

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	812.368	7.737	0.005	**
gain.theta:CLRole	1	283.914	2.704	0.100	
gain.theta:Type:CLRole	1	1.473	0.014	0.906	
gain.theta:Residuals	31	2472.244			

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	19	0.04	22.42	426	236	2.78	0.002
gain.theta.Type:ont-gamified:w/o-gamified.greater.2	w/o-gamified	16	-0.05	12.75	204	236	2.78	0.002
gain.theta.Type:ont-gamified:w/o-gamified.two.sided.1	ont-gamified	19	0.04	22.42	426	236	2.78	0.005
gain.theta.Type:ont-gamified:w/o-gamified.two.sided.2	w/o-gamified	16	-0.05	12.75	204	236	2.78	0.005
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Apprentice.greater.1	ont-gamified.Apprentice	13	0.06	15.92	207	116	2.58	0.004
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Apprentice.greater.2	w/o-gamified.Apprentice	11	-0.03	8.45	93	116	2.58	0.004
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Apprentice.two.sided.1	ont-gamified.Apprentice	13	0.06	15.92	207	116	2.58	0.009
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Apprentice.two.sided.2	w/o-gamified.Apprentice	11	-0.03	8.45	93	116	2.58	0.009
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Master.greater.1	ont-gamified.Apprentice	13	0.06	11.54	150	59	2.61	0.003
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Master.greater.2	w/o-gamified.Master	5	-0.09	4.20	21	59	2.61	0.003
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Master.two.sided.1	ont-gamified.Apprentice	13	0.06	11.54	150	59	2.61	0.007
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Master.two.sided.2	w/o-gamified.Master	5	-0.09	4.20	21	59	2.61	0.007
gain.theta.Type:CLRole.w/o-gamified.Apprentice:w/o-gamified.Master.greater.1	w/o-gamified.Apprentice	11	-0.03	9.91	109	43	1.76	0.045
gain.theta.Type:CLRole.w/o-gamified.Apprentice:w/o-gamified.Master.greater.2	w/o-gamified.Master	5	-0.09	5.40	27	43	1.76	0.045

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	19	0.04	22.42	426	236	2.78	0.998
gain.theta.Type:ont-gamified:w/o-gamified.less.2	w/o-gamified	16	-0.05	12.75	204	236	2.78	0.998
gain.theta.Type:ont-gamified:w/o-gamified.greater.1	ont-gamified	19	0.04	22.42	426	236	2.78	0.002
gain.theta.Type:ont-gamified:w/o-gamified.greater.2	w/o-gamified	16	-0.05	12.75	204	236	2.78	0.002
gain.theta.Type:ont-gamified:w/o-gamified.two.sided.1	ont-gamified	19	0.04	22.42	426	236	2.78	0.005
gain.theta.Type:ont-gamified:w/o-gamified.two.sided.2	w/o-gamified	16	-0.05	12.75	204	236	2.78	0.005
gain.theta.Type:CLRole.ont-gamified.Apprentice:ont-gamified.Master.less.1	ont-gamified.Apprentice	13	0.06	10.77	140	49	0.88	0.816
gain.theta.Type:CLRole.ont-gamified.Apprentice:ont-gamified.Master.less.2	ont-gamified.Master	6	-0.01	8.33	50	49	0.88	0.816
gain.theta.Type:CLRole.ont-gamified.Apprentice:ont-gamified.Master.greater.1	ont-gamified.Apprentice	13	0.06	10.77	140	49	0.88	0.208
gain.theta.Type:CLRole.ont-gamified.Apprentice:ont-gamified.Master.greater.2	ont-gamified.Master	6	-0.01	8.33	50	49	0.88	0.208
gain.theta.Type:CLRole.ont-gamified.Apprentice:ont-gamified.Master.two.sided.1	ont-gamified.Apprentice	13	0.06	10.77	140	49	0.88	0.416
gain.theta.Type:CLRole.ont-gamified.Apprentice:ont-gamified.Master.two.sided.2	ont-gamified.Master	6	-0.01	8.33	50	49	0.88	0.416
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Apprentice.less.1	ont-gamified.Apprentice	13	0.06	15.92	207	116	2.58	0.996
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Apprentice.less.2	w/o-gamified.Apprentice	11	-0.03	8.45	93	116	2.58	0.996
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Apprentice.greater.1	ont-gamified.Apprentice	13	0.06	15.92	207	116	2.58	0.004
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Apprentice.greater.2	w/o-gamified.Apprentice	11	-0.03	8.45	93	116	2.58	0.004
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Apprentice.two.sided.1	ont-gamified.Apprentice	13	0.06	15.92	207	116	2.58	0.009
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Apprentice.two.sided.2	w/o-gamified.Apprentice	11	-0.03	8.45	93	116	2.58	0.009
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Master.less.1	ont-gamified.Apprentice	13	0.06	11.54	150	59	2.61	0.998
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Master.less.2	w/o-gamified.Apprentice	5	-0.09	4.20	21	59	2.61	0.998
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Master.greater.1	ont-gamified.Apprentice	13	0.06	11.54	150	59	2.61	0.003
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Master.greater.2	w/o-gamified.Apprentice	5	-0.09	4.20	21	59	2.61	0.003
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Master.two.sided.1	ont-gamified.Apprentice	13	0.06	11.54	150	59	2.61	0.007
gain.theta.Type:CLRole.ont-gamified.Apprentice:w/o-gamified.Master.two.sided.2	w/o-gamified.Apprentice	5	-0.09	4.20	21	59	2.61	0.007
gain.theta.Type:CLRole.ont-gamified.Master:w/o-gamified.Apprentice.less.1	ont-gamified.Master	6	-0.01	10.00	60	39	0.60	0.738
gain.theta.Type:CLRole.ont-gamified.Master:w/o-gamified.Apprentice.less.2	w/o-gamified.Apprentice	11	-0.03	8.45	93	39	0.60	0.738
gain.theta.Type:CLRole.ont-gamified.Master:w/o-gamified.Apprentice.greater.1	ont-gamified.Master	6	-0.01	10.00	60	39	0.60	0.295
gain.theta.Type:CLRole.ont-gamified.Master:w/o-gamified.Apprentice.greater.2	w/o-gamified.Apprentice	11	-0.03	8.45	93	39	0.60	0.295
gain.theta.Type:CLRole.ont-gamified.Master:w/o-gamified.Apprentice.two.sided.1	ont-gamified.Master	6	-0.01	10.00	60	39	0.60	0.591
gain.theta.Type:CLRole.ont-gamified.Master:w/o-gamified.Apprentice.two.sided.2	w/o-gamified.Apprentice	11	-0.03	8.45	93	39	0.60	0.591
gain.theta.Type:CLRole.ont-gamified.Master:w/o-gamified.Master.less.1	ont-gamified.Master	6	-0.01	7.17	43	22	1.28	0.911
gain.theta.Type:CLRole.ont-gamified.Master:w/o-gamified.Master.less.2	w/o-gamified.Master	5	-0.09	4.60	23	22	1.28	0.911
gain.theta.Type:CLRole.ont-gamified.Master:w/o-gamified.Master.greater.1	ont-gamified.Master	6	-0.01	7.17	43	22	1.28	0.123
gain.theta.Type:CLRole.ont-gamified.Master:w/o-gamified.Master.greater.2	w/o-gamified.Master	5	-0.09	4.60	23	22	1.28	0.123
gain.theta.Type:CLRole.ont-gamified.Master:w/o-gamified.Master.two.sided.1	ont-gamified.Master	6	-0.01	7.17	43	22	1.28	0.247
gain.theta.Type:CLRole.ont-gamified.Master:w/o-gamified.Master.two.sided.2	w/o-gamified.Master	5	-0.09	4.60	23	22	1.28	0.247
gain.theta.Type:CLRole.w/o-gamified.Apprentice:w/o-gamified.Master.less.1	w/o-gamified.Apprentice	11	-0.03	9.91	109	43	1.76	0.966
gain.theta.Type:CLRole.w/o-gamified.Apprentice:w/o-gamified.Master.less.2	w/o-gamified.Apprentice	5	-0.09	5.40	27	43	1.76	0.966
gain.theta.Type:CLRole.w/o-gamified.Apprentice:w/o-gamified.Master.greater.1	w/o-gamified.Apprentice	11	-0.03	9.91	109	43	1.76	0.045

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							
			5	-0.09	5.40	27	43	1.76	0.045

Table 3: (*continued*)

gain.theta.Type:CLRole.w/o-gamified.Apprentice:w/o-gamified.Master.two.sided.1 gain.theta.Type:CLRole.w/o-gamified.Apprentice:w/o-gamified.Master.two.sided.2	Group		N	Median	Mean.Ranks	Sum.Ranks	U	Z	p.value
	w/o-gamified.Apprentice	w/o-gamified.Master							
	11		11	-0.03	9.91	109	43	1.76	0.090
		5	5	-0.09	5.40	27	43	1.76	0.090

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