

Statistical Analysis in the first study for signed up students

October 1, 2018

Table 1: Two-way ANOVA and Scheirer-Ray-Hare in the first study for signed up students

	Sum Sq	Df	F value	Pr(>F)	Sig	Df	Sum Sq	H	p.value	Sig
Interest/Enjoyment.(Intercept)	0.421	1	0.419	0.520						
Interest/Enjoyment.Type	0.946	1	0.942	0.336		1	1135.350	3.741	0.053	
Interest/Enjoyment.CLRole	0.268	1	0.267	0.607		1	32.781	0.108	0.742	
Interest/Enjoyment.Type:CLRole	2.003	1	1.993	0.164		1	456.963	1.506	0.220	
Interest/Enjoyment.Residuals	52.258	52				56	16281.406			
Perceived Choice.(Intercept)	0.016	1	0.020	0.889						
Perceived Choice.Type	6.371	1	7.885	0.007	**	1	1804.017	5.938	0.015	*
Perceived Choice.CLRole	0.229	1	0.283	0.597		1	74.909	0.247	0.620	
Perceived Choice.Type:CLRole	0.050	1	0.061	0.805		1	12.988	0.043	0.836	
Perceived Choice.Residuals	45.244	56				56	16034.087			
Pressure/Tension.(Intercept)	5.506	1	5.333	0.025						
Pressure/Tension.Type	2.428	1	2.352	0.131		1	504.600	1.737	0.187	
Pressure/Tension.CLRole	0.011	1	0.011	0.918		1	9.782	0.034	0.854	
Pressure/Tension.Type:CLRole	6.351	1	6.151	0.016	*	1	1602.613	5.517	0.019	*
Pressure/Tension.Residuals	57.815	56				56	15021.004			
Effort/Importance.(Intercept)	0.078	1	0.086	0.770						
Effort/Importance.Type	3.861	1	4.303	0.043	*	1	1050.017	3.491	0.062	
Effort/Importance.CLRole	2.374	1	2.646	0.109		1	463.808	1.542	0.214	
Effort/Importance.Type:CLRole	0.799	1	0.891	0.349		1	265.209	0.882	0.348	
Effort/Importance.Residuals	50.244	56				56	15964.465			
Intrinsic Motivation.(Intercept)	0.579	1	1.520	0.223						
Intrinsic Motivation.Type	3.087	1	8.103	0.006	**	1	2088.600	6.848	0.009	**
Intrinsic Motivation.CLRole	0.064	1	0.168	0.683		1	34.127	0.112	0.738	
Intrinsic Motivation.Type:CLRole	0.020	1	0.053	0.819		1	10.693	0.035	0.851	
Intrinsic Motivation.Residuals	21.333	56				56	15861.581			

Signif. codes: 0 “***” 0.01 “**” 0.05

Table 2: Summary of Tukey post-hoc in the first study for signed up students

	N	mean	lsmean	SE	df	lwr.CI	upr.CI	t.ratio	p.value	p.adj	g	sig	mag
Perceived Choice:non-gamified - ont-gamified	60	-0.650	-0.652	0.232		-1.115	-0.185	-2.808	0.007	0.007	-0.724	**	medium
Pressure/Tension:non-gamified.Apprentice - ont-gamified.Apprentice	29	1.054	1.054	0.378		0.054	2.054	2.792	0.007	0.035	0.964	*	large
Effort/Importance:non-gamified - ont-gamified	60	-0.529	-0.508	0.245		-1.019	-0.039	-2.074	0.043	0.035	-0.544	*	medium
Intrinsic Motivation:non-gamified - ont-gamified	60	-0.458	-0.454	0.160		-0.777	-0.138	-2.847	0.006	0.006	-0.743	**	medium

Table 3: Summary of Pair wilcoxon in the first study for signed up students

	Group	N	Median	Mean.Ranks	Sum.Ranks	U	Z	p.value	r	magnitude
Interest/Enjoyment.Type.less.1	non-gamified	30	-0.79	26.15	784.5	319.5	-1.93	0.027	0.250	small
Interest/Enjoyment.Type.less.2	ont-gamified	30	0.05	34.85	1045.5	319.5	-1.93	0.027	0.250	small
Interest/Enjoyment.Type:CLRole.less.1	non-gamified.Master	16	-0.94	12.53	200.5	64.5	-2.20	0.013	0.395	medium
Interest/Enjoyment.Type:CLRole.less.2	ont-gamified.Master	15	0.19	19.70	295.5	64.5	-2.20	0.013	0.395	medium
Interest/Enjoyment.Type:CLRole.two.sided.1	non-gamified.Master	16	-0.94	12.53	200.5	64.5	-2.20	0.027	0.395	medium
Interest/Enjoyment.Type:CLRole.two.sided.2	ont-gamified.Master	15	0.19	19.70	295.5	64.5	-2.20	0.027	0.395	medium
Perceived Choice.Type.less.1	non-gamified	30	-0.40	25.02	750.5	285.5	-2.44	0.007	0.315	medium
Perceived Choice.Type.less.2	ont-gamified	30	0.21	35.98	1079.5	285.5	-2.44	0.007	0.315	medium
Perceived Choice.Type.two.sided.1	non-gamified	30	-0.40	25.02	750.5	285.5	-2.44	0.014	0.315	medium
Perceived Choice.Type.two.sided.2	ont-gamified	30	0.21	35.98	1079.5	285.5	-2.44	0.014	0.315	medium
Perceived Choice.Type:CLRole.less.1	non-gamified.Apprentice	14	-0.57	11.43	160.0	55.0	-2.19	0.014	0.406	medium
Perceived Choice.Type:CLRole.less.2	ont-gamified.Master	15	0.14	18.33	275.0	55.0	-2.19	0.014	0.406	medium
Perceived Choice.Type:CLRole.two.sided.1	non-gamified.Apprentice	14	-0.57	11.43	160.0	55.0	-2.19	0.028	0.406	medium
Perceived Choice.Type:CLRole.two.sided.2	ont-gamified.Master	15	0.14	18.33	275.0	55.0	-2.19	0.028	0.406	medium
Perceived Choice.Type:CLRole.less.11	non-gamified.Master	16	-0.17	12.97	207.5	71.5	-1.92	0.028	0.345	medium
Perceived Choice.Type:CLRole.less.21	ont-gamified.Master	15	0.14	19.23	288.5	71.5	-1.92	0.028	0.345	medium
Pressure/Tension.Type:CLRole.greater.1	non-gamified.Apprentice	14	0.81	18.82	263.5	158.5	2.43	0.007	0.451	medium
Pressure/Tension.Type:CLRole.greater.2	ont-gamified.Apprentice	15	-0.91	11.43	171.5	158.5	2.43	0.007	0.451	medium
Pressure/Tension.Type:CLRole.two.sided.1	non-gamified.Apprentice	14	0.81	18.82	263.5	158.5	2.43	0.014	0.451	medium
Pressure/Tension.Type:CLRole.two.sided.2	ont-gamified.Apprentice	15	-0.91	11.43	171.5	158.5	2.43	0.014	0.451	medium
Pressure/Tension.Type:CLRole.less.1	ont-gamified.Apprentice	15	-0.91	12.60	189.0	69.0	-1.91	0.028	0.348	medium
Pressure/Tension.Type:CLRole.less.2	ont-gamified.Master	15	0.82	18.40	276.0	69.0	-1.91	0.028	0.348	medium
Effort/Importance.Type.less.1	non-gamified	30	-0.59	26.32	789.5	324.5	-1.87	0.031	0.241	small
Effort/Importance.Type.less.2	ont-gamified	30	0.21	34.68	1040.5	324.5	-1.87	0.031	0.241	small
Effort/Importance.Type:CLRole.less.1	non-gamified.Master	16	-0.82	12.69	203.0	67.0	-2.11	0.017	0.379	medium
Effort/Importance.Type:CLRole.less.2	ont-gamified.Apprentice	15	0.21	19.53	293.0	67.0	-2.11	0.017	0.379	medium
Effort/Importance.Type:CLRole.two.sided.1	non-gamified.Master	16	-0.82	12.69	203.0	67.0	-2.11	0.034	0.379	medium
Effort/Importance.Type:CLRole.two.sided.2	ont-gamified.Apprentice	15	0.21	19.53	293.0	67.0	-2.11	0.034	0.379	medium
Effort/Importance.Type:CLRole.less.11	non-gamified.Master	16	-0.82	13.00	208.0	72.0	-1.91	0.028	0.343	medium
Effort/Importance.Type:CLRole.less.21	ont-gamified.Master	15	0.21	19.20	288.0	72.0	-1.91	0.028	0.343	medium
Intrinsic Motivation.Type.less.1	non-gamified	30	-0.42	24.60	738.0	273.0	-2.62	0.004	0.338	medium
Intrinsic Motivation.Type.less.2	ont-gamified	30	0.00	36.40	1092.0	273.0	-2.62	0.004	0.338	medium
Intrinsic Motivation.Type.two.sided.1	non-gamified	30	-0.42	24.60	738.0	273.0	-2.62	0.008	0.338	medium
Intrinsic Motivation.Type.two.sided.2	ont-gamified	30	0.00	36.40	1092.0	273.0	-2.62	0.008	0.338	medium
Intrinsic Motivation.Type:CLRole.less.1	non-gamified.Master	16	-0.42	12.50	200.0	64.0	-2.21	0.013	0.398	medium
Intrinsic Motivation.Type:CLRole.less.2	ont-gamified.Apprentice	15	0.29	19.73	296.0	64.0	-2.21	0.013	0.398	medium
Intrinsic Motivation.Type:CLRole.two.sided.1	non-gamified.Master	16	-0.42	12.50	200.0	64.0	-2.21	0.027	0.398	medium

Table 3: *(continued)*

	Group	N	Median	Mean.Ranks	Sum.Ranks	U	Z	p.value	r	magnitude
Intrinsic Motivation.Type:CLRole.two.sided.2	ont-gamified.Apprentice	15	0.29	19.73	296.0	64.0	-2.21	0.027	0.398	medium
Intrinsic Motivation.Type:CLRole.less.11	non-gamified.Master	16	-0.42	12.88	206.0	70.0	-1.98	0.025	0.355	medium
Intrinsic Motivation.Type:CLRole.less.21	ont-gamified.Master	15	-0.05	19.33	290.0	70.0	-1.98	0.025	0.355	medium

Table 3: *(continued)*

	Group	N	Median	Mean.Ranks	Sum.Ranks	U	Z	p.value	r	magnitude
Intrinsic Motivation.Type:CLRole.two.sided.11	non-gamified.Master	16	-0.42	12.88	206.0	70.0	-1.98	0.049	0.355	medium
Intrinsic Motivation.Type:CLRole.two.sided.21	ont-gamified.Master	15	-0.05	19.33	290.0	70.0	-1.98	0.049	0.355	medium