

1 Summaries of Nonparametric Statistics Analysis

Table 1: Summary of Scheirer-Ray-Hare results

	Df	Sum Sq	H	p.value	Sig
gain.theta					
gain.theta:Type	1	1290.572	6.321	0.012	*
gain.theta:CLRole	1	1029.892	5.045	0.025	*
gain.theta:Type:CLRole	1	3.010	0.015	0.903	
gain.theta:Residuals	45	7476.026			

Signif. codes: 0 '***' 0.01 '**' 0.05

2 Summaries of Wilcoxon Data Analysis

Table 2: Descriptive statistic of the pair wilcoxon analysis

	Group	N	Median	Mean.Ranks	Sum.Ranks	U	Z	p.value
gain.theta.Type:ont-gamified:w/o-gamified.greater.1	ont-gamified	23	0.04	30.46	700.5	424.5	2.51	0.006
gain.theta.Type:ont-gamified:w/o-gamified.greater.2	w/o-gamified	26	-0.04	20.17	524.5	424.5	2.51	0.006
gain.theta.Type:ont-gamified:w/o-gamified.two.sided.1	ont-gamified	23	0.04	30.46	700.5	424.5	2.51	0.011
gain.theta.Type:ont-gamified:w/o-gamified.two.sided.2	w/o-gamified	26	-0.04	20.17	524.5	424.5	2.51	0.011
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Apprentice.greater.1	ont-gamified.Apprentice	16	0.07	22.84	365.5	229.5	2.57	0.005
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Apprentice.greater.2	w/o-gamified.Apprentice	19	-0.03	13.92	264.5	229.5	2.57	0.005
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Apprentice.two.sided.1	ont-gamified.Apprentice	16	0.07	22.84	365.5	229.5	2.57	0.009
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Apprentice.two.sided.2	w/o-gamified.Apprentice	19	-0.03	13.92	264.5	229.5	2.57	0.009
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Master.greater.1	ont-gamified.Apprentice	16	0.07	14.69	235.0	99.0	2.87	0.001
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Master.greater.2	w/o-gamified.Master	7	-0.07	5.86	41.0	99.0	2.87	0.001
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Master.two.sided.1	ont-gamified.Apprentice	16	0.07	14.69	235.0	99.0	2.87	0.003
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Master.two.sided.2	w/o-gamified.Master	7	-0.07	5.86	41.0	99.0	2.87	0.003
gain.theta.Type:CLRole.w/o-gamified.Apprentice:w/o-gamified.Master.greater.1	w/o-gamified.Apprentice	19	-0.03	15.21	289.0	99.0	1.88	0.032
gain.theta.Type:CLRole.w/o-gamified.Apprentice:w/o-gamified.Master.greater.2	w/o-gamified.Master	7	-0.07	8.86	62.0	99.0	1.88	0.032

Signif. codes: 0 '***' 0.01 '**' 0.05

Table 3: Full descriptive statistic of the pair wilcoxon analysis

	Group	N	Median	Mean.Ranks	Sum.Ranks	U	Z	p.value
gain.theta.Type:ont-gamified:w/o-gamified.less.1	ont-gamified	23	0.04	30.46	700.5	424.5	2.51	0.995
gain.theta.Type:ont-gamified:w/o-gamified.less.2	w/o-gamified	26	-0.04	20.17	524.5	424.5	2.51	0.995
gain.theta.Type:ont-gamified:w/o-gamified.greater.1	ont-gamified	23	0.04	30.46	700.5	424.5	2.51	0.006
gain.theta.Type:ont-gamified:w/o-gamified.greater.2	w/o-gamified	26	-0.04	20.17	524.5	424.5	2.51	0.006
gain.theta.Type:ont-gamified:w/o-gamified.two.sided.1	ont-gamified	23	0.04	30.46	700.5	424.5	2.51	0.011
gain.theta.Type:ont-gamified:w/o-gamified.two.sided.2	w/o-gamified	26	-0.04	20.17	524.5	424.5	2.51	0.011
gain.theta.Type:CLRole.ont-gamified.Apprentice:ont-gamified.Master.less.1	ont-gamified.Apprentice	16	0.07	13.19	211.0	75.0	1.27	0.901
gain.theta.Type:CLRole.ont-gamified.Apprentice:ont-gamified.Master.less.2	ont-gamified.Master	7	-0.02	9.29	65.0	75.0	1.27	0.901
gain.theta.Type:CLRole.ont-gamified.Apprentice:ont-gamified.Master.greater.1	ont-gamified.Apprentice	16	0.07	13.19	211.0	75.0	1.27	0.111
gain.theta.Type:CLRole.ont-gamified.Apprentice:ont-gamified.Master.greater.2	ont-gamified.Master	7	-0.02	9.29	65.0	75.0	1.27	0.111
gain.theta.Type:CLRole.ont-gamified.Apprentice:ont-gamified.Master.two.sided.1	ont-gamified.Apprentice	16	0.07	13.19	211.0	75.0	1.27	0.222
gain.theta.Type:CLRole.ont-gamified.Apprentice:ont-gamified.Master.two.sided.2	ont-gamified.Master	7	-0.02	9.29	65.0	75.0	1.27	0.222
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Apprentice.less.1	ont-gamified.Apprentice	16	0.07	22.84	365.5	229.5	2.57	0.996
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Apprentice.less.2	w/o-gamified.Apprentice	19	-0.03	13.92	264.5	229.5	2.57	0.996
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Apprentice.greater.1	ont-gamified.Apprentice	16	0.07	22.84	365.5	229.5	2.57	0.005
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Apprentice.greater.2	w/o-gamified.Apprentice	19	-0.03	13.92	264.5	229.5	2.57	0.005
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Apprentice.two.sided.1	ont-gamified.Apprentice	16	0.07	22.84	365.5	229.5	2.57	0.009
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Apprentice.two.sided.2	w/o-gamified.Apprentice	19	-0.03	13.92	264.5	229.5	2.57	0.009
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Master.less.1	ont-gamified.Apprentice	16	0.07	14.69	235.0	99.0	2.87	0.999
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Master.less.2	w/o-gamified.Master	7	-0.07	5.86	41.0	99.0	2.87	0.999
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Master.greater.1	ont-gamified.Apprentice	16	0.07	14.69	235.0	99.0	2.87	0.001
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Master.greater.2	w/o-gamified.Master	7	-0.07	5.86	41.0	99.0	2.87	0.001
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Master.two.sided.1	ont-gamified.Apprentice	16	0.07	14.69	235.0	99.0	2.87	0.003
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Master.two.sided.2	w/o-gamified.Master	7	-0.07	5.86	41.0	99.0	2.87	0.003
gain.theta.Type:CLRole.ont-gamified.Master:w/o-gamified.Apprentice.less.1	ont-gamified.Master	7	-0.02	13.14	92.0	64.0	-0.14	0.455
gain.theta.Type:CLRole.ont-gamified.Master:w/o-gamified.Apprentice.less.2	w/o-gamified.Apprentice	19	-0.03	13.63	259.0	64.0	-0.14	0.455
gain.theta.Type:CLRole.ont-gamified.Master:w/o-gamified.Apprentice.greater.1	ont-gamified.Master	7	-0.02	13.14	92.0	64.0	-0.14	0.567
gain.theta.Type:CLRole.ont-gamified.Master:w/o-gamified.Apprentice.greater.2	w/o-gamified.Apprentice	19	-0.03	13.63	259.0	64.0	-0.14	0.567
gain.theta.Type:CLRole.ont-gamified.Master:w/o-gamified.Apprentice.two.sided.1	ont-gamified.Master	7	-0.02	13.14	92.0	64.0	-0.14	0.910
gain.theta.Type:CLRole.ont-gamified.Master:w/o-gamified.Apprentice.two.sided.2	w/o-gamified.Apprentice	19	-0.03	13.63	259.0	64.0	-0.14	0.910
gain.theta.Type:CLRole.ont-gamified.Master:w/o-gamified.Master.less.1	ont-gamified.Master	7	-0.02	8.57	60.0	32.0	0.96	0.841
gain.theta.Type:CLRole.ont-gamified.Master:w/o-gamified.Master.less.2	w/o-gamified.Master	7	-0.07	6.43	45.0	32.0	0.96	0.841
gain.theta.Type:CLRole.ont-gamified.Master:w/o-gamified.Master.greater.1	ont-gamified.Master	7	-0.02	8.57	60.0	32.0	0.96	0.191
gain.theta.Type:CLRole.ont-gamified.Master:w/o-gamified.Master.greater.2	w/o-gamified.Master	7	-0.07	6.43	45.0	32.0	0.96	0.191
gain.theta.Type:CLRole.ont-gamified.Master:w/o-gamified.Master.two.sided.1	ont-gamified.Master	7	-0.02	8.57	60.0	32.0	0.96	0.383
gain.theta.Type:CLRole.ont-gamified.Master:w/o-gamified.Master.two.sided.2	w/o-gamified.Master	7	-0.07	6.43	45.0	32.0	0.96	0.383
gain.theta.Type:CLRole.w/o-gamified.Apprentice:w/o-gamified.Master.less.1	w/o-gamified.Apprentice	19	-0.03	15.21	289.0	99.0	1.88	0.972
gain.theta.Type:CLRole.w/o-gamified.Apprentice:w/o-gamified.Master.less.2	w/o-gamified.Master	7	-0.07	8.86	62.0	99.0	1.88	0.972
gain.theta.Type:CLRole.w/o-gamified.Apprentice:w/o-gamified.Master.greater.1	w/o-gamified.Apprentice	19	-0.03	15.21	289.0	99.0	1.88	0.032

Table 3: (continued)

gain.theta.Type:CLRole.w/o-gamified.Apprentice:w/o-gamified.Master.greater.2	Group		N	Median	Mean.Ranks	Sum.Ranks	U	Z	p.value
	w/o-gamified	Master							
			7	-0.07	8.86	62.0	99.0	1.88	0.032

Table 3: (continued)

gain.theta.Type:CLRole.w/o-gamified.Apprentice:w/o-gamified.Master.two.sided.1	Group		N	Median	Mean.Ranks	Sum.Ranks	U	Z	p.value
	w/o-gamified.Apprentice	w/o-gamified.Master							
gain.theta.Type:CLRole.w/o-gamified.Apprentice:w/o-gamified.Master.two.sided.2	19	7	19	-0.03	15.21	289.0	99.0	1.88	0.063
gain.theta.Type:CLRole.w/o-gamified.Apprentice:w/o-gamified.Master.two.sided.2			7	-0.07	8.86	62.0	99.0	1.88	0.063

Signif. codes: 0 '***' 0.01 '**' 0.05