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Theatre Artists' Aptitudes Study:
Aptitudes of Theatre Professionals

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This bulletin reports findings from a study of professional theatre artists. The proposal for this study was outlined in Statistical Bulletin 2011-4, and results from Phase I of the study, which looked at Word Association scores and results of an online survey about work preferences and goals, were reported in SB 2015-2. In Phase II of the study, participating theatre artists took the entire battery of aptitude and vocabulary tests administered by the Foundation, and those results are reported here.

For this study of the aptitudes of theatre artists, we had several hypotheses we wanted to test. We thought that theatre artists would score high on verbal abilities (Silograms, English vocabulary, Ideaphoria) and musical abilities (Tonal Memory, Pitch Discrimination, Rhythm Memory), and possibly high on the Structural Visualization (spatial) aptitude (measured by the Wiggly Block and Paper Folding tests).

We also had more specific hypotheses for roles within the theatre field. For example, because their work often considers movement through space, or filling space, we thought directors and designers might have higher than average Structural Visualization scores. Because of their use of words, we supposed that playwrights might score highest among the theatre artists on English Vocabulary and Ideaphoria. And, because actors might need to be skilled at verbal improvisation, we wondered if they might have high scores on Ideaphoria.

Sample

All participants who completed Phase I of the study were invited to take the full battery of Foundation tests. Of the 206 theatre artists who completed the online survey in Phase I, 162 took the Word Association test (also reported in Phase I), and 132 (58 males, 74 females) completed the full battery of aptitude and vocabulary testing. Age of the participants ranged from 21 to 60 years old, with a mean age of 32 years old.

The great majority of participants were active in the Chicago theatre industry, while three were from Atlanta. Participants were asked to self-identify their primary role within the professional theatre community: there were 46 actors, 28 directors, 16 playwrights, 15 designers, 10 stage technicians, 11 who categorized themselves as "other," and 6 did not categorize themselves.

Method

For this study the full battery of Johnson O'Connor Research Foundation tests was used to compare scores to the general foundation mean from the same time period,¹ and scores for subsets based on primary role within the theatre were compared to each other.

Standardized scores, or z-scores, were calculated from raw scores in order to allow for comparisons among the tests. Age effects were removed and using z-scores puts all of the tests on the same metric, where a value of 0.0 stands for the mean, and 1.0 stands for a score that is one standard deviation above the mean².

As noted, Word Association scores were reported in SB 2015-2, and so are not reported here.

Results

First, we compared the mean scores of theatre artists as a group to the mean scores of the Foundation's general testing population. Table 1 shows the means for each of the tests.

Higher than average aptitude scores were found for theatre artists as a group for the following tests: Ideaphoria, Foresight, Analytical Reasoning, Number Series, Structural Visualization, Wiggly Block, Paper Folding, Tonal Memory, Pitch Discrimination, Rhythm Memory, Memory for Design, Silograms, Number Memory, Observation, and English Vocabulary.

The test with the highest mean overall was Foresight, with a mean z-score of .68, corresponding to the 74th percentile. When the theatre artists were broken down by role, all of the sub-groups had Foresight scores that were significantly higher than the general population.

Actors scored higher than the general population on the tests of Ideaphoria, Foresight, Analytical Reasoning, Paper Folding, Tonal Memory, Pitch Discrimination, Rhythm Memory, and English Vocabulary. Directors were higher than the general population on the same tests, with the exception of the auditory aptitudes (Tonal Memory, Pitch Discrimination, Rhythm Memory). Playwrights also scored high on Ideaphoria, Foresight, Analytical Reasoning, and English Vocabulary, but not on Paper Folding or the auditory tests.

Designers and stage technicians scored very similarly, both groups higher than the general population on the tests of Ideaphoria, Foresight, Analytical Reasoning, Wiggly Block, Paper Folding, Memory for Design, Observation, and Color Discrimination.

¹ From the period of 2011 to 2013.

² A standardized age-adjusted score was calculated by removing the age effects (age, age squared, and age cubed) from the percentiles, to find the standardized residual. Though our test percentiles are generally age-normed, this was done for all of the scores in order to more easily compare them.

Conclusions

The theatre artists as a whole scored higher than our general testing population on many of the aptitude tests. The Foundation has established several criteria that should be met in the determination of an occupational aptitude profile. Among these are that the difference between the sample mean and the general population mean must be statistically significant; the difference between the means should also be practically significant, an effect size of three-tenths of a standard deviation or greater; and at least sixty percent of the sample should score at or above the 50th percentile of the general population. The mean scores for the theatre artists met at least two of these criteria for the tests of Ideaphoria, Foresight, Analytical Reasoning, Number Series, Paper Folding, Tonal Memory, Pitch Discrimination, Rhythm Memory, Silograms, and English Vocabulary.

Ideaphoria, a divergent thinking measure, is thought to be useful in generating ideas and maintaining fluency in communication, among other things; it is commonly found among journalists, schoolteachers, and professionals in creative fields such as advertising and public relations. The highest Ideaphoria scores among the theatre artists were obtained by directors and playwrights. Actors, who had been hypothesized to score high, did not score significantly higher than the Foundation population.

Designers and stage technicians scored very similarly to the actors, directors, and playwrights on the tests of Foresight and Analytical Reasoning, but stood apart on the tests of Structural Visualization (Wiggly Block and Paper Folding), Memory for Design, Observation, and Color Discrimination. These are generally attributes of those in the visual arts, particularly three-dimensional arts such as architecture or interior design. Aptitudes for visual arts certainly make a great deal of sense for these two sub-groups.

Another divergent thinking measure, Foresight, stands out most for all the theatre artists. Possibly this aptitude is useful in helping them to see and think of many possibilities, and to generate many ideas. Playwrights may use it in imagining characters, plots, and themes, and in the case of adaptations to the stage from other media may find it helpful in seeing how to transform the story into a new form. Directors may use it while exploring concepts for a production in order to realize the world of the play, or in re-envisioning a classic text. Designers probably use it in everything they do; they, as visual artists, must take raw materials and imbue them with meaning and expression. Actors might use it in considering various readings of a character, scene, or line, or in imagining backstory and situations outside the play that could inform their character's choices. Those in stage and production management, may find that Foresight helps in seeing the big picture of the theatrical project as a long-term series of processes, problems, and competing deadlines: any Artistic Director will thank his or her lucky stars for a production manager who foresees problems before they arise, and has a plan for dealing with them.

References

Statistical Bulletin 2011-4. *Theatre Artists' Aptitudes Study Phase I: Personality, Satisfaction, and Goals*. S. Barsotti. Chicago: Johnson O'Connor Research Foundation.

Statistical Bulletin 2015-2. *Theatre Artists' Aptitudes Study: Results for Word Association and an Online Survey of Theatre Artists*. S. Barsotti, L.S. Houser-Marko, & R. Burke. Chicago: Johnson O'Connor Research Foundation.

Table 1. Theater artists' percentiles scores and standardized raw scores compared to current foundation mean.

	Mean PC	Theater Mean z (of raw score)	Confidence Interval of Theater artists' mean		Different from foundation mean	At least 60% above 50 th percentile
Graphoria	54.62	.00	-.14	.14		
Ideaphoria	66.17	.40	.24	.57	*	*
Foresight	74.25	.68	.51	.86	*	*
Inductive Reasoning	48.04	.21	.03	.40		
Analytical Reasoning	65.27	.59	.42	.75	*	*
Number Series	61.16	.26	.12	.40	*	*
Number Facility	53.23	.12	-.05	.29		
Structural Visualization	60.59	.41	.21	.60	*	
Wiggly Block	57.50	.26	.08	.45		
Paper Folding	62.78	.48	.28	.67	*	*
Tonal Memory	60.63	.47	.34	.61	*	*
Pitch Discrimination	59.63	.37	.25	.49	*	*
Rhythm Memory	66.20	.43	.29	.56	*	*
Memory for Design	61.45	.29	.13	.45	*	
Silograms	62.59	.39	.22	.57	*	*
Number Memory	55.82	.23	.06	.39	*	
Observation	59.34	.31	.16	.47	*	
Color Discrimination	58.18	.19	.05	.34		
Finger Dexterity	50.55	.09	-.08	.26		
Tweezer Dexterity	46.61	-.10	-.28	.07		
Word Association	9.56	-.34	-.48	-.20	*	*
English Vocabulary	63.26	.59	.45	.73	*	*

Table 2. Mean Standardized z scores and criteria for Actors.

	Actor Mean z (of raw score)	Confidence Interval of Actors' mean		Different from other theatre artists' mean	At least 60% above 50 th percentile
Graphoria	0.07	-0.16	0.30		
Ideaphoria	0.36	0.03	0.69		*
Foresight	0.66	0.36	0.96	*	*
Inductive Reasoning	0.24	-0.09	0.56		
Analytical Reasoning	0.49	0.20	0.78	*	*
Number Series	0.25	-0.01	0.51		*
Number Facility	0.08	-0.21	0.37		
Structural Visualization	0.34	0.01	0.68		
Wiggly Block	0.26	-0.07	0.58		
Paper Folding	0.36	0.05	0.67		*
Tonal Memory	0.73	0.55	0.91	*	*
Pitch Discrimination	0.32	0.12	0.52	*	*
Rhythm Memory	0.53	0.32	0.74	*	*
Memory for Design	0.32	0.05	0.59		
Silograms	0.51	0.19	0.83	*	*
Number Memory	0.09	-0.18	0.35		
Observation	0.38	0.08	0.68		
Color Discrimination	0.04	-0.25	0.33		
Finger Dexterity	0.08	-0.20	0.35		
Tweezer Dexterity	0.06	-0.22	0.33		
Word Association	-0.53	-0.74	-0.32	*	*
English Vocabulary	0.44	0.19	0.68	*	

Table 3. Mean Standardized z scores and criteria for Directors.

	Director Mean z (of raw score)	Confidence Interval of Directors' mean		Different from other theatre artists' mean	At least 60% above 50 th percentile
Graphoria	-0.10	-0.45	0.24		
Ideaphoria	0.64	0.30	0.98	*	*
Foresight	0.69	0.30	1.08	*	*
Inductive Reasoning	-0.02	-0.36	0.32		
Analytical Reasoning	0.56	0.21	0.91	*	*
Number Series	0.32	-0.04	0.68		*
Number Facility	0.13	-0.39	0.64		
Structural Visualization	0.42	-0.01	0.85		
Wiggly Block	0.35	-0.08	0.77		
Paper Folding	0.47	0.01	0.93		*
Tonal Memory	0.29	-0.06	0.63		*
Pitch Discrimination	0.36	0.05	0.66		*
Rhythm Memory	0.32	-0.07	0.71		*
Memory for Design	0.15	-0.20	0.51		
Silograms	0.21	-0.15	0.57		
Number Memory	0.15	-0.25	0.54		
Observation	-0.12	-0.42	0.18		
Color Discrimination	0.14	-0.23	0.51		
Finger Dexterity	0.05	-0.29	0.38		
Tweezer Dexterity	-0.33	-0.75	0.09		
Word Association	-0.05	-0.37	0.28		
English Vocabulary	0.52	0.24	0.81	*	*