

Understanding Creativity Level of Students of 10th and 12th standard: Evidence from Assam, India

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Abstract

Schools in Assam have options of adopting curricula of different education boards. The two most common are the Board of Secondary Education, Assam (SEBA) and Central Board of Secondary Education (all India). There are different groups of schools depending on the management. The study investigates into the creativity level of students of 10th standard and 12th standard of Dibrugarh district of Assam, India. We wanted to find out the creativity level of students of different categories of schools, find out any gender differences, and also check for relationship between academic performance and creativity level. CBSE schools showed a higher level of creativity as compared to State board schools. There was no significant difference between the creativity scores of girls and boys. The creative scores of 10th standard were found to be higher than 12th standard students. Schools that followed bilingual mode of teaching showed higher creative scores. There was a statistically significant positive relationship between academic and creativity scores.

Key Words: Creativity, Academic Achievement, Gender, School

1. Introduction

Creativity has long been a topic of interest and has been a subject of study by psychologist, educationist and even it has recently been the subject of attraction for genetics. Creativity is viewed under the angle of creative cognition (Finke, Ward, Smith 1992) and it is seen as a socio-cultural process where social transactions are at the core of creativity (Vygotskey, 1930/1983, Bennis & Brederman 1997; John Steiner, 2000).

Creativity is commonly used to express unusual thoughts, which are interesting and stimulating and the people are called creative who experience the world in novel and original ways and whose perceptions are fresh and judgments are insightful and who may make important discoveries that only they know about and who have changed our culture in some important way and their achievements are remained forever like Leonardo, Edison, Picasso, Einstein etc. (M. Csikszent, 2006).

Sternberg (2003) felt that academic performance can be improved if creative thinking is enhanced in schools. It helps the more creative children to capitalise on a strength at the same time that it helps the less creative children to compensate for or correct a weakness.

Ai,(1999) investigated the possible relation between creativity and academic achievement, in particular, to see if this relation might be different for boys and girls. His study was based on a sample of 2,264 students, randomly selected from 68 schools in the Basque region of Spain. Ai used three different tests to measure creative scores of these students. Academic achievement scores of the students were also collected. The study indicated that boys who were flexible and liked to elaborate tended to have higher achievement in all six academic subject areas. Girls who liked to elaborate and were fluent, flexible, and original tended to have higher achievement in all six academic subject areas.

Sak & Maker, (2006) investigated the association of age, years of schooling and domain specific knowledge in the development of children's creativity in mathematics, among different schools located in the southwest region of the United States. They found that mathematical knowledge progressively contributes to children's fluency and originality, flexibility and elaboration with a lower contribution in the lower grades and greater contribution in the upper grades. The findings implied that the more a child learns about the mathematical domain, the more creatively he or she performs in this domain. The study showed that an increase in domain-specific knowledge is significantly associated with children's creativity in mathematics. Regarding age-related findings, age was significantly associated with children's originality, flexibility and elaboration development at lower grades but not at upper grades. Further they found that age was more related to originality, flexibility and elaboration than to fluency in mathematics. No slumps or peak were observed in children's creativity development as a function of grade in this study. Meanwhile, the slight stagnancy in fluency at the fourth grade found in this study can be explained by decreased contribution of age and knowledge to fluency at this grade level.

Trivedi & Bhargava, (2010), conducted a study among adolescents with the objective of finding the influence of academic achievement on creativity in a sample of 240 subjects. The high achiever adolescents differed significantly on almost all the subjects of creativity. The adolescent males were found better at comprehending problems in fluency, flexibility and originality in naming names of things used for numerous purposes existing in psychological and physical environment. Both high and low achievers are similar in persistency, block fluency, flexibility, originality and creativity. The high achiever female adolescents are better at expressing fluency, flexibility, originality, persistency and inquisitiveness as measured by Passi Test of creativity. There were no significant differences among the high achiever adolescent males and females on all the subjects of Passi Test of creativity and composite creative scores. To sum up, the results indicated that (i) high achiever group of adolescents had higher level of creativity than low achiever group (ii) were more alike and shared similar traits overriding the impact of gender (iii) there were gender differences among low achiever group on creativity (iv) gender is less impacting than the level of achievement.

Palaniappan, (2007) undertook a study to understand the relationship between creativity and academic achievement in intelligence continuum among 497 Malaysian students. There were no significant differences found in academic achievement between the group

of High-intelligence with Low-creativity and the group of Low-intelligence with High-creativity. A very important finding in this study was the equivalent academic achievement level of the High-intelligence with High-creativity and the Low-intelligence with High-creativity groups. Creativity may help compensate the lack of intelligence in enhancing academic achievement. Another important finding was that there were no significant differences in academic achievement scores. The finding indicated that at very high IQ level, an increase in creativity may not result in higher academic achievement. At very high IQ levels, the strength of the relationship between creativity and academic achievement appears to diminish.

2 Research Methodology

The study investigates into the creativity level of students of 10th standard and 12th standard of Dibrugarh district of Assam, India.

2.1 Objective of the study:

The present study was conducted

- To find out relation between academic achievement and creativity level of students
- To find out gender differences in creativity.
- To find out the creativity level of students of different categories of schools

2.2 Research Plan

Schools in Assam have options of adopting curricula of different education boards. The two most common are the Board of Secondary Education, Assam (SEBA) and Central Board of Secondary Education (all India). There are different groups of schools depending on the management. The Kendriya Vidyalayas, popularly known as KVs are under the management of Kendriya Vidyalaya Sangathan (a Government organization); there are missionary schools run by different missionary organizations; private schools run by private organizations/management, and there are the state government run schools. The 16 schools were selected in a manner to make the sample as representative as possible.

2.2.1 Sample

For the present investigation, a total sample of 847 subjects --male students and female students of ages 16 to 18 years were collected from 16 number of different categories of schools of Dibrugarh district of Assam. The samples were chosen on the basis of stratified random sampling.

Table 1: Break up of the sample schools

Code	Name of School	Management	Board	Medium of instruction
1	Don Bosco	Private	SEBA	English
2	OIL Higher Secondary	Government	SEBA	English
3	K V Duliajan	KVS	CBSE	Bilingual
4	Jatiya Vidyalaya	Private	SEBA	Vernacular
5	Uccha Vidyalaya	Government	SEBA	Vernacular

6	K.V Namrup	KVS	CBSE	Bilingual
7	Salt Brook High School	Private	SEBA	English
8	St.Xavier's H S School	Missionary	SEBA	English
9	Assam Vidyapeeth H.S.School	Government	SEBA	Vernacular
10	DPS Duliajan	Private	CBSE	English
11	St.Mary's H.S.School	Missionary	SEBA	English
12	Little Flower High School	Missionary	SEBA	English
13	Sishu Niketan High School	Private	SEBA	Vernacular
14	Vivekananda High School	Private	CBSE	English
15	K.V Dinjan	KVS	CBSE	Bilingual
16	Gyan Vigyan Academy	Private	SEBA	English

There were 9 English medium schools, 4 Vernacular medium schools and 3 Bilingual schools. 5 schools followed Central board while 11 schools followed State board. 7 were private schools, 3 were run by KVS, 3 were state government run schools and 3 were missionary schools.

2.2.2 Tools Used

In the present study the following tools were used:

- a. A self constructed questionnaire was used to collect information regarding school environment. The aim was to find out the existence of those parameters that are believed to enhance creative thinking in students. The parameters were drawn from literature available on creativity.

Table 2: Parameters to assess the school environment

VARIABLES	PARAMETER	REFERENCES
1] Teaching Pedagogy	1] Use of Black Board 2] Audio visual aids 3] Group Activities – a) Project Work b) Presentation 4] Demonstration & laboratory work 5] Model displaying 6] Discussion 7] Periodic visit by subject expert 8] Dramatisation	Fleith, (1998); Gupta, A.K. (1977), Torrance (1983)
2] Infrastructure	1] Teacher Student ratios 2] Provision of vehicle 3] Location of the School (urban/rural) 4] School Building (Assam type / Kheri / R.C.C. Building) 5] Library	Dubey (1986); Ahmed (1980); Goyal (1973); Rostogy (1967); Chatterjee (1970) ,

	(Number of books available / journal / Magazine etc.) 6] Sports Ground (facilities for outdoor / indoor games) 7] Facilities for Extra-curricular activities (Equipment / Accessories) 8] Laboratory (for Science) 9] Computer Lab. 10] No. of teacher for extra curricular activities. 11] Cleanliness of Surrounding 12] Residential / Day school	
3] Medium of Instruction	1] Vernacular (Assamese/Hindi/Bengali) 2] English	Srivastava, A.K. & Ramaswamy (1986)

- b. Torrance Test of Creative Thinking (TTCT Figural -A) was administered to measure the creativity level of the students. It measured Fluency, Originality, Elaboration, Premature Closure, and Abstractness of title and the score obtained.

Academic achievement was measured on the basis of percentages of aggregate marks obtained by the students in their final board examination. These board exams are independent of the school and are taken to represent an unbiased assessment of the student's academic performance.

3. Findings

3.1 Relation between Academic achievement and creativity score

We tried to find out the correlation between the academic performance (judged by percentage of marks obtained in the board exams) and the creative scores.

Table 3: Correlation between Creative and Academic score

		CREATIVE SCORE	ACADEMIC SCORE
CREATIVE SCORE	Pearson Correlation	1	.576
	Sig. (2-tailed)		.000
	Sum of Squares and Cross-products	336570.838	143116.001
	Covariance	397.838	169.168
	N	847	847

ACADEMIC SCORE	Pearson Correlation	.576**	1
	Sig. (2-tailed)	.000	
	Sum of Squares and Cross-products	143116.001	183410.080
	Covariance	169.168	216.797
	N	847	847

** . Correlation is significant at the 0.01 level (2-tailed).

From Table 3, it can be concluded that there is a statistically significant positive relationship between academic score and creativity scores.

3.1.1 Difference between creativity scores of 10th and 12th standard

We tried to find out if the creative scores of 10th and 12th standard students were significantly different or not.

Table 4a: Mean Creative scores of 10th and 12th standard

	Standard	N	Mean	Std. Deviation	Std. Error Mean
CREATIVE SCORE	X	577	59.50	19.270	.802
	XII	270	55.24	21.063	1.282

Table 4b: Independent Samples Test

	Levene's Test for Equality of Variances	t-test for Equality of Means								
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
CREATIVE SCORE	Equal variances assumed	3.224	.073	2.908	845	.004	4.259	1.464	1.385	7.133
	Equal variances not assumed			2.816	486.170	.005	4.259	1.512	1.287	7.230

The Levene's test significance value .073 is greater than .05 and so equal variance can be assumed. The corresponding t-test significance value of .004 is less than .05 and so it can be concluded that creativity scores are different for 10th and 12th standard. The creativity score was different for 10th and 12th standard students.

3.2 Gender differences in Creativity scores and Academic scores

A T-test was conducted to assess if there was any difference between the mean creative scores of boys and girls.

Table 5a: Mean creative score gender wise

	Gender	N	Mean	Std. Deviation	Std. Error Mean
CREATIVE SCORE	Male	421	59.08	19.905	.970
	Female	426	57.20	19.966	.967

Table 5b: Independent Samples Test

	Levene's Test for Equality of Variances	t-test for Equality of Means								
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
CREATIVE SCORE	Equal variances assumed	.024	.877	1.371	845	.171	1.879	1.370	- .810	4.568
	Equal variances not assumed			1.371	844.935	.171	1.879	1.370	- .810	4.568

The levene’s test has a significance value which is greater than .05 and hence equal variance can be assumed. The T-test significance value is .171 which is greater than .05 and so it can be concluded that there is no significant difference between the creativity scores of girls and boys.

A T-test was conducted to assess if there was any difference between the mean academic scores of boys and girls.

Test 6a: Gender wise Academic Mean score

	Gender	N	Mean	Std. Deviation	Std. Error Mean
ACADEMIC SCORE	Male	421	66.57	14.373	.700
	Female	426	68.21	15.036	.728

Table 6b: Independent Samples Test

	Levene's Test for Equality of Variances	t-test for Equality of Means								
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper

Academic Score	Equal variances assumed	.654	.419	-1.619	845	.106	-1.637	1.011	-3.621	.348
	Equal variances not assumed			-1.619	844.065	.106	-1.637	1.011	-3.620	.347

There is no significant difference between the academic mean score of the two groups.

3.3 Relation between creativity score and medium of instruction

We wanted to see if there was any difference in the creative scores of students based on the medium of instruction followed in the schools.

Table 7a: Test of Homogeneity of Variances

CREATIVE SCORE

Levene Statistic	df1	df2	Sig.
9.028	2	844	.000

From the above result ($p < .05$), we can see that equal variance cannot be assumed. Hence we need to run the Welch ANNOVA test.

Table 7b: ANOVA to test for differences in medium of instruction

CREATIVE SCORE

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	26926.120	2	13463.060	36.696	.000
Within Groups	309644.718	844	366.878		
Total	336570.838	846			

From the above we can understand that since $p < .05$, there is significant difference between group means. The post-hoc analysis is given below.

Table 7c: Multiple Comparisons

CREATIVE SCORE

Games-Howell

(I) MEDIUM OF INST	(J) MEDIUM OF INST	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
English	Vernacular	8.646 [*]	1.403	.000	5.35	11.94
	Bilingual	-7.331 [*]	1.862	.000	-11.72	-2.95
Vernacular	English	-8.646 [*]	1.403	.000	-11.94	-5.35
	Bilingual	-15.977 [*]	1.891	.000	-20.43	-11.52
Bilingual	English	7.331 [*]	1.862	.000	2.95	11.72

Vernacular	15.977	1.891	.000	11.52	20.43
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*. The mean difference is significant at the 0.05 level.

Thus the average creative scores are statistically significantly different depending on the medium of instruction. Bilingual schools have higher scores than English medium schools, and Vernacular medium schools trailed behind.

3.4 Relation between creativity score and education board

We tried to find out if creative scores of students varied because of the curricula followed.

Table 8a: Board-wise creativity mean score

Group Statistics

	BOARD	N	Mean	Std. Deviation	Std. Error Mean
CREATIVE SCORE	State	578	53.78	17.945	.746
	Central	269	67.50	20.823	1.270

Table 8b: Independent Samples Test

	Levene's Test for Equality of Variances	t-test for Equality of Means								
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
CREATIVE SCORE	Equal variances assumed	5.506	.019	-9.834	845	.000	-13.722	1.395	-16.460	-10.983
	Equal variances not assumed			-9.317	459.773	.000	-13.722	1.473	-16.616	-10.827

The Levene's test shows that $p=.019$ which is less than $.05$ and hence equal variance cannot be assumed. The corresponding t-test p value is $.000$ which is less than $.05$ and so it can be concluded that there is difference between creativity scores of the State board and the Central Board. CBSE schools showed a higher level of creativity as compared to State board schools. This correlates with the scores obtained for the schools. It can be seen from Table 9 that the schools having high scores are the ones following the CBSE.

Table 9: Scores of schools

Code	Name of School	School score
6	K.V Namrup	278
15	K.V Dinjan	270

14	Vivekananda High School	266
3	K V Duliajan	265
8	St. Xavier's H S School	260
10	DPS Duliajan	259
1	Don Bosco	258
16	Gyan Vigyan Academy	257
7	Salt Brook High School	256
12	Little Flower High School	243
4	Jatiya Vidyalaya	241
13	Sishu Niketan High School	231
2	OIL Higher Secondary	230
11	St.Mary's H.S.School	229
9	Assam Vidyapeeth H.S.School	189
5	Uccha Vidyalaya	188

3.5 Relation between Schools and Creativity scores

ANOVA test was conducted to find out if there was any significant difference between the mean creative scores of the different schools. From Table 10 we can understand that since $p < .05$, there is significant difference between group means.

Table 10: ANOVA to test for differences in school

CREATIVE SCORE

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	68426.838	15	4561.789	14.137	.000
Within Groups	268144.000	831	322.676		
Total	336570.838	846			

Post-hoc analysis revealed that there are statistically significant differences between the creativity scores of the following pairs of schools. *Please refer to Appendix- 1.*

KV Duliajan, KV Namrup, Delhi Public School, Little Flower School, Vivekananda KV, KV Dinjan and Gyan Vigyan Academy showed higher creative mean scores over Don Bosco High School. On the other hand Assam Vidyapeeth and St. Mary's High School showed lower scores than Don Bosco.

Oil HS School showed higher creative mean scores than Uccha Vidyalay, Assam Vidyapeeth and St. Mary's School.

KV Duliajan showed higher creative mean score than Uccha Vidyalay, Assam Vidyapeeth and St. Mary’s.

Jatiya Vidyalay showed higher creative mean score than Uccha Vidyalay, Assam Vidyapeeth and St. Mary’s but lower than Delhi Public School..

KV Namrup, Salt Brook Academy, St. Xaviers, Delhi Public School, Little Flower School, Vivekananda KV, KV Dinjan and Gyan Vigyan Academy showed higher creative mean score than Uccha Vidyalay.

KV Namrup had higher creative mean score than Assam Vidyapeeth and St. Mary’s.

Salt Brook had higher creative mean score than Assam Vidyapeeth and St. Mary’s.

St.xavier’s had higher creative mean score than Assam Vidyapith and St.Mary’s.

Delhi Public School, Little Flower School, Sishu Niketan, Vivekananda, K V Dinjan and Gyan Vigyan have higher creative mean scores than Assam Vidyapeeth.

Delhi Public School has higher creative mean score than St. Mary’s.

Little Flower School, Vivekananda, K V Dinjan and Gyan Vigyan have higher creative mean score than St. Mary’s.

A quick look with the school scores indicates that schools that scored higher also had higher creative mean scores.

4. Conclusion

The study showed that academic scores and creative scores were positively related. 12th standard students had a lower mean creative score than 10th standard students. There is no difference between the creative mean scores of boys and girls and also for the academic mean scores. Schools having bilingual medium of instruction showed higher creative mean scores, while vernacular medium schools showed the lowest. CBSE schools had higher creative mean scores than the State board schools. Schools that had most of the provisions mentioned in Table 2 viz. extra-curricular facilities, multiple teaching pedagogy, encouraged teachers to upgrade, library, computer laboratory, science laboratories etc. showed higher creative mean scores. Thus it can be strongly concluded that school environment has a strong role in promoting creativity among its students.

APPENDIX -1

Multiple Comparisons

CREATIVE SCORE

Games-Howell

(I) CODE OF SCHO OL	(J) CODE OF SCHO OL	Mean Difference (I- J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	-4.794	3.343	.987	-16.50	6.91
	3	-14.019*	3.385	.006	-25.87	-2.16

4		-4.936	2.851	.935	-14.89	5.02
5		6.130	2.461	.487	-2.52	14.78
6		-13.882*	3.712	.026	-26.94	-.83
7		-14.243	4.330	.111	-29.89	1.41
8		-6.137	2.961	.778	-16.50	4.22
9		9.777*	2.643	.028	.51	19.04
10		-17.526*	3.392	.000	-29.41	-5.64
11		8.639	2.947	.216	-1.68	18.96
12		-8.519	3.237	.394	-20.01	2.97
13		-3.680	3.650	1.000	-16.72	9.36
14		-17.358*	3.997	.006	-31.71	-3.00
15		-14.695*	3.395	.003	-26.59	-2.80
16		-16.010*	4.067	.020	-30.65	-1.37
2	1	4.794	3.343	.987	-6.91	16.50
	3	-9.226	3.701	.484	-22.17	3.72
	4	-.142	3.220	1.000	-11.41	11.13
	5	10.924*	2.880	.023	.77	21.08
	6	-9.089	4.003	.646	-23.13	4.95
	7	-9.449	4.582	.780	-25.87	6.97
	8	-1.344	3.317	1.000	-12.96	10.27
	9	14.570*	3.037	.001	3.90	25.24
	10	-12.733	3.707	.060	-25.71	.24
	11	13.432*	3.306	.008	1.85	25.01
	12	-3.726	3.566	1.000	-16.32	8.87
	13	1.113	3.945	1.000	-12.89	15.11
	14	-12.564	4.268	.223	-27.78	2.65
	15	-9.901	3.710	.363	-22.88	3.08
	16	-11.216	4.333	.425	-26.69	4.26
3	1	14.019*	3.385	.006	2.16	25.87
	2	9.226	3.701	.484	-3.72	22.17
	4	9.083	3.264	.294	-2.34	20.51

	5	20.149*	2.929	.000	9.82	30.48
	6	.137	4.038	1.000	-14.02	14.30
	7	-.224	4.613	1.000	-16.74	16.29
	8	7.882	3.360	.591	-3.89	19.65
	9	23.796*	3.083	.000	12.96	34.64
	10	-3.507	3.746	1.000	-16.62	9.60
	11	22.658*	3.348	.000	10.92	34.39
	12	5.500	3.605	.976	-7.23	18.23
	13	10.339	3.981	.417	-3.78	24.46
	14	-3.339	4.301	1.000	-18.66	11.98
	15	-.676	3.748	1.000	-13.79	12.44
	16	-1.990	4.366	1.000	-17.57	13.59
4	1	4.936	2.851	.935	-5.02	14.89
	2	.142	3.220	1.000	-11.13	11.41
	3	-9.083	3.264	.294	-20.51	2.34
	5	11.066*	2.291	.000	3.07	19.06
	6	-8.946	3.602	.492	-21.62	3.73
	7	-9.307	4.236	.694	-24.67	6.06
	8	-1.201	2.821	1.000	-11.05	8.65
	9	14.713*	2.486	.000	6.04	23.38
	10	-12.590*	3.271	.017	-24.05	-1.13
	11	13.575*	2.807	.000	3.77	23.38
	12	-3.583	3.110	.999	-14.64	7.47
	13	1.255	3.538	1.000	-11.42	13.93
	14	-12.422	3.895	.137	-26.46	1.61
	15	-9.759	3.274	.194	-21.22	1.71
	16	-11.074	3.966	.308	-25.41	3.26
5	1	-6.130	2.461	.487	-14.78	2.52
	2	-10.924*	2.880	.023	-21.08	-.77
	3	-20.149*	2.929	.000	-30.48	-9.82
	4	-11.066*	2.291	.000	-19.06	-3.07
	6	-20.012*	3.302	.000	-31.73	-8.29

	7	-20.373*	3.984	.001	-35.03	-5.72
	8	-12.267*	2.426	.000	-20.79	-3.74
	9	3.647	2.026	.911	-3.45	10.75
	10	-23.656*	2.937	.000	-34.03	-13.29
	11	2.509	2.410	1.000	-5.97	10.99
	12	-14.649*	2.756	.000	-24.62	-4.68
	13	-9.810	3.231	.199	-21.59	1.97
	14	-23.488*	3.618	.000	-36.73	-10.25
	15	-20.825*	2.940	.000	-31.20	-10.45
	16	-22.139*	3.696	.000	-35.70	-8.58
6	1	13.882*	3.712	.026	.83	26.94
	2	9.089	4.003	.646	-4.95	23.13
	3	-.137	4.038	1.000	-14.30	14.02
	4	8.946	3.602	.492	-3.73	21.62
	5	20.012*	3.302	.000	8.29	31.73
	7	-.361	4.858	1.000	-17.68	16.96
	8	7.745	3.689	.761	-5.23	20.72
	9	23.659*	3.439	.000	11.50	35.82
	10	-3.644	4.044	1.000	-17.83	10.54
	11	22.521*	3.679	.000	9.58	35.47
	12	5.363	3.914	.991	-8.46	19.19
	13	10.202	4.262	.558	-4.89	25.29
	14	-3.476	4.563	1.000	-19.67	12.72
	15	-.813	4.046	1.000	-15.00	13.38
	16	-2.127	4.624	1.000	-18.57	14.31
7	1	14.243	4.330	.111	-1.41	29.89
	2	9.449	4.582	.780	-6.97	25.87
	3	.224	4.613	1.000	-16.29	16.74
	4	9.307	4.236	.694	-6.06	24.67
	5	20.373*	3.984	.001	5.72	35.03
	6	.361	4.858	1.000	-16.96	17.68
	8	8.105	4.311	.872	-7.48	23.70

	9	24.020*	4.099	.000	9.04	38.99
	10	-3.283	4.618	1.000	-19.82	13.25
	11	22.882*	4.301	.000	7.32	38.45
	12	5.724	4.505	.995	-10.52	21.96
	13	10.562	4.810	.696	-6.69	27.82
	14	-3.115	5.078	1.000	-21.29	15.06
	15	-.452	4.619	1.000	-16.99	16.09
	16	-1.767	5.134	1.000	-20.15	16.62
8	1	6.137	2.961	.778	-4.22	16.50
	2	1.344	3.317	1.000	-10.27	12.96
	3	-7.882	3.360	.591	-19.65	3.89
	4	1.201	2.821	1.000	-8.65	11.05
	5	12.267*	2.426	.000	3.74	20.79
	6	-7.745	3.689	.761	-20.72	5.23
	7	-8.105	4.311	.872	-23.70	7.48
	9	15.914*	2.610	.000	6.76	25.07
	10	-11.389	3.367	.071	-23.19	.41
	11	14.776*	2.918	.000	4.56	25.00
	12	-2.382	3.210	1.000	-13.79	9.02
	13	2.457	3.626	1.000	-10.51	15.43
	14	-11.221	3.975	.288	-25.51	3.07
	15	-8.557	3.369	.451	-20.36	3.25
	16	-9.872	4.046	.528	-24.45	4.71
9	1	-9.777*	2.643	.028	-19.04	-.51
	2	-14.570*	3.037	.001	-25.24	-3.90
	3	-23.796*	3.083	.000	-34.64	-12.96
	4	-14.713*	2.486	.000	-23.38	-6.04
	5	-3.647	2.026	.911	-10.75	3.45
	6	-23.659*	3.439	.000	-35.82	-11.50
	7	-24.020*	4.099	.000	-38.99	-9.04
	8	-15.914*	2.610	.000	-25.07	-6.76
	10	-27.303*	3.091	.000	-38.18	-16.43

	11	-1.138	2.595	1.000	-10.24	7.97
	12	-18.296*	2.919	.000	-28.77	-7.82
	13	-13.457*	3.372	.018	-25.65	-1.27
	14	-27.135*	3.744	.000	-40.74	-13.53
	15	-24.471*	3.094	.000	-35.35	-13.59
	16	-25.786*	3.819	.000	-39.70	-11.87
10	1	17.526*	3.392	.000	5.64	29.41
	2	12.733	3.707	.060	-.24	25.71
	3	3.507	3.746	1.000	-9.60	16.62
	4	12.590*	3.271	.017	1.13	24.05
	5	23.656*	2.937	.000	13.29	34.03
	6	3.644	4.044	1.000	-10.54	17.83
	7	3.283	4.618	1.000	-13.25	19.82
	8	11.389	3.367	.071	-.41	23.19
	9	27.303*	3.091	.000	16.43	38.18
	11	26.165*	3.355	.000	14.40	37.93
	12	9.007	3.612	.486	-3.75	21.77
	13	13.846	3.986	.061	-.30	27.99
	14	.168	4.306	1.000	-15.17	15.51
	15	2.831	3.754	1.000	-10.31	15.97
	16	1.517	4.371	1.000	-14.09	17.12
11	1	-8.639	2.947	.216	-18.96	1.68
	2	-13.432*	3.306	.008	-25.01	-1.85
	3	-22.658*	3.348	.000	-34.39	-10.92
	4	-13.575*	2.807	.000	-23.38	-3.77
	5	-2.509	2.410	1.000	-10.99	5.97
	6	-22.521*	3.679	.000	-35.47	-9.58
	7	-22.882*	4.301	.000	-38.45	-7.32
	8	-14.776*	2.918	.000	-25.00	-4.56
	9	1.138	2.595	1.000	-7.97	10.24
	10	-26.165*	3.355	.000	-37.93	-14.40
	12	-17.158*	3.198	.000	-28.53	-5.79

	13	-12.319	3.615	.078	-25.26	.62
	14	-25.997*	3.965	.000	-40.26	-11.73
	15	-23.334*	3.358	.000	-35.10	-11.56
	16	-24.648*	4.036	.000	-39.20	-10.09
12	1	8.519	3.237	.394	-2.97	20.01
	2	3.726	3.566	1.000	-8.87	16.32
	3	-5.500	3.605	.976	-18.23	7.23
	4	3.583	3.110	.999	-7.47	14.64
	5	14.649*	2.756	.000	4.68	24.62
	6	-5.363	3.914	.991	-19.19	8.46
	7	-5.724	4.505	.995	-21.96	10.52
	8	2.382	3.210	1.000	-9.02	13.79
	9	18.296*	2.919	.000	7.82	28.77
	10	-9.007	3.612	.486	-21.77	3.75
	11	17.158*	3.198	.000	5.79	28.53
	13	4.839	3.855	.996	-8.96	18.64
	14	-8.839	4.185	.749	-23.86	6.18
	15	-6.176	3.614	.939	-18.94	6.59
	16	-7.490	4.252	.919	-22.78	7.80
13	1	3.680	3.650	1.000	-9.36	16.72
	2	-1.113	3.945	1.000	-15.11	12.89
	3	-10.339	3.981	.417	-24.46	3.78
	4	-1.255	3.538	1.000	-13.93	11.42
	5	9.810	3.231	.199	-1.97	21.59
	6	-10.202	4.262	.558	-25.29	4.89
	7	-10.562	4.810	.696	-27.82	6.69
	8	-2.457	3.626	1.000	-15.43	10.51
	9	13.457*	3.372	.018	1.27	25.65
	10	-13.846	3.986	.061	-27.99	.30
	11	12.319	3.615	.078	-.62	25.26
	12	-4.839	3.855	.996	-18.64	8.96
	14	-13.677	4.512	.188	-29.82	2.46

	15	-11.014	3.988	.314	-25.16	3.13
	16	-12.329	4.574	.359	-28.71	4.06
14	1	17.358*	3.997	.006	3.00	31.71
	2	12.564	4.268	.223	-2.65	27.78
	3	3.339	4.301	1.000	-11.98	18.66
	4	12.422	3.895	.137	-1.61	26.46
	5	23.488*	3.618	.000	10.25	36.73
	6	3.476	4.563	1.000	-12.72	19.67
	7	3.115	5.078	1.000	-15.06	21.29
	8	11.221	3.975	.288	-3.07	25.51
	9	27.135*	3.744	.000	13.53	40.74
	10	-.168	4.306	1.000	-15.51	15.17
	11	25.997*	3.965	.000	11.73	40.26
	12	8.839	4.185	.749	-6.18	23.86
	13	13.677	4.512	.188	-2.46	29.82
	15	2.663	4.308	1.000	-12.68	18.01
	16	1.348	4.855	1.000	-16.02	18.72
	15	1	14.695*	3.395	.003	2.80
2		9.901	3.710	.363	-3.08	22.88
3		.676	3.748	1.000	-12.44	13.79
4		9.759	3.274	.194	-1.71	21.22
5		20.825*	2.940	.000	10.45	31.20
6		.813	4.046	1.000	-13.38	15.00
7		.452	4.619	1.000	-16.09	16.99
8		8.557	3.369	.451	-3.25	20.36
9		24.471*	3.094	.000	13.59	35.35
10		-2.831	3.754	1.000	-15.97	10.31
11		23.334*	3.358	.000	11.56	35.10
12		6.176	3.614	.939	-6.59	18.94
13		11.014	3.988	.314	-3.13	25.16
14		-2.663	4.308	1.000	-18.01	12.68
16		-1.315	4.373	1.000	-16.92	14.29

16	1	16.010*	4.067	.020	1.37	30.65
	2	11.216	4.333	.425	-4.26	26.69
	3	1.990	4.366	1.000	-13.59	17.57
	4	11.074	3.966	.308	-3.26	25.41
	5	22.139*	3.696	.000	8.58	35.70
	6	2.127	4.624	1.000	-14.31	18.57
	7	1.767	5.134	1.000	-16.62	20.15
	8	9.872	4.046	.528	-4.71	24.45
	9	25.786*	3.819	.000	11.87	39.70
	10	-1.517	4.371	1.000	-17.12	14.09
	11	24.648*	4.036	.000	10.09	39.20
	12	7.490	4.252	.919	-7.80	22.78
	13	12.329	4.574	.359	-4.06	28.71
	14	-1.348	4.855	1.000	-18.72	16.02
	15	1.315	4.373	1.000	-14.29	16.92

*. The mean difference is significant at the 0.05 level.

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