

Summary of correlation analysis between participants' motivation and learning outcomes in the pilot empirical study

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1 Gains in Skill/Knowledge and Motivation

Table 1: Correlation matrix of Gains in Skill/Knowledge and Motivation between participants' motivation and learning outcomes in the pilot empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	1.0000	-0.3394	-0.3051	-0.3258	0.1837	0.1269
Intrinsic Motivation	-0.3394	1.0000	0.9074	0.6098	-0.5219	0.4248
Interest/Enjoyment	-0.3051	0.9074	1.0000	0.4144	-0.3706	0.3391
Perceived Choice	-0.3258	0.6098	0.4144	1.0000	-0.5273	0.1136
Pressure/Tension	0.1837	-0.5219	-0.3706	-0.5273	1.0000	0.0810
Effort/Importance	0.1269	0.4248	0.3391	0.1136	0.0810	1.0000

method: spearman

Table 2: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation between participants' motivation and learning outcomes in the pilot empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	0.0000	0.0833	0.1217	0.0973	0.3589	0.5283
Intrinsic Motivation	0.0833	0.0000	0.0000	0.0007	0.0052	0.0272
Interest/Enjoyment	0.1217	0.0000	0.0000	0.0316	0.0571	0.0836
Perceived Choice	0.0973	0.0007	0.0316	0.0000	0.0047	0.5725
Pressure/Tension	0.3589	0.0052	0.0571	0.0047	0.0000	0.6880
Effort/Importance	0.5283	0.0272	0.0836	0.5725	0.6880	0.0000

method: spearman

2 Gains in Skill/Knowledge and Motivation for the group non-gamified

Table 3: Correlation matrix of Gains in Skill/Knowledge and Motivation for the group non-gamified between participants' motivation and learning outcomes in the pilot empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	1.0000	-0.3500	-0.2368	-0.0700	-0.0948	0.0112
Intrinsic Motivation	-0.3500	1.0000	0.7961	0.6621	-0.3807	0.3757
Interest/Enjoyment	-0.2368	0.7961	1.0000	0.2833	0.0622	0.3269
Perceived Choice	-0.0700	0.6621	0.2833	1.0000	-0.4701	0.2033
Pressure/Tension	-0.0948	-0.3807	0.0622	-0.4701	1.0000	0.1373
Effort/Importance	0.0112	0.3757	0.3269	0.2033	0.1373	1.0000

method: spearman

Table 4: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation for the group non-gamified between participants' motivation and learning outcomes in the pilot empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	0.0000	0.2410	0.4361	0.8202	0.7579	0.9711
Intrinsic Motivation	0.2410	0.0000	0.0011	0.0137	0.1994	0.2058
Interest/Enjoyment	0.4361	0.0011	0.0000	0.3482	0.8399	0.2757
Perceived Choice	0.8202	0.0137	0.3482	0.0000	0.1050	0.5052
Pressure/Tension	0.7579	0.1994	0.8399	0.1050	0.0000	0.6546
Effort/Importance	0.9711	0.2058	0.2757	0.5052	0.6546	0.0000

method: spearman

3 Gains in Skill/Knowledge and Motivation for the group ont-gamified

Table 5: Correlation matrix of Gains in Skill/Knowledge and Motivation for the group ont-gamified between participants' motivation and learning outcomes in the pilot empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	1.0000	-0.3771	-0.4327	-0.3872	0.3131	0.3067
Intrinsic Motivation	-0.3771	1.0000	0.8999	0.4983	-0.4785	0.4629
Interest/Enjoyment	-0.4327	0.8999	1.0000	0.2859	-0.4073	0.2927

method: spearman

Table 5: (continued)

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Perceived Choice	-0.3872	0.4983	0.2859	1.0000	-0.3706	0.2100
Pressure/Tension	0.3131	-0.4785	-0.4073	-0.3706	1.0000	0.0433
Effort/Importance	0.3067	0.4629	0.2927	0.2100	0.0433	1.0000
method: spearman						

Table 6: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation for the group ont-gamified between participants' motivation and learning outcomes in the pilot empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	0.0000	0.1838	0.1223	0.1714	0.2758	0.2862
Intrinsic Motivation	0.1838	0.0000	0.0000	0.0697	0.0835	0.0955
Interest/Enjoyment	0.1223	0.0000	0.0000	0.3218	0.1483	0.3099
Perceived Choice	0.1714	0.0697	0.3218	0.0000	0.1921	0.4712
Pressure/Tension	0.2758	0.0835	0.1483	0.1921	0.0000	0.8831
Effort/Importance	0.2862	0.0955	0.3099	0.4712	0.8831	0.0000
method: spearman						

4 Gains in Skill/Knowledge and Motivation for the group Apprentice

Table 7: Correlation matrix of Gains in Skill/Knowledge and Motivation for the group Apprentice between participants' motivation and learning outcomes in the pilot empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	1.0000	-0.1648	-0.1729	-0.2975	0.2003	0.3196
Intrinsic Motivation	-0.1648	1.0000	0.8800	0.5372	-0.5368	0.5098
Interest/Enjoyment	-0.1729	0.8800	1.0000	0.2821	-0.3092	0.4578
Perceived Choice	-0.2975	0.5372	0.2821	1.0000	-0.5034	0.1350
Pressure/Tension	0.2003	-0.5368	-0.3092	-0.5034	1.0000	0.0812
Effort/Importance	0.3196	0.5098	0.4578	0.1350	0.0812	1.0000
method: spearman						

Table 8: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation for the group Apprentice between participants' motivation and learning outcomes in the pilot empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	0.0000	0.4754	0.4537	0.1904	0.3839	0.1578
Intrinsic Motivation	0.4754	0.0000	0.0000	0.0120	0.0121	0.0182
Interest/Enjoyment	0.4537	0.0000	0.0000	0.2154	0.1726	0.0369
Perceived Choice	0.1904	0.0120	0.2154	0.0000	0.0200	0.5596
Pressure/Tension	0.3839	0.0121	0.1726	0.0200	0.0000	0.7264
Effort/Importance	0.1578	0.0182	0.0369	0.5596	0.7264	0.0000
method: spearman						

5 Gains in Skill/Knowledge and Motivation for the group Master

Table 9: Correlation matrix of Gains in Skill/Knowledge and Motivation for the group Master between participants' motivation and learning outcomes in the pilot empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	1.0000	-0.8697	-0.5798	-0.6471	0.4058	-0.2500
Intrinsic Motivation	-0.8697	1.0000	0.8286	0.8407	-0.4857	0.1160
Interest/Enjoyment	-0.5798	0.8286	1.0000	0.9276	-0.7714	-0.3189
Perceived Choice	-0.6471	0.8407	0.9276	1.0000	-0.7827	0.0147
Pressure/Tension	0.4058	-0.4857	-0.7714	-0.7827	1.0000	0.3189
Effort/Importance	-0.2500	0.1160	-0.3189	0.0147	0.3189	1.0000
method: spearman						

Table 10: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation for the group Master between participants' motivation and learning outcomes in the pilot empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	0.0000	0.0244	0.2278	0.1649	0.4247	0.6328
Intrinsic Motivation	0.0244	0.0000	0.0583	0.0361	0.3556	0.8268
Interest/Enjoyment	0.2278	0.0583	0.0000	0.0077	0.1028	0.5379
Perceived Choice	0.1649	0.0361	0.0077	0.0000	0.0657	0.9779
Pressure/Tension	0.4247	0.3556	0.1028	0.0657	0.0000	0.5379
Effort/Importance	0.6328	0.8268	0.5379	0.9779	0.5379	0.0000
method: spearman						

6 Gains in Skill/Knowledge and Motivation for the group non-gamified.Apprentice

Table 11: Correlation matrix of Gains in Skill/Knowledge and Motivation for the group non-gamified.Apprentice between participants' motivation and learning outcomes in the pilot empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	1.0000	-0.3149	-0.1628	-0.3466	-0.0419	0.2150
Intrinsic Motivation	-0.3149	1.0000	0.7580	0.7725	-0.4201	0.3257
Interest/Enjoyment	-0.1628	0.7580	1.0000	0.3002	0.1078	0.3917
Perceived Choice	-0.3466	0.7725	0.3002	1.0000	-0.5751	0.2552
Pressure/Tension	-0.0419	-0.4201	0.1078	-0.5751	1.0000	0.1083
Effort/Importance	0.2150	0.3257	0.3917	0.2552	0.1083	1.0000

method: spearman

Table 12: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation for the group non-gamified.Apprentice between participants' motivation and learning outcomes in the pilot empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	0.0000	0.3456	0.6324	0.2964	0.9027	0.5256
Intrinsic Motivation	0.3456	0.0000	0.0069	0.0053	0.1983	0.3284
Interest/Enjoyment	0.6324	0.0069	0.0000	0.3697	0.7524	0.2335
Perceived Choice	0.2964	0.0053	0.3697	0.0000	0.0642	0.4488
Pressure/Tension	0.9027	0.1983	0.7524	0.0642	0.0000	0.7513
Effort/Importance	0.5256	0.3284	0.2335	0.4488	0.7513	0.0000

method: spearman

7 Gains in Skill/Knowledge and Motivation for the group non-gamified.Master

Table 13: Correlation matrix of Gains in Skill/Knowledge and Motivation for the group non-gamified.Master between participants' motivation and learning outcomes in the pilot empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	1	-1	1		-1	-1
Intrinsic Motivation	-1	1	-1		1	1
Interest/Enjoyment	1	-1	1		-1	-1
Perceived Choice				1		
Pressure/Tension	-1	1	-1		1	1
Effort/Importance	-1	1	-1		1	1

method: spearman

Table 14: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation for the group non-gamified.Master between participants' motivation and learning outcomes in the pilot empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	0	1	1		1	1
Intrinsic Motivation	1	0	1		1	1
Interest/Enjoyment	1	1	0		1	1
Perceived Choice				0		
Pressure/Tension	1	1	1		0	1
Effort/Importance	1	1	1		1	0

method: spearman

8 Gains in Skill/Knowledge and Motivation for the group ont-gamified.Apprentice

Table 15: Correlation matrix of Gains in Skill/Knowledge and Motivation for the group ont-gamified.Apprentice between participants' motivation and learning outcomes in the pilot empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	1.0000	-0.0486	-0.1094	-0.0973	0.2294	0.5368
Intrinsic Motivation	-0.0486	1.0000	0.8545	0.2727	-0.5122	0.5688
Interest/Enjoyment	-0.1094	0.8545	1.0000	0.0061	-0.4207	0.3731
Perceived Choice	-0.0973	0.2727	0.0061	1.0000	-0.1890	0.1101
Pressure/Tension	0.2294	-0.5122	-0.4207	-0.1890	1.0000	0.1354
Effort/Importance	0.5368	0.5688	0.3731	0.1101	0.1354	1.0000

method: spearman

Table 16: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation for the group ont-gamified.Apprentice between participants' motivation and learning outcomes in the pilot empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	0.0000	0.8939	0.7635	0.7892	0.5238	0.1096
Intrinsic Motivation	0.8939	0.0000	0.0035	0.4483	0.1301	0.0862
Interest/Enjoyment	0.7635	0.0035	0.0000	1.0000	0.2260	0.2883
Perceived Choice	0.7892	0.4483	1.0000	0.0000	0.6010	0.7621
Pressure/Tension	0.5238	0.1301	0.2260	0.6010	0.0000	0.7092
Effort/Importance	0.1096	0.0862	0.2883	0.7621	0.7092	0.0000

method: spearman

9 Gains in Skill/Knowledge and Motivation for the group ont-gamified.Master

Table 17: Correlation matrix of Gains in Skill/Knowledge and Motivation for the group ont-gamified.Master between participants' motivation and learning outcomes in the pilot empirical study

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Table 18: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation for the group ont-gamified.Master between participants' motivation and learning outcomes in the pilot empirical study

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