0.501			
Originality	Public	351	30.7379	12.519	0.668	-0.01	480	0.994
	Private	131	30.7481	12.770	1.116			
Elaboration	Public	351	77.5527	38.608	2.061	1.97*	480	0.50
	Private	131	70.2595	28.633	2.502			
Total	Public	351	139.3020	62.811	3.353	2.05*	374.57	.041
	Private	131	129.5115	38.82	3.397			

*Significant at $P \leq .05$

Place of Origin

No significant correlations were yielded for this variable except for a negative relationship with fluency among the Natural Sciences students. However, ANOVA results show significant differences on elaboration and total TTCT score, with F-values at $p < .001$ and $p < .01$, respectively.

On the whole, subjects from the urban areas tended to be more creative than those who come from the rural areas. Socrates (1980) similarly reported that more of the high creative subjects in her study came from Metro Manila including Cagayan and that they gravitate to state schools particularly University of the Philippines. Parloff et al (1968) in Wallinga & Crase (1982) likewise found a larger percentage of persons in their more creative group living in metropolitan areas than their less creative group.

Socio-Economic Status

SES correlated positively with the dimension of elaboration among several specialization groups, namely Education, Engineering, Behavioral Sciences and the Professional Group.

Parents' education showed a significant positive relationship with elaboration among Communication Arts/Languages students and the Professional Group. TTCT total score was also found to correlate with parents' education among the Professional Group. Mothers' education also bear a direct positive correspondence with originality among Home Economics students. The TTCT total score also showed a positive correlation with mothers' occupation among the Professional Group.

Elaboration yielded a positive significant relation with combined family income among the Natural Sciences and Behavioral Sciences groups but registered a negative correlation among Commerce students.

What is remarkable, though, are what the Pearson r 's yielded for the whole sample. All these variables - SES, father's education and occupation and family income - positively correlated with elaboration. All, likewise, including family income, correlated positively with the total TTCT score.

Table VIII - One-Way Analysis of Variance by Place

Creativity Dimension	Source of Variation	D.F.	Sum of Squares	Mean Squares	F-ratio	F-prob
Fluency	Between groups	2	75.2668	37.6334	0.989	0.3276ns
	Within groups	470	17880.1531	38.0429		
	Total	472	17955.4180			
Flexibility	Between groups	2	13.9140	6.9670		
	Within groups	470	12437.8975	26.4636	0.263	0.7689ns
	Total	472	12451.8086			
Originality	Between groups	2	108.0980	54.0490		
	Within groups	470	74652.7422	158.8356	0.340	0.7117ns
	Total	472	74760.8125			
Elaboration	Between groups	2	21819.7576	10909.8750		

	Within groups	470	606054.1445	1289.4768	8.481	0.0002
	Total	472	627873.8750			

Total	Between groups	2	33753.3588	16876.6758		
	Within groups	470	1539365.8125	3275.2463	5.153	0.0061
	Total	472	1573119.000			

Table IX - T-Test Results Obtained for TTCT Dimensions by SES Groups (1,2)

TTCT Dimension	N	Mean	SD	SE	T-Value	DF	2-tail prob.
Fluency	Group 1	246	15.3415	5.880	0.375		
	Group 2	232	15.7586	6.422	0.422	-0.74	476
Flexibility	Group 1	246	12.3333	4.802	0.306		
	Group 2	232	12.7112	5.428	0.356	-0.81	476
Originality	Group 1	246	31.2805	12.659			
	Group 2	232	29.9828	12.277	0.806	1.14	476
Elaboration	Group 1	246	70.9756	33.093	2.110	**	
	Group 2	232	80.3879	38.823	2.549	-2.86	476
Total	Group 1	246	131.1463	44.698	2.850		
	Group 2	232	142.2888	67.959	4.462		

Legend: Group 1 - Below the mean SES

Group 2 - Above the mean SES

* Significant at $p < .05$

** Significant at $p < .01$

These findings are confirmed by the results of the T-test done on two SES groups (see Table IX). SES is the composite score statistically derived from the fathers' and mothers' education occupation and their combined annual income. Results show significant differences on elaboration and total TTCT score between those who scored below and those who scored above the SES mean.

These findings indicate that socio-economic status does in fact influence creativity, with subjects having a higher SES scoring higher in creativity, particularly on the elaboration dimension. Velez (1981) and Sanchez (1984) observed in their studies that children from high

SES group showed more creativity than those from low SES. Hoffer (1955, 1968) in Petrasko (1983) affirm that:

For a society to foster creativity there must be a measure of individual autonomy for its citizens... Also needed is a minimal level of economic well-being for the obvious reason that impoverished societies cannot afford the luxury of creativity since the energies of most of the population are absorbed in addressing the needs of physical survival.

Urbina (1972) likewise opines that to be productively creative in a given work it is but natural that one has the necessary motivating environment like a pleasant room equipped with necessary accessories to work and live by. Children from the high SES bracket are more likely to be provided with an environment that is intellectually stimulating than those from low SES.

Curriculum Year Level

Among the different specialization groups, curriculum year level showed only one significant correlation, a negative one with flexibility, among Natural Sciences students. However, for the whole sample, a negative correlation appeared with the dimensions of fluency, flexibility and originality as well as with total TTCT score.

These show that the subjects in the lower curriculum levels are more creative than those in the higher curriculum levels and the Professional Group, confirming the earlier finding that the younger respondents in the sample tend to be more creative than their older counterparts. In Simonton's (1983) study it was found that:

Formal education may have mixed repercussions for creative development. Up to the first couple of years of college, the acquisition of formal education tends to increase creative potential and reduce dogmatism. Yet the specialization which takes place in the last year of undergraduate training may turn this beneficial influence completely around. The ultimate outcome is an individual who is less likely to achieve eminence as a creator and is more prone to exhibit idealistic

inflexibility. Obtaining the doctorate marks the nadir in creative potential and the acme of dogmatism...

Table X - One-Way Analysis of Variance by Year Level

Creativity Dimension	Source of Variation	D.F	Sum of Squares	Mean Squares	F-ratio	F prob.
Fluency	Between groups	3	449.9303	149.9768	4.026	0.0078
	Within groups	341	12703.3511		37.2538	
	Total	344	13153.2813			
Flexibility	Between groups	3	454.9422	151.6474		6.083 00005
	Within groups	341	8501.1836	24.9301		
	Total	344	8956.1250			
Originality	Between groups	3	1562.9136		520.9709	
	Within groups	341	50928.7070	149.3510		3.488 00160
	Total	344	52491.6172			
Elaboration	Between groups	3	2531.8415	843.9470	0.710	0.05466 ns
	Within groups	341	405392.0859		1188.8330	
	Total	344	407923.8750			
Total	Between groups	3	23389.2546	7796.4180	2.267	0.0805 ns
	Within groups	341	1172839.0625	3439.4106		
	Total	344	1196228.0000			

Table XI-Results Obtained for Respondents Satisfied/Dissatisfied with Training Received in School

TF CT Dimensions	N	Mean	SD	SE	T-Value	DF	2-tailed prob	
Fluency	SWT	354	15.1429	6.270	0.333	1.37	462	0.172
	DWT	110	14.8273	5.637	0.537			
Flexibility	SWT	354	12.7288	5.054	0.269	1.47	462	0.143
	DWT	110	11.9091	5.310	0.506			
Originality	SWT	354	31.0056	12.628	0.671	1.37	462	0.170
	DWT	110	29.1091	1.211	1.211			
	SWT	354	73.6610	34.876	1.854			

Elaboration						-1.89	462	0.059
	DWT	110	80.9727	6.898	3.518			

	SWT	354	136.2429	60.914	3.238			
Total						-0.09	462	0.927
	DWT	110	136.8182	43.683	4.165			

Legend:

SWT - Satisfied with training
DWT - Dissatisfied with training

These findings are corroborated by the results of the ANOVA (see Table X) which yielded significant differences on fluency, flexibility and originality.

State of Satisfaction with Academic Training

One question asked the respondents to state whether training in their field was satisfactory. Pearson r 's on this variable did not yield any significant correlations, except for a negative relationship with fluency among the Natural Sciences group.

Analysis of variance, likewise, did not show any significant differences in creativity scores between those who are satisfied with their academic training and those who are not.

Recapitulation

In summary, the following are the findings in this study regarding the relationship of some socio-demographic variables to creativity:

1. As Simonton (1983) has observed, the most eminent creators -- scientists, philosophers, writers, artists and composers -- tend to complete their junior years but do not go on to finish their senior years and earn their degree. Apparently, he adds, college education can be a very enriching experience so long as it concentrates on a broad "liberal arts" education but once the student is obliged to become more specialized by taking "upper division" courses in his or her major, the effect becomes detrimental to creative development. The general personality characteristics of creative individuals tend to be almost identical to persons low in dogmatism (e.g., idealistic

inflexibility) or authoritarianism (Stein 1969, Rokeach 1950 in Simonton 1983).

2. Male subjects tend to be more creative than the female subjects in this study. They are more original, more innovative, are able to produce more ideas that are far from the obvious, commonplace, or banal. Amaam & Morgan (1980) have noted that even the word "inventor" has become a masculine word and our culture and language seem to have firmly secured "inventor" as a masculine occupation, even a masculine concept. This is probably the reason why males try to outwit their female counterparts.

3. Socio-economic status which includes the father's education and occupation, mother's education and occupation, and combined family income, is very strongly related to creativity. Subjects with higher SES are more creative than those with lower SES. The correlation is specially strong on the elaboration dimension.

These findings affirm Trachtman's statement (1975) that the first prerequisite of the expression of creativity is a certain amount of affluence. They likewise corroborate findings of many studies (Ausubel and Robinson, 1959; Frierson, 1965; Lichtenwalner & Maxwell, 1959; Ogletree & Ujlaki, 1973; Oralla, 1975; Smith, 1965; Velez, 1981) where subjects belonging to higher SES groups were found to score higher on most, if not all, aspects of creative abilities than subjects belonging to the lower SES groups.

4. Creative performance was found to vary from school to school, with subjects from the public schools tending to be more creative than those from the private schools. Subjects from the University of the Philippines scored highly on all creativity dimensions but most especially on elaboration.

The results show that creativity is likely to be enhanced by the type of school environment students find themselves in. In Sharma and Naruka's study (1985), public schools were found to excel on four types of fluencies, namely: word, ideational, associational, and expressional. This is similar to the results of this particular study which found superiority of the public schools, particularly the University of the Philippines, in the elaboration aspect of creativity. Excellence of the public school Ss on this creative ability may be due to independence of environment (i.e., academic freedom) while lower

scores of private school Ss could be attributed to the relative conventionality obtaining in their school environments. Harding (1962) contends that society provides an atmosphere for creativity when its value system focuses on the regard for change and novelty. On the other hand, society may also discourage creativity if it puts too much emphasis on conformity and punishment is given for deviation in the form of isolation and exclusion. Moreover, giving ready-made solutions to problem, limiting a person's freedom to work, setting up rigid rules and boundaries all contribute to hampering creativity.

5. Place of origin, i.e., place where the respondents spent most of their lives was also found to correlate with creativity, particularly on the elaboration dimension with subjects from urban communities tending to be more creative than those coming from rural communities. In a Wallinga & Crase (1982) study, the city spouses scored higher on TTCT than did the farm spouses. For husbands, the city farm variable was significantly correlated for figural fluency, elaboration and figural total. This is also consistent with Parloff et al's (1968) findings that a large percentage of their creative group lived in metropolitan areas.

6. No significant relationship was established between state of satisfaction with academic training and creativity, implying that these two variables are relatively independent of each other.

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