Summary of correlation analysis between motivation factors and in the third empirical study

October 1, 2018

1 Gains in Skill/Knowledge and Motivation

Table 1: Correlation matrix of Gains in Skill/Knowledge and Motivation between motivation factors and in the third empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance	Level of Motivation	Attention	Relevance	Satisfaction
Gains in Skill/Knowledge	1.0000	-0.0387	-0.2761	0.0681	0.0845	0.2336	-0.0745	-0.1175	0.1354	0.0212
Intrinsic Motivation	-0.0387	1.0000	0.5719	0.7804	-0.4514	0.3574	0.6146	0.3167	0.6683	0.6182
Interest/Enjoyment	-0.2761	0.5719	1.0000	0.2813	0.0205	-0.0995	0.7473	0.6965	0.2263	0.6293
Perceived Choice	0.0681	0.7804	0.2813	1.0000	-0.3622	0.1183	0.3690	0.1383	0.5547	0.3732
Pressure/Tension	0.0845	-0.4514	0.0205	-0.3622	1.0000	-0.1196	0.0612	0.1945	-0.3265	0.0744
Effort/Importance	0.2336	0.3574	-0.0995	0.1183	-0.1196	1.0000	0.1801	-0.0681	0.2608	0.3181
Level of Motivation	-0.0745	0.6146	0.7473	0.3690	0.0612	0.1801	1.0000	0.8991	0.4347	0.8335
Attention	-0.1175	0.3167	0.6965	0.1383	0.1945	-0.0681	0.8991	1.0000	0.2098	0.6350
Relevance	0.1354	0.6683	0.2263	0.5547	-0.3265	0.2608	0.4347	0.2098	1.0000	0.3178
Satisfaction	0.0212	0.6182	0.6293	0.3732	0.0744	0.3181	0.8335	0.6350	0.3178	1.0000
method: spearman										

Table 2: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation between motivation factors and in the third empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance	Level of Motivation	Attention	Relevance	Satisfaction
Gains in Skill/Knowledge	0.0000	0.7983	0.0632	0.6530	0.5766	0.1182	0.6227	0.4369	0.3698	0.8889
Intrinsic Motivation	0.7983	0.0000	0.0000	0.0000	0.0016	0.0147	0.0000	0.0320	0.0000	0.0000
Interest/Enjoyment	0.0632	0.0000	0.0000	0.0582	0.8926	0.5106	0.0000	0.0000	0.1304	0.0000
Perceived Choice	0.6530	0.0000	0.0582	0.0000	0.0134	0.4334	0.0116	0.3593	0.0001	0.0106
Pressure/Tension	0.5766	0.0016	0.8926	0.0134	0.0000	0.4286	0.6863	0.1952	0.0268	0.6231
Effort/Importance	0.1182	0.0147	0.5106	0.4334	0.4286	0.0000	0.2311	0.6528	0.0800	0.0312
Level of Motivation	0.6227	0.0000	0.0000	0.0116	0.6863	0.2311	0.0000	0.0000	0.0025	0.0000
Attention	0.4369	0.0320	0.0000	0.3593	0.1952	0.6528	0.0000	0.0000	0.1617	0.0000
Relevance	0.3698	0.0000	0.1304	0.0001	0.0268	0.0800	0.0025	0.1617	0.0000	0.0314
Satisfaction	0.8889	0.0000	0.0000	0.0106	0.6231	0.0312	0.0000	0.0000	0.0314	0.0000
method: spearman										

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

Table 3: Correlation matrix of Gains in Skill/Knowledge and Motivation for the group ont-gamified between motivation factors and in the third empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance	Level of Motivation	Attention	Relevance	Satisfaction
Gains in Skill/Knowledge	1.0000	0.0753	-0.1743	0.0806	-0.0678	0.2440	0.0857	0.0390	0.0749	0.2308
Intrinsic Motivation	0.0753	1.0000	0.5411	0.8047	-0.1981	0.2644	0.5593	0.4342	0.7135	0.4454
Interest/Enjoyment	-0.1743	0.5411	1.0000	0.1580	0.2587	-0.1704	0.7890	0.8138	0.2769	0.6163
Perceived Choice	0.0806	0.8047	0.1580	1.0000	-0.3037	0.1172	0.2363	0.1021	0.6849	0.1741
Pressure/Tension	-0.0678	-0.1981	0.2587	-0.3037	1.0000	-0.0484	0.4104	0.4061	-0.1862	0.5129
Effort/Importance	0.2440	0.2644	-0.1704	0.1172	-0.0484	1.0000	0.1460	-0.0056	-0.1355	0.3458
Level of Motivation	0.0857	0.5593	0.7890	0.2363	0.4104	0.1460	1.0000	0.9629	0.3022	0.8862
Attention	0.0390	0.4342	0.8138	0.1021	0.4061	-0.0056	0.9629	1.0000	0.2030	0.7927
Relevance	0.0749	0.7135	0.2769	0.6849	-0.1862	-0.1355	0.3022	0.2030	1.0000	0.0698
Satisfaction	0.2308	0.4454	0.6163	0.1741	0.5129	0.3458	0.8862	0.7927	0.0698	1.0000

Table 4: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation for the group ont-gamified between motivation factors and in the third empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance	Level of Motivation	Attention	Relevance	Satisfaction
Gains in Skill/Knowledge	0.0000	0.7454	0.4500	0.7284	0.7704	0.2864	0.7117	0.8667	0.7470	0.3141

method: spearman

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance	Level of Motivation	Attention	Relevance	Satisfaction
Intrinsic Motivation	0.7454	0.0000	0.0113	0.0000	0.3893	0.2469	0.0084	0.0492	0.0003	0.0430
Interest/Enjoyment	0.4500	0.0113	0.0000	0.4939	0.2575	0.4602	0.0000	0.0000	0.2244	0.0029
Perceived Choice	0.7284	0.0000	0.4939	0.0000	0.1808	0.6129	0.3023	0.6595	0.0006	0.4504
Pressure/Tension	0.7704	0.3893	0.2575	0.1808	0.0000	0.8350	0.0646	0.0678	0.4190	0.0174
Effort/Importance	0.2864	0.2469	0.4602	0.6129	0.8350	0.0000	0.5277	0.9808	0.5582	0.1246
Level of Motivation	0.7117	0.0084	0.0000	0.3023	0.0646	0.5277	0.0000	0.0000	0.1831	0.0000
Attention	0.8667	0.0492	0.0000	0.6595	0.0678	0.9808	0.0000	0.0000	0.3775	0.0000
Relevance	0.7470	0.0003	0.2244	0.0006	0.4190	0.5582	0.1831	0.3775	0.0000	0.7638
Satisfaction	0.3141	0.0430	0.0029	0.4504	0.0174	0.1246	0.0000	0.0000	0.7638	0.0000

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

Table 5: Correlation matrix of Gains in Skill/Knowledge and Motivation for the group w/o-gamified between motivation factors and in the third empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance	Level of Motivation	Attention	Relevance	Satisfaction
Gains in Skill/Knowledge	1.0000	-0.3489	-0.5229	-0.1528	0.3022	0.0237	-0.3617	-0.2876	0.0379	-0.4126
Intrinsic Motivation	-0.3489	1.0000	0.6022	0.7306	-0.6753	0.3322	0.6543	0.3059	0.6238	0.7364
Interest/Enjoyment	-0.5229	0.6022	1.0000	0.3371	-0.1730	0.0019	0.6990	0.6219	0.1290	0.6586
Perceived Choice	-0.1528	0.7306	0.3371	1.0000	-0.4735	-0.0806	0.4376	0.2384	0.3839	0.4328
Pressure/Tension	0.3022	-0.6753	-0.1730	-0.4735	1.0000	-0.1244	-0.2626	-0.0015	-0.5435	-0.3437
Effort/Importance	0.0237	0.3322	0.0019	-0.0806	-0.1244	1.0000	0.2736	0.0369	0.3852	0.3006
Level of Motivation	-0.3617	0.6543	0.6990	0.4376	-0.2626	0.2736	1.0000	0.8708	0.4847	0.7947
Attention	-0.2876	0.3059	0.6219	0.2384	-0.0015	0.0369	0.8708	1.0000	0.2485	0.5285
Relevance	0.0379	0.6238	0.1290	0.3839	-0.5435	0.3852	0.4847	0.2485	1.0000	0.4630
Satisfaction	-0.4126	0.7364	0.6586	0.4328	-0.3437	0.3006	0.7947	0.5285	0.4630	1.0000
method: spearman										

Table 6: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation for the group w/o-gamified between motivation factors and in the third empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance	Level of Motivation	Attention	Relevance	Satisfaction
Gains in Skill/Knowledge	0.0000	0.0874	0.0073	0.4658	0.1421	0.9103	0.0756	0.1632	0.8571	0.0404
Intrinsic Motivation	0.0874	0.0000	0.0014	0.0000	0.0002	0.1047	0.0004	0.1370	0.0009	0.0000
Interest/Enjoyment	0.0073	0.0014	0.0000	0.0993	0.4082	0.9927	0.0001	0.0009	0.5387	0.0003
Perceived Choice	0.4658	0.0000	0.0993	0.0000	0.0168	0.7016	0.0287	0.2511	0.0581	0.0307
Pressure/Tension	0.1421	0.0002	0.4082	0.0168	0.0000	0.5536	0.2048	0.9941	0.0050	0.0925
Effort/Importance	0.9103	0.1047	0.9927	0.7016	0.5536	0.0000	0.1857	0.8608	0.0572	0.1443
Level of Motivation	0.0756	0.0004	0.0001	0.0287	0.2048	0.1857	0.0000	0.0000	0.0141	0.0000
Attention	0.1632	0.1370	0.0009	0.2511	0.9941	0.8608	0.0000	0.0000	0.2309	0.0066
Relevance	0.8571	0.0009	0.5387	0.0581	0.0050	0.0572	0.0141	0.2309	0.0000	0.0198
Satisfaction	0.0404	0.0000	0.0003	0.0307	0.0925	0.1443	0.0000	0.0066	0.0198	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 motivation factors and in the third empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance	Level of Motivation	Attention	Relevance	Satisfaction
Gains in Skill/Knowledge	1.0000	-0.1482	-0.3262	-0.0853	0.1641	0.1264	-0.1221	-0.1367	0.0802	0.0143
Intrinsic Motivation	-0.1482	1.0000	0.6225	0.7542	-0.3550	0.3817	0.6716	0.3851	0.6293	0.7112
Interest/Enjoyment	-0.3262	0.6225	1.0000	0.2415	-0.0142	-0.0940	0.7721	0.7502	0.2153	0.6901
Perceived Choice	-0.0853	0.7542	0.2415	1.0000	-0.3343	0.1597	0.3487	0.1121	0.5275	0.3776
method: spearman										

Table 7: (continued)

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance	Level of Motivation	Attention	Relevance	Satisfaction
Pressure/Tension	0.1641	-0.3550	-0.0142	-0.3343	1.0000	-0.1216	0.0526	0.1541	-0.2013	0.0850
Effort/Importance	0.1264	0.3817	-0.0940	0.1597	-0.1216	1.0000	0.1709	-0.1000	0.1884	0.3614
Level of Motivation	-0.1221	0.6716	0.7721	0.3487	0.0526	0.1709	1.0000	0.9022	0.5027	0.8541
Attention	-0.1367	0.3851	0.7502	0.1121	0.1541	-0.1000	0.9022	1.0000	0.2896	0.6372
Relevance	0.0802	0.6293	0.2153	0.5275	-0.2013	0.1884	0.5027	0.2896	1.0000	0.4116
Satisfaction	0.0143	0.7112	0.6901	0.3776	0.0850	0.3614	0.8541	0.6372	0.4116	1.0000

Table 8: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation for the group Apprentice between motivation factors and in the third empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance	Level of Motivation	Attention	Relevance	Satisfaction
Gains in Skill/Knowledge	0.0000	0.4184	0.0684	0.6426	0.3694	0.4905	0.5056	0.4557	0.6626	0.9380
Intrinsic Motivation	0.4184	0.0000	0.0001	0.0000	0.0462	0.0311	0.0000	0.0295	0.0001	0.0000
Interest/Enjoyment	0.0684	0.0001	0.0000	0.1830	0.9387	0.6089	0.0000	0.0000	0.2367	0.0000
Perceived Choice	0.6426	0.0000	0.1830	0.0000	0.0615	0.3825	0.0505	0.5414	0.0019	0.0331
Pressure/Tension	0.3694	0.0462	0.9387	0.0615	0.0000	0.5074	0.7751	0.3996	0.2691	0.6435
Effort/Importance	0.4905	0.0311	0.6089	0.3825	0.5074	0.0000	0.3496	0.5859	0.3018	0.0421
Level of Motivation	0.5056	0.0000	0.0000	0.0505	0.7751	0.3496	0.0000	0.0000	0.0034	0.0000
Attention	0.4557	0.0295	0.0000	0.5414	0.3996	0.5859	0.0000	0.0000	0.1080	0.0001
Relevance	0.6626	0.0001	0.2367	0.0019	0.2691	0.3018	0.0034	0.1080	0.0000	0.0193
Satisfaction	0.9380	0.0000	0.0000	0.0331	0.6435	0.0421	0.0000	0.0001	0.0193	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 motivation factors and in the third empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance	Level of Motivation	Attention	Relevance	Satisfaction
Gains in Skill/Knowledge	1.0000	0.3168	0.0265	0.5347	-0.5118	0.2343	0.2126	0.0033	0.3642	0.0553
Intrinsic Motivation	0.3168	1.0000	0.4229	0.7731	-0.6452	0.4614	0.4070	0.0397	0.8027	0.3978
Interest/Enjoyment	0.0265	0.4229	1.0000	0.4029	0.2226	-0.0199	0.7233	0.4972	0.1680	0.5150
Perceived Choice	0.5347	0.7731	0.4029	1.0000	-0.4810	0.0288	0.5138	0.1867	0.5967	0.4164
Pressure/Tension	-0.5118	-0.6452	0.2226	-0.4810	1.0000	-0.4171	0.1084	0.4491	-0.5577	-0.1223
Effort/Importance	0.2343	0.4614	-0.0199	0.0288	-0.4171	1.0000	0.0950	0.0266	0.5670	0.0999
Level of Motivation	0.2126	0.4070	0.7233	0.5138	0.1084	0.0950	1.0000	0.8687	0.1589	0.8164
Attention	0.0033	0.0397	0.4972	0.1867	0.4491	0.0266	0.8687	1.0000	-0.1350	0.6818
Relevance	0.3642	0.8027	0.1680	0.5967	-0.5577	0.5670	0.1589	-0.1350	1.0000	0.0455
Satisfaction	0.0553	0.3978	0.5150	0.4164	-0.1223	0.0999	0.8164	0.6818	0.0455	1.0000

method: spearman

Table 10: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation for the group Master between motivation factors and in the third empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance	Level of Motivation	Attention	Relevance	Satisfaction
Gains in Skill/Knowledge	0.0000	0.2697	0.9285	0.0488	0.0614	0.4202	0.4657	0.9910	0.2004	0.8510
Intrinsic Motivation	0.2697	0.0000	0.1319	0.0012	0.0127	0.0968	0.1486	0.8928	0.0005	0.1590
Interest/Enjoyment	0.9285	0.1319	0.0000	0.1532	0.4443	0.9461	0.0035	0.0704	0.5660	0.0595
Perceived Choice	0.0488	0.0012	0.1532	0.0000	0.0816	0.9222	0.0602	0.5227	0.0243	0.1386
Pressure/Tension	0.0614	0.0127	0.4443	0.0816	0.0000	0.1379	0.7122	0.1072	0.0382	0.6769
Effort/Importance	0.4202	0.0968	0.9461	0.9222	0.1379	0.0000	0.7466	0.9281	0.0345	0.7340
Level of Motivation	0.4657	0.1486	0.0035	0.0602	0.7122	0.7466	0.0000	0.0001	0.5873	0.0004
Attention	0.9910	0.8928	0.0704	0.5227	0.1072	0.9281	0.0001	0.0000	0.6455	0.0072
Relevance	0.2004	0.0005	0.5660	0.0243	0.0382	0.0345	0.5873	0.6455	0.0000	0.8774
Satisfaction	0.8510	0.1590	0.0595	0.1386	0.6769	0.7340	0.0004	0.0072	0.8774	0.0000

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

Table 11: Correlation matrix of Gains in Skill/Knowledge and Motivation for the group ont-gamified. Apprentice between motivation factors and in the third empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance	Level of Motivation	Attention	Relevance	Satisfaction
Gains in Skill/Knowledge	1.0000	-0.2659	-0.0687	-0.1720	0.1545	-0.1879	0.0990	0.0968	-0.0597	0.1257
Intrinsic Motivation	-0.2659	1.0000	0.6541	0.7652	0.4746	0.2305	0.6315	0.5435	0.6195	0.6417
Interest/Enjoyment	-0.0687	0.6541	1.0000	0.1802	0.6303	0.0474	0.8591	0.9301	0.2634	0.8343
Perceived Choice	-0.1720	0.7652	0.1802	1.0000	0.1406	-0.0505	0.2638	0.1071	0.5794	0.2511
Pressure/Tension	0.1545	0.4746	0.6303	0.1406	1.0000	0.0865	0.7702	0.7083	0.5022	0.7497
Effort/Importance	-0.1879	0.2305	0.0474	-0.0505	0.0865	1.0000	0.1086	0.0325	-0.2061	0.1852
Level of Motivation	0.0990	0.6315	0.8591	0.2638	0.7702	0.1086	1.0000	0.9648	0.4120	0.9636
Attention	0.0968	0.5435	0.9301	0.1071	0.7083	0.0325	0.9648	1.0000	0.2879	0.9327
Relevance	-0.0597	0.6195	0.2634	0.5794	0.5022	-0.2061	0.4120	0.2879	1.0000	0.3330
Satisfaction	0.1257	0.6417	0.8343	0.2511	0.7497	0.1852	0.9636	0.9327	0.3330	1.0000

method: spearman

Table 12: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation for the group ont-gamified. Apprentice between motivation factors and in the third empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance	Level of Motivation	Attention	Relevance	Satisfaction
Gains in Skill/Knowledge	0.0000	0.3573	0.8154	0.5566	0.5979	0.5199	0.7363	0.7420	0.8393	0.6685
Intrinsic Motivation	0.3573	0.0000	0.0112	0.0014	0.0864	0.4280	0.0154	0.0446	0.0181	0.0134
Interest/Enjoyment	0.8154	0.0112	0.0000	0.5376	0.0157	0.8721	0.0001	0.0000	0.3629	0.0002
Perceived Choice	0.5566	0.0014	0.5376	0.0000	0.6315	0.8638	0.3621	0.7156	0.0299	0.3865
Pressure/Tension	0.5979	0.0864	0.0157	0.6315	0.0000	0.7687	0.0013	0.0046	0.0672	0.0020
Effort/Importance	0.5199	0.4280	0.8721	0.8638	0.7687	0.0000	0.7116	0.9122	0.4796	0.5262
Level of Motivation	0.7363	0.0154	0.0001	0.3621	0.0013	0.7116	0.0000	0.0000	0.1433	0.0000
Attention	0.7420	0.0446	0.0000	0.7156	0.0046	0.9122	0.0000	0.0000	0.3182	0.0000
Relevance	0.8393	0.0181	0.3629	0.0299	0.0672	0.4796	0.1433	0.3182	0.0000	0.2447
Satisfaction	0.6685	0.0134	0.0002	0.3865	0.0020	0.5262	0.0000	0.0000	0.2447	0.0000

method: spearman

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

Table 13: Correlation matrix of Gains in Skill/Knowledge and Motivation for the group ont-gamified.Master between motivation factors and in the third empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance	Level of Motivation	Attention	Relevance	Satisfaction
Gains in Skill/Knowledge	1.0000	0.8929	-0.1441	0.9286	-0.8895	0.7388	0.3214	-0.0180	0.7568	0.4505
Intrinsic Motivation	0.8929	1.0000	0.0180	0.9643	-0.9636	0.8829	0.4286	-0.0180	0.7748	0.4505
Interest/Enjoyment	-0.1441	0.0180	1.0000	-0.1622	0.0748	0.0636	0.4685	0.1273	-0.3455	0.4909
Perceived Choice	0.9286	0.9643	-0.1622	1.0000	-0.9636	0.8469	0.2857	-0.0721	0.8829	0.3063
Pressure/Tension	-0.8895	-0.9636	0.0748	-0.9636	1.0000	-0.8415	-0.2594	0.2057	-0.8602	-0.2805
Effort/Importance	0.7388	0.8829	0.0636	0.8469	-0.8415	1.0000	0.6667	0.3000	0.5727	0.5636
Level of Motivation	0.3214	0.4286	0.4685	0.2857	-0.2594	0.6667	1.0000	0.7928	-0.1802	0.9370
Attention	-0.0180	-0.0180	0.1273	-0.0721	0.2057	0.3000	0.7928	1.0000	-0.4545	0.6909
Relevance	0.7568	0.7748	-0.3455	0.8829	-0.8602	0.5727	-0.1802	-0.4545	1.0000	-0.1636
Satisfaction	0.4505	0.4505	0.4909	0.3063	-0.2805	0.5636	0.9370	0.6909	-0.1636	1.0000

Table 14: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation for the group ont-gamified.Master between motivation factors and in the third empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance	Level of Motivation	Attention	Relevance	Satisfaction
Gains in Skill/Knowledge	0.0000	0.0123	0.7578	0.0067	0.0073	0.0579	0.4976	0.9694	0.0489	0.3104
Intrinsic Motivation	0.0123	0.0000	0.9694	0.0028	0.0005	0.0085	0.3536	0.9694	0.0408	0.3104
Interest/Enjoyment	0.7578	0.9694	0.0000	0.7283	0.8734	0.8922	0.2890	0.7857	0.4479	0.2633
Perceived Choice	0.0067	0.0028	0.7283	0.0000	0.0005	0.0162	0.5560	0.8780	0.0085	0.5040
Pressure/Tension	0.0073	0.0005	0.8734	0.0005	0.0000	0.0176	0.5742	0.6582	0.0130	0.5423
Effort/Importance	0.0579	0.0085	0.8922	0.0162	0.0176	0.0000	0.1019	0.5133	0.1790	0.1876
Level of Motivation	0.4976	0.3536	0.2890	0.5560	0.5742	0.1019	0.0000	0.0334	0.6990	0.0019
Attention	0.9694	0.9694	0.7857	0.8780	0.6582	0.5133	0.0334	0.0000	0.3055	0.0856
Relevance	0.0489	0.0408	0.4479	0.0085	0.0130	0.1790	0.6990	0.3055	0.0000	0.7259
Satisfaction	0.3104	0.3104	0.2633	0.5040	0.5423	0.1876	0.0019	0.0856	0.7259	0.0000

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

Table 15: Correlation matrix of Gains in Skill/Knowledge and Motivation for the group w/o-gamified. Apprentice between motivation factors and in the third empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance	Level of Motivation	Attention	Relevance	Satisfaction
Gains in Skill/Knowledge	1.0000	-0.2473	-0.7037	-0.1149	0.0866	0.0804	-0.4669	-0.4901	0.1585	-0.3892
Intrinsic Motivation	-0.2473	1.0000	0.6049	0.7469	-0.9039	0.4071	0.6846	0.3294	0.6712	0.7465
Interest/Enjoyment	-0.7037	0.6049	1.0000	0.2129	-0.4590	-0.0057	0.6537	0.5784	0.1327	0.6326
Perceived Choice	-0.1149	0.7469	0.2129	1.0000	-0.7869	0.1300	0.3811	0.1389	0.4849	0.3398
Pressure/Tension	0.0866	-0.9039	-0.4590	-0.7869	1.0000	-0.2665	-0.6475	-0.3365	-0.7353	-0.6019
Effort/Importance	0.0804	0.4071	-0.0057	0.1300	-0.2665	1.0000	0.3648	0.0698	0.3685	0.4109
Level of Motivation	-0.4669	0.6846	0.6537	0.3811	-0.6475	0.3648	1.0000	0.8411	0.5619	0.7788
Attention	-0.4901	0.3294	0.5784	0.1389	-0.3365	0.0698	0.8411	1.0000	0.2865	0.4792
Relevance	0.1585	0.6712	0.1327	0.4849	-0.7353	0.3685	0.5619	0.2865	1.0000	0.5205
Satisfaction	-0.3892	0.7465	0.6326	0.3398	-0.6019	0.4109	0.7788	0.4792	0.5205	1.0000

method: spearman

Table 16: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation for the group w/o-gamified. Apprentice between motivation factors and in the third empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance	Level of Motivation	Attention	Relevance	Satisfaction
Gains in Skill/Knowledge	0.0000	0.3225	0.0011	0.6498	0.7325	0.7513	0.0508	0.0389	0.5300	0.1104
Intrinsic Motivation	0.3225	0.0000	0.0078	0.0004	0.0000	0.0936	0.0017	0.1820	0.0023	0.0004
Interest/Enjoyment	0.0011	0.0078	0.0000	0.3963	0.0554	0.9821	0.0033	0.0119	0.5996	0.0048
Perceived Choice	0.6498	0.0004	0.3963	0.0000	0.0001	0.6073	0.1187	0.5825	0.0414	0.1678
Pressure/Tension	0.7325	0.0000	0.0554	0.0001	0.0000	0.2850	0.0037	0.1722	0.0005	0.0082
Effort/Importance	0.7513	0.0936	0.9821	0.6073	0.2850	0.0000	0.1366	0.7833	0.1324	0.0903
Level of Motivation	0.0508	0.0017	0.0033	0.1187	0.0037	0.1366	0.0000	0.0000	0.0152	0.0001
Attention	0.0389	0.1820	0.0119	0.5825	0.1722	0.7833	0.0000	0.0000	0.2490	0.0442
Relevance	0.5300	0.0023	0.5996	0.0414	0.0005	0.1324	0.0152	0.2490	0.0000	0.0268
Satisfaction	0.1104	0.0004	0.0048	0.1678	0.0082	0.0903	0.0001	0.0442	0.0268	0.0000

method: spearman

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

Table 17: Correlation matrix of Gains in Skill/Knowledge and Motivation for the group w/o-gamified. Master between motivation factors and in the third empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance	Level of Motivation	Attention	Relevance	Satisfaction
Gains in Skill/Knowledge	1.0000	-0.6307	0.0545	-0.0091	0.5964	-0.2883	0.0901	0.2342	-0.4220	-0.3784
Intrinsic Motivation	-0.6307	1.0000	0.6307	0.3964	-0.1773	0.1071	0.5357	0.3571	0.6183	0.7143
Interest/Enjoyment	0.0545	0.6307	1.0000	0.6364	0.5467	-0.0721	0.8829	0.7928	0.1284	0.7388
Perceived Choice	-0.0091	0.3964	0.6364	1.0000	0.0994	-0.7207	0.5946	0.4144	-0.1927	0.7748
Pressure/Tension	0.5964	-0.1773	0.5467	0.0994	1.0000	0.1773	0.6502	0.7881	-0.1806	0.1970
Effort/Importance	-0.2883	0.1071	-0.0721	-0.7207	0.1773	1.0000	-0.0357	0.1071	0.4910	-0.1786
Level of Motivation	0.0901	0.5357	0.8829	0.5946	0.6502	-0.0357	1.0000	0.9643	0.2910	0.8214
Attention	0.2342	0.3571	0.7928	0.4144	0.7881	0.1071	0.9643	1.0000	0.2910	0.6786
Relevance	-0.4220	0.6183	0.1284	-0.1927	-0.1806	0.4910	0.2910	0.2910	1.0000	0.2910
Satisfaction	-0.3784	0.7143	0.7388	0.7748	0.1970	-0.1786	0.8214	0.6786	0.2910	1.0000

Table 18: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation for the group $\rm w/o\textsc{-}gamified.Master$ between motivation factors and in the third empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance	Level of Motivation	Attention	Relevance	Satisfaction
	, 0		/ 0 0			/ 1				
Gains in Skill/Knowledge	0.0000	0.1289	0.9075	0.9846	0.1575	0.5307	0.8477	0.6132	0.3456	0.4026
Intrinsic Motivation	0.1289	0.0000	0.1289	0.3786	0.7037	0.8397	0.2357	0.4444	0.1389	0.0881
Interest/Enjoyment	0.9075	0.1289	0.0000	0.1244	0.2041	0.8780	0.0085	0.0334	0.7837	0.0579
Perceived Choice	0.9846	0.3786	0.1244	0.0000	0.8321	0.0676	0.1591	0.3553	0.6790	0.0408
Pressure/Tension	0.1575	0.7037	0.2041	0.8321	0.0000	0.7037	0.1139	0.0353	0.6984	0.6720
Effort/Importance	0.5307	0.8397	0.8780	0.0676	0.7037	0.0000	0.9635	0.8397	0.2632	0.7131
Level of Motivation	0.8477	0.2357	0.0085	0.1591	0.1139	0.9635	0.0000	0.0028	0.5267	0.0341
Attention	0.6132	0.4444	0.0334	0.3553	0.0353	0.8397	0.0028	0.0000	0.5267	0.1095
Relevance	0.3456	0.1389	0.7837	0.6790	0.6984	0.2632	0.5267	0.5267	0.0000	0.5267
Satisfaction	0.4026	0.0881	0.0579	0.0408	0.6720	0.7131	0.0341	0.1095	0.5267	0.0000