

Summary of nonparametric statistics analysis for the scores of Relevance in the third study for signed up students

Table 1: Summary of Scheirer-Ray-Hare results for the scores of Relevance in the third study for signed up students

| | Df | Sum Sq | H | p.value | Sig |
|------------------|----|-----------|-------|---------|-----|
| Type | | | | | |
| Type:Type | 1 | 310.633 | 1.365 | 0.243 | |
| Type:CLRole | 1 | 467.303 | 2.053 | 0.152 | |
| Type:Type:CLRole | 1 | 280.216 | 1.231 | 0.267 | |
| Type:Residuals | 48 | 10548.849 | | | |

Signif. codes: 0 ‘***’ 0.01 ‘**’ 0.05

Table 2: Descriptive statistic of the pair wilcoxon analysis for the scores of Relevance in the third study for signed up students

| | Group | N | Median | Mean.Ranks | Sum.Ranks | U | Z | p.value | r | magnitude |
|------------------------|-------------------------|----|--------|------------|-----------|-------|-------|---------|-------|-----------|
| Type:CLRole.less.1 | ont-gamified.Apprentice | 16 | 4.5 | 11.03 | 176.5 | 40.5 | -1.79 | 0.038 | 0.358 | medium |
| Type:CLRole.less.2 | ont-gamified.Master | 9 | 6.0 | 16.50 | 148.5 | 40.5 | -1.79 | 0.038 | 0.358 | medium |
| Type:CLRole.greater.1 | ont-gamified.Master | 9 | 6.0 | 18.83 | 169.5 | 124.5 | 1.93 | 0.027 | 0.364 | medium |
| Type:CLRole.greater.2 | w/o-gamified.Apprentice | 19 | 4.5 | 12.45 | 236.5 | 124.5 | 1.93 | 0.027 | 0.364 | medium |
| Type:CLRole.greater.11 | ont-gamified.Master | 9 | 6.0 | 10.94 | 98.5 | 53.5 | 1.69 | 0.048 | 0.411 | medium |
| Type:CLRole.greater.21 | w/o-gamified.Master | 8 | 4.5 | 6.81 | 54.5 | 53.5 | 1.69 | 0.048 | 0.411 | medium |

Table 3: Full descriptive statistic of the pair wilcoxon analysis for the scores of Relevance in the third study for signed up students

| | Group | N | Median | Mean.Ranks | Sum.Ranks | U | Z | p.value | r | magnitude |
|--------------------------|-------------------------|----|--------|------------|-----------|-------|-------|---------|-------|-----------|
| Type.less.1 | ont-gamified | 25 | 4.75 | 29.04 | 726.0 | 401.0 | 1.17 | 0.878 | 0.162 | small |
| Type.less.2 | w/o-gamified | 27 | 4.50 | 24.15 | 652.0 | 401.0 | 1.17 | 0.878 | 0.162 | small |
| Type.greater.1 | ont-gamified | 25 | 4.75 | 29.04 | 726.0 | 401.0 | 1.17 | 0.123 | 0.162 | small |
| Type.greater.2 | w/o-gamified | 27 | 4.50 | 24.15 | 652.0 | 401.0 | 1.17 | 0.123 | 0.162 | small |
| Type.two.sided.1 | ont-gamified | 25 | 4.75 | 29.04 | 726.0 | 401.0 | 1.17 | 0.247 | 0.162 | small |
| Type.two.sided.2 | w/o-gamified | 27 | 4.50 | 24.15 | 652.0 | 401.0 | 1.17 | 0.247 | 0.162 | small |
| Type:CLRole.less.1 | ont-gamified.Apprentice | 16 | 4.50 | 11.03 | 176.5 | 40.5 | -1.79 | 0.038 | 0.358 | medium |
| Type:CLRole.less.2 | ont-gamified.Master | 9 | 6.00 | 16.50 | 148.5 | 40.5 | -1.79 | 0.038 | 0.358 | medium |
| Type:CLRole.greater.1 | ont-gamified.Apprentice | 16 | 4.50 | 11.03 | 176.5 | 40.5 | -1.79 | 0.965 | 0.358 | medium |
| Type:CLRole.greater.2 | ont-gamified.Master | 9 | 6.00 | 16.50 | 148.5 | 40.5 | -1.79 | 0.965 | 0.358 | medium |
| Type:CLRole.two.sided.1 | ont-gamified.Apprentice | 16 | 4.50 | 11.03 | 176.5 | 40.5 | -1.79 | 0.076 | 0.358 | medium |
| Type:CLRole.two.sided.2 | ont-gamified.Master | 9 | 6.00 | 16.50 | 148.5 | 40.5 | -1.79 | 0.076 | 0.358 | medium |
| Type:CLRole.less.11 | ont-gamified.Apprentice | 16 | 4.50 | 18.47 | 295.5 | 159.5 | 0.25 | 0.601 | 0.042 | none |
| Type:CLRole.less.21 | w/o-gamified.Apprentice | 19 | 4.50 | 17.61 | 334.5 | 159.5 | 0.25 | 0.601 | 0.042 | none |
| Type:CLRole.greater.11 | ont-gamified.Apprentice | 16 | 4.50 | 18.47 | 295.5 | 159.5 | 0.25 | 0.406 | 0.042 | none |
| Type:CLRole.greater.21 | w/o-gamified.Apprentice | 19 | 4.50 | 17.61 | 334.5 | 159.5 | 0.25 | 0.406 | 0.042 | none |
| Type:CLRole.two.sided.11 | ont-gamified.Apprentice | 16 | 4.50 | 18.47 | 295.5 | 159.5 | 0.25 | 0.812 | 0.042 | none |
| Type:CLRole.two.sided.21 | w/o-gamified.Apprentice | 19 | 4.50 | 17.61 | 334.5 | 159.5 | 0.25 | 0.812 | 0.042 | none |
| Type:CLRole.less.12 | ont-gamified.Apprentice | 16 | 4.50 | 12.47 | 199.5 | 63.5 | -0.03 | 0.494 | 0.006 | none |
| Type:CLRole.less.22 | w/o-gamified.Master | 8 | 4.50 | 12.56 | 100.5 | 63.5 | -0.03 | 0.494 | 0.006 | none |
| Type:CLRole.greater.12 | ont-gamified.Apprentice | 16 | 4.50 | 12.47 | 199.5 | 63.5 | -0.03 | 0.518 | 0.006 | none |
| Type:CLRole.greater.22 | w/o-gamified.Master | 8 | 4.50 | 12.56 | 100.5 | 63.5 | -0.03 | 0.518 | 0.006 | none |
| Type:CLRole.two.sided.12 | ont-gamified.Apprentice | 16 | 4.50 | 12.47 | 199.5 | 63.5 | -0.03 | 0.988 | 0.006 | none |
| Type:CLRole.two.sided.22 | w/o-gamified.Master | 8 | 4.50 | 12.56 | 100.5 | 63.5 | -0.03 | 0.988 | 0.006 | none |
| Type:CLRole.less.13 | ont-gamified.Master | 9 | 6.00 | 18.83 | 169.5 | 124.5 | 1.93 | 0.974 | 0.364 | medium |
| Type:CLRole.less.23 | w/o-gamified.Apprentice | 19 | 4.50 | 12.45 | 236.5 | 124.5 | 1.93 | 0.974 | 0.364 | medium |
| Type:CLRole.greater.13 | ont-gamified.Master | 9 | 6.00 | 18.83 | 169.5 | 124.5 | 1.93 | 0.027 | 0.364 | medium |
| Type:CLRole.greater.23 | w/o-gamified.Apprentice | 19 | 4.50 | 12.45 | 236.5 | 124.5 | 1.93 | 0.027 | 0.364 | medium |
| Type:CLRole.two.sided.13 | ont-gamified.Master | 9 | 6.00 | 18.83 | 169.5 | 124.5 | 1.93 | 0.055 | 0.364 | medium |
| Type:CLRole.two.sided.23 | w/o-gamified.Apprentice | 19 | 4.50 | 12.45 | 236.5 | 124.5 | 1.93 | 0.055 | 0.364 | medium |
| Type:CLRole.less.14 | ont-gamified.Master | 9 | 6.00 | 10.94 | 98.5 | 53.5 | 1.69 | 0.957 | 0.411 | medium |
| Type:CLRole.less.24 | w/o-gamified.Master | 8 | 4.50 | 6.81 | 54.5 | 53.5 | 1.69 | 0.957 | 0.411 | medium |
| Type:CLRole.greater.14 | ont-gamified.Master | 9 | 6.00 | 10.94 | 98.5 | 53.5 | 1.69 | 0.048 | 0.411 | medium |
| Type:CLRole.greater.24 | w/o-gamified.Master | 8 | 4.50 | 6.81 | 54.5 | 53.5 | 1.69 | 0.048 | 0.411 | medium |
| Type:CLRole.two.sided.14 | ont-gamified.Master | 9 | 6.00 | 10.94 | 98.5 | 53.5 | 1.69 | 0.095 | 0.411 | medium |
| Type:CLRole.two.sided.24 | w/o-gamified.Master | 8 | 4.50 | 6.81 | 54.5 | 53.5 | 1.69 | 0.095 | 0.411 | medium |
| Type:CLRole.less.15 | w/o-gamified.Apprentice | 19 | 4.50 | 13.68 | 260.0 | 70.0 | -0.32 | 0.381 | 0.062 | none |
| Type:CLRole.less.25 | w/o-gamified.Master | 8 | 4.50 | 14.75 | 118.0 | 70.0 | -0.32 | 0.381 | 0.062 | none |
| Type:CLRole.greater.15 | w/o-gamified.Apprentice | 19 | 4.50 | 13.68 | 260.0 | 70.0 | -0.32 | 0.628 | 0.062 | none |
| Type:CLRole.greater.25 | w/o-gamified.Master | 8 | 4.50 | 14.75 | 118.0 | 70.0 | -0.32 | 0.628 | 0.062 | none |

Table 3: *(continued)*

| | Group | N | Median | Mean.Ranks | Sum.Ranks | U | Z | p.value | r | magnitude |
|--------------------------|-------------------------|----|--------|------------|-----------|------|-------|---------|-------|-----------|
| Type:CLRole.two.sided.15 | w/o-gamified.Apprentice | 19 | 4.50 | 13.68 | 260.0 | 70.0 | -0.32 | 0.763 | 0.062 | none |
| Type:CLRole.two.sided.25 | w/o-gamified.Master | 8 | 4.50 | 14.75 | 118.0 | 70.0 | -0.32 | 0.763 | 0.062 | none |