

2014-2015 Torrance Tests of Creative Thinking Results Summary

During the 2014-2015 school year, 165 students at Washburn University participated in the pilot administrations of the Torrance Tests of Creative Thinking.

- TTCT Figural average standard scores ranged from 70 to 130 with a mean of 105.93 (SD= 11.41)
- TCTT Figural National Percentiles ranged from the 3rd to 98th percentile with a mean of 64.11 (SD= 25.21)
- ***On average, WU students who were assessed scored better in the Figural Section of the TCTT than did 64% of the students tested nation-wide***

- TTCT Verbal average standard scores ranged from 63 to 150 with a mean of 104.92 (SD= 16.24)
- TCTT Verbal National Percentiles ranged from the 5th to 99th percentile with a mean of 57.79 (SD= 24.40)
- ***On average, WU students who were assessed scored better in the Verbal Section of the TCTT than did 58% of the students tested nation-wide***

- TTCT Creativity Index average standard scores ranged from 19 to 145 with a mean of 117.02 (SD= 15.14)
- TCTT Figural National Percentiles ranged from the 3rd to 97th percentile with a mean of 63.53 (SD= 22.94)
- ***On average, WU students who were assessed scored better on the Creativity Index of the TCTT than did 64% of the students tested nation-wide***

The Torrance Test of Creative Thinking (TTCT) was created by Ellis Paul Torrance in 1974, building on the work of J.P. Guilford, and involves simple tests of divergent thinking and other problem-solving skills. The most recent version was published by the Scholastic Testing Service in 2008, and it measures Figural and Verbal creativity using both norm-referenced and criterion-referenced assessments. The WU frequency distributions for the average standard scores and mean National Percentile Ranks associated with the Figural Average, Creativity Index Average, and the Verbal Average of the Torrance Tests of Creative Thinking are somewhat positively skewed. This indicates that the 165 Washburn University students that participated in the TTCT during 2014-2015 had higher standard scores than would statistically be expected, and performed better compared to other students tested nation-wide.

The 165 students tested at Washburn University participated in either the fall 2014 (33.3%) or spring 2015 (66.7%) pilot administrations of the Torrance Test of Creative Thinking. The participating WU students, 83% of whom were female, were mostly from the Education and Nursing programs, with 87% being classified as Seniors and 13% as Post-Baccalaureate. Over 95% reported being Full-Time students, 67% attended courses on campus only, and 97% were Kansas residents (with 2 students from out-of-state and 3 international students). Almost 58% of the students tested transferred to WU from a 2-Year Institution and approximately 15% transferred from a 4-Year Institution. Over 80% of the students were White (10% did not report an ethnicity), and 53% were between the ages of 22 and 24 with another 15% being ages 20-21 and 14% being ages 25-29 (13% in their 30's and 4% in their 40's or older). Table 1 below shows the basic statistics resulting from the administration.

Table 1. Torrance Tests of Creative Thinking Descriptives for 2014-2015

TTCT Statistics for N=165	Minimum	Maximum	Mean	Std. Dev.
Figural Average	70	130	105.93	11.411
Figural National Percentile	3	98	64.11	25.211
Verbal Average	63	150	104.92	16.240
Verbal National Percentile	5	99	57.79	24.402
Creativity Index Average	19	145	117.02	15.143
Creativity Index National Percentile	3	97	63.53	22.940

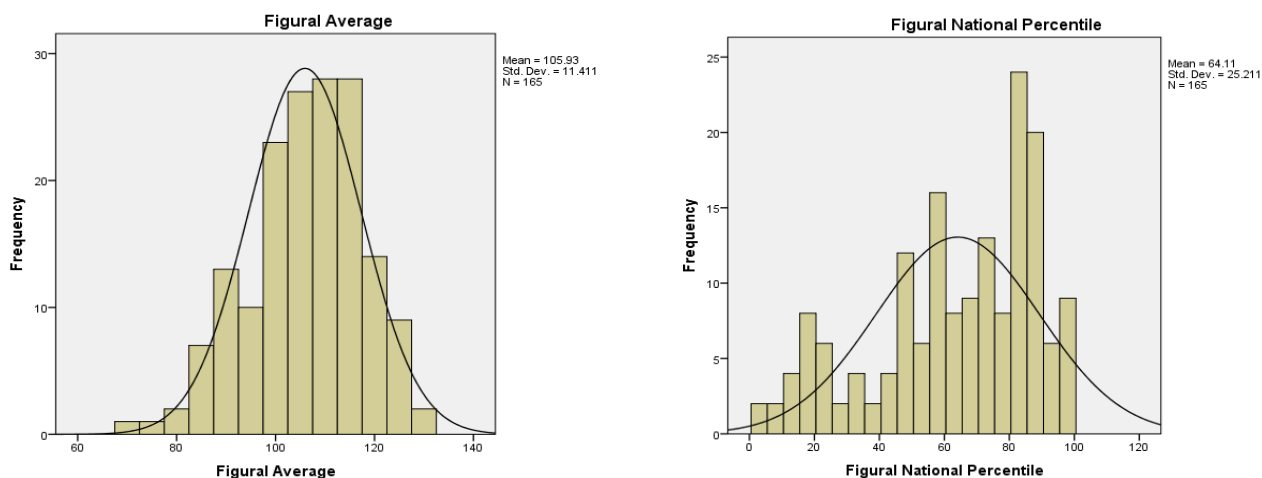
The five separate TTCT Figural norm-referenced assessments include:

- Fluency- based upon the total number of relevant responses
- Originality- based upon the statistical infrequency and unusualness of the response
- Abstractness of Title- related to the subject's synthesizing and organizing processes of thinking
- Elaboration- based on two underlying assumptions: the minimum primary response to the stimulus figure is a single response, and the imagination and exposition of detail is a function of creative ability
- Resistance to Premature Closure- ability to keep open/delay closure long enough to make the mental leap that makes possible original ideas
- *Each of the norm-referenced assessments are reported in terms of a standard score, enabling an average of the standard scores to obtain a score reflecting the assessment based upon the pooling of the norm-referenced assessments.*

[Torrance, E.P. (2001, 2008). *Torrance Tests of Creative Thinking- Interpretive Manual*. Scholastic Testing Service, Inc. Bensenville: ILL.]

The WU student TTCT Figural average standard scores ranged from 70 to 130 with a mean of 105.93 (SD= 11.41), and the TCTT Figural National Percentile Ranks ranged from the 3rd to 98th percentile with a mean of 64.11 (SD= 25.21). On average, WU students who were assessed scored better in the Figural Section of the TCTT than did 64% of the students tested nation-wide.

The frequency distribution (with the normal distribution curve added) for the Standard Scores of the TTCT Figural Average below shows that WU had more students performing above the mean standard score than expected. The frequency distribution for the mean National Percentile Ranks (with the normal distribution curve added) for the TTCT Figural assessment shows that WU students performed better than 64% of students tested nation-wide.



The thirteen TTCT Figural criterion-referenced assessments include:

- Emotional Expressiveness- ability to communicate feelings and emotions verbally/nonverbally through drawings, titles, speech of figures
- Storytelling Articulativeness- ability to clearly and powerfully communicate an idea/tell a story by providing details for context
- Movement or Action- perception of movement through titles and the speech/bodily posture of figures & drawings
- Expressiveness of Titles- use of titles that communicate something that the graphic cues themselves do not express without the title

- Synthesis of Incomplete Figures- combination of two or more figures points out an individual whose thinking departs from the commonplace and established, and who is able to see relationships among rather diverse and unrelated elements
- Synthesis of Lines- same as Synthesis of Incomplete Figures except combination of sets of parallel lines or combinations of circles
- Unusual Visualization- individual can return repeatedly to a commonplace object or situation and perceive it in different ways
- Internal Visualization- ability to visualize beyond exteriors and pay attention to the internal, dynamic workings of things
- Extending or Breaking Boundaries- ability to remain open long enough to permit mental leaps away from the obvious/commonplace and open up or extend the boundaries or limits imposed upon the stimulus figure
- Humor- individual perceives and depicts conceptual and perpetual incongruity, unusual combinations, and surprise
- Richness of Imagery- subject's ability to create strong, sharp, distinct pictures in the mind of the beholder
- Colorfulness of Imagery- subject's ability to excite and appeal to the senses
- Fantasy- person's use of fantasy imagery in responding to the test tasks
- ***The thirteen criterion-referenced indicators are added to the average standard score to provide the Creativity Index, which is perhaps the best measure to reflect the overall level of creativity.***

[Torrance, E.P. (2001, 2008). *Torrance Tests of Creative Thinking- Interpretive Manual*. Scholastic Testing Service, Inc. Bensenville: ILL.]

The WU student TTCT Creativity Index average standard scores ranged from 19 to 145 with a mean of 117.02 (SD= 15.14), and TTCT Figural National Percentile Ranks ranged from the 3rd to 97th percentile with a mean of 63.53 (SD= 22.94). On average, WU students who were assessed scored better on the Creativity Index of the TCTT than did 64% of the students tested nation-wide.

The frequency distribution (with the normal distribution curve added) for the Standard Scores of the TTCT Creativity Index Average below shows more WU students scoring at or above the mean standard score than statistically expected. The frequency distribution for the mean National Percentile Ranks (with the normal distribution curve added) for the TTCT Creativity Index shows that WU students performed better than almost 64% of students tested nation-wide.

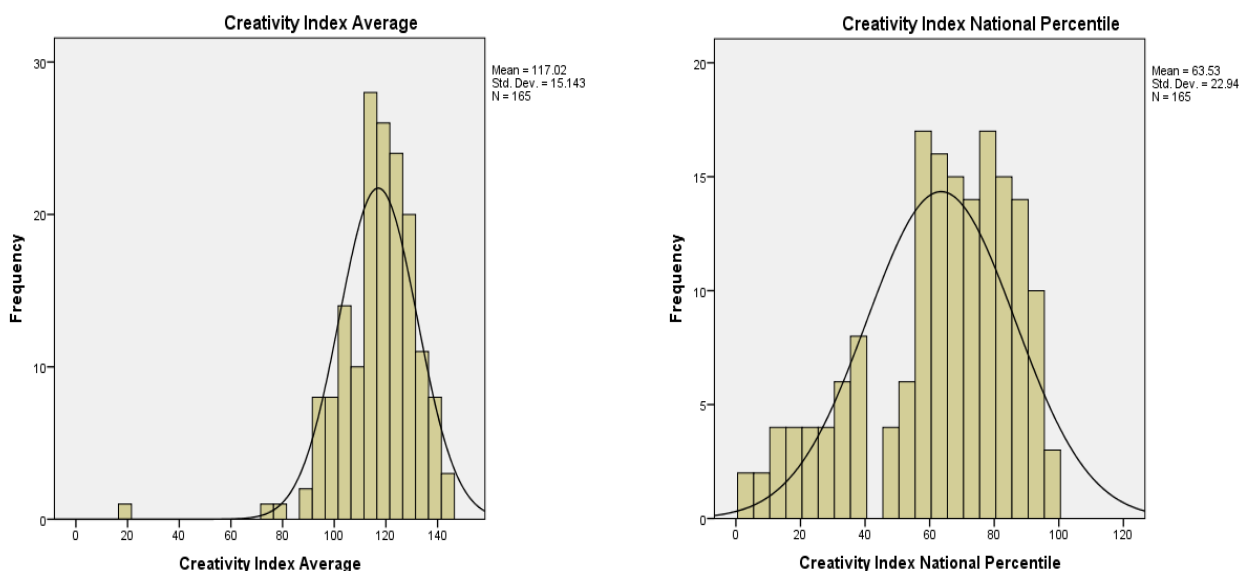


Table 2 presents the percentages of the 165 WU students tested scoring within 10-point score intervals for each of the five norm-referenced Figural assessments, the Average Figural standard score, and the overall Creativity Index. On the Figural Titles norm-referenced assessment 69% of students tested scored between 110 and 139, with 12% scoring above 140 and 19% scoring below 109. For the Figural Elaboration assessment 63% of students scored between 110 and 139, with 14% scoring above 140 and 23% scoring below 109. On Figural Fluency, 54% of WU students achieved a standard score between 90 and 109, with 29% scoring above 110 and 17% scoring below 79. Fifty percent of WU students tested achieved standard scores between 80 and 109 on the Figural Closure assessment, with 32% scoring above 110 and 18% scoring below 79. Approximately 60% of WU students tested had a standard score for Originality between 70 and 99, with 26% of students scoring above 100 and 14% scoring below 69.

Table 2. Standard Score Summary for TTCT Figural 2014-2015

Score Intervals	Percent of Students at Score Interval						
	Fluency	Originality	Titles	Elaboration	Closure	Average	Creativity Index
150 +	0%	0%	1%	7%	0%	0%	0%
140-149	1%	0%	11%	7%	0%	0%	4%
130-139	2%	1%	17%	26%	8%	1%	13%
120-129	7%	2%	29%	18%	14%	8%	30%
110-119	19%	6%	23%	19%	11%	33%	29%
100-109	22%	17%	9%	17%	18%	31%	13%
90-99	19%	17%	3%	4%	11%	14%	8%
80-89	13%	19%	5%	1%	21%	11%	2%
70-79	11%	23%	1%	0%	10%	1%	1%
60-69	5%	8%	0%	0%	7%	1%	0%
50-59	1%	5%	0%	1%	0%	0%	0%
< 50	0%	1%	0%	0%	1%	0%	0%

The Average Figural Standard Score mean for the 165 WU students tested was 105.93 (SD= 11.4). Approximately 78% of students obtained a standard score between 90 and 119, with 9% scoring higher than 120 and 13% scoring below 89. The overall mean Creativity Index for WU students tested was 117.02 (SD= 15.1). Over 70% (72%) of students rendered Creativity Indices between 100 and 129, with 17% scoring above 130 and 11% scoring below 99.

The TTCT Verbal provides three separate norm-referenced assessments of creativity including:

- **Fluency**- ability to produce a large number of ideas with words; each task attempting to tap into a different ability or mental process
- **Flexibility**- ability to produce a variety of ideas, shift from one approach to another, or use a variety of strategies
- **Originality**- ability to produce ideas well beyond the obvious, commonplace, banal, or established
- **Scores from the separate assessments are converted to standard scores to allow the computation of an average which serves as a single composite for the Verbal assessment.**

[Torrance, E.P. (2001, 2008). *Torrance Tests of Creative Thinking- Interpretive Manual*. Scholastic Testing Service, Inc. Bensenville: ILL.]

The WU student TTCT Verbal average standard scores ranged from 63 to 150 with a mean of 104.92 (SD= 16.24), and the TCTT Verbal National Percentile Ranks ranged from the 5th to 99th percentile with a mean of 57.79 (SD= 24.40). On average, WU students who were assessed scored better in the Verbal Section of the TCTT than did 58% of the students tested nation-wide.

The frequency distribution (with the normal distribution curve added) for the Standard Scores of the TTCT Verbal Average below shows that WU had slightly more students performing below the mean than expected. The frequency distribution for the mean National Percentile Ranks (with the normal distribution curve added) for the TTCT Verbal assessment shows that WU students performed better than 58% of students tested nationwide.

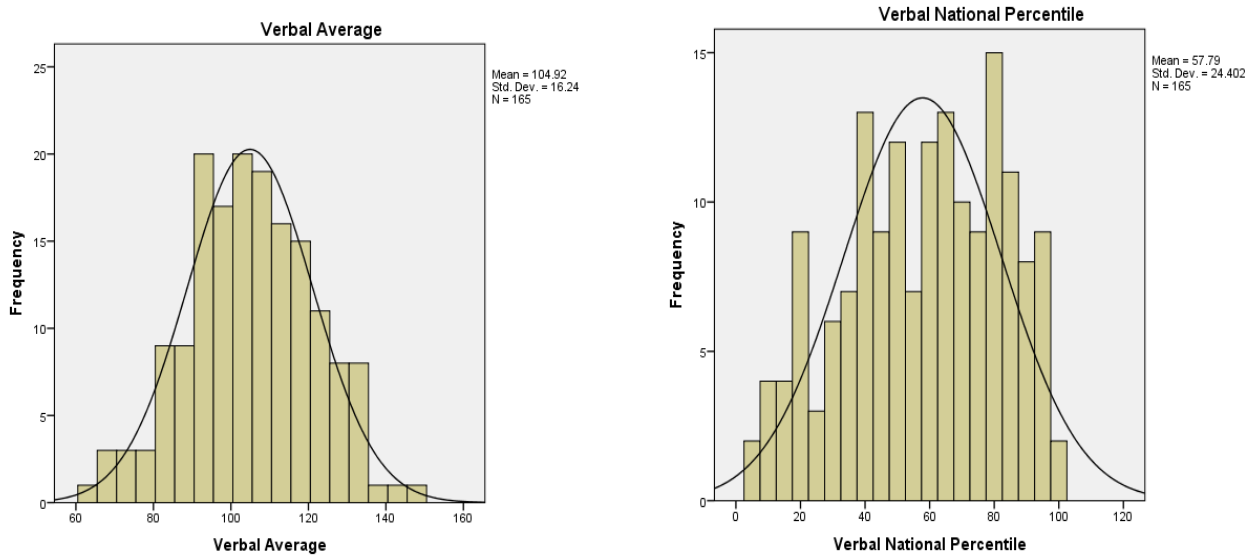


Table 3 below shows the percentage of the 165 WU students tested scoring within 10-point score intervals for the three norm-referenced Verbal assessments, and the Average Verbal standard score.

Table 3. Standard Score Summary for TTCT Verbal 2014-2015

Score Intervals	Percent of Students at Score Interval			
	Fluency	Flexibility	Originality	Average
150 +	1%	0%	6%	1%
140-149	1%	1%	6%	1%
130-139	6%	4%	10%	5%
120-129	10%	10%	21%	14%
110-119	15%	21%	20%	23%
100-109	22%	22%	21%	23%
90-99	23%	25%	10%	21%
80-89	16%	13%	4%	9%
70-79	8%	5%	2%	4%
60-69	0%	0%	0%	0%
50-59	0%	0%	0%	0%
< 50	0%	0%	0%	0%

For the norm-referenced Verbal Originality assessment 62% had standard scores between 100 and 129, with 22% scoring above 130 and 16% scoring below 99. Almost 70% (68%) of students achieved a standard score for Flexibility between 90 and 119, with 15% scoring above 120 and 17% scoring below 89. For the Verbal Fluency assessment 61% of WU students tested had a standard scores between 80 and 109, with 31% scoring above 110 and 8% scoring below 79. The Average Verbal Standard Score for the WU students tested was 104.92 (SD= 16.2). Approximately 67% of WU students achieved average verbal standard scores between 90 and 119, with 20% scoring higher than 120 and 13% scoring below 89.

Torrance Tests of Creative Thinking Student Group Comparisons for 2014-2015

The 165 Washburn University students that participated in the Torrance Tests of Creative Thinking assessment included 93 Nursing majors, 65 Education majors, and 7 students with other majors who attended an open testing session. The small group in the open testing session included 5 students from the College of Arts and Sciences (3 majoring in Mass Media, 1 Political Science, and 1 Undeclared), 1 student from the School of Business (majoring in Management), and 1 student from the School of Applied Studies (majoring in Social Work). Table 4 presents the means and standard deviations of the Standard Score Averages and National Percentile Ranks for the Figural and Verbal TTCT assessments and the Creativity Index.

Table 4. TTCT Descriptives by Major for 2014-2015

Major	N	Figural Average		Figural Nat'l Perc		Creativity Index Ave		Creativity Index NP		Verbal Average		Verbal Nat'l Perc	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Education	65	102.4	11.1	55.8	25.5	112.8	17.1	57.7	22.7	103.0	14.6	54.9	23.7
Nursing	93	108.9	11.0	71.2	23.0	120.4	13.0	68.4	22.1	105.9	17.4	59.4	25.0
Other	7	98.7	8.5	48.0	22.4	111.4	11.5	52.7	23.6	109.1	14.8	64.1	23.1
Total	165	105.9	11.4	64.1	25.2	117.0	15.1	63.5	22.9	104.9	16.2	57.8	24.4

For the TTCT Figural Average and the Creativity Index Average the 93 Nursing majors rendered the highest mean standard scores at 108.9 and 120.4, respectively; followed by the 65 Education majors with mean standard scores of 102.4 and 112.8, and the 7 Other majors had the lowest mean standard scores of 98.7 for the Figural Average and 111.4 for the Creativity Index Average. Nursing majors scored better than 71% of students tested nation-wide according to the National Percentile Ranks obtained for the Figural assessment, Education majors scored better than 56%, and Other majors scored better than 48% of students tested nation-wide. The National Percentile Ranks for the Creativity Index show that Nursing majors scored better than 68% of students tested nation-wide, Education majors scored better than 58%, and Other majors scored better than 53% of students tested nation-wide. For the TTCT Verbal Average the 7 Other majors rendered the highest mean standard score at 109.1, followed by the 93 Nursing majors at 105.9, and the 65 Education majors had the lowest mean standard score for the Verbal assessment at 103.0. The National Percentile Ranks for the TTCT Verbal show that the Other majors scored better than 64% of students tested nation-wide, Nursing majors scored better than 59%, and Education majors scored better than 55% of students tested nation-wide.

Independent t-tests were used to compare the mean results for the Education and Nursing majors' groups. The Nursing students had a significantly higher mean standard score than did the Education majors for the Figural assessment ($p < 0.001$) and the Creativity Index ($p = 0.002$), as well as significantly higher National Percentile Rank scores for the Figural Average ($p < 0.001$) and Creativity Index ($p = 0.004$). No significant differences between the Nursing and Education groups were detected for the Verbal Average or National Percentile Rank.

Table 5. Education and Nursing Means Comparison for 2014-2015 TTCT

Torrance Test of Creative Thinking Scores	Education			Nursing			Signif
	N	Mean	SD	N	Mean	SD	
Figural Average	65	102.4	11.1	93	108.9	11.0	< 0.001
Figural National Percentile	65	55.8	25.5	93	71.2	23.0	< 0.001
Creativity Index Average	65	112.8	17.1	93	120.4	13.0	0.002
Creativity Index National Percentile	65	57.7	68.4	93	68.4	22.1	0.004
Verbal Average	65	103.0	14.6	93	106.0	17.4	0.263
Verbal National Percentile	65	54.9	23.7	93	59.4	25.0	0.258