Summary of Correlation Analysis

July 18, 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

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round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	1.0000	-0.0268	-0.2039	0.0804	0.1106	0.2534
Intrinsic Motivation	-0.0268	1.0000	0.5078	0.7129	-0.2682	0.3152
$\operatorname{Interest/Enjoyment}$	-0.2039	0.5078	1.0000	0.1497	0.2556	-0.1697
Perceived Choice	0.0804	0.7129	0.1497	1.0000	-0.1260	0.0913
Pressure/Tension	0.1106	-0.2682	0.2556	-0.1260	1.0000	-0.0574
m Effort/Importance	0.2534	0.3152	-0.1697	0.0913	-0.0574	1.0000
Level of Motivation	-0.0217	0.5305	0.6976	0.2474	0.3150	0.1899
Attention	-0.1304	0.2813	0.7137	0.0326	0.4008	-0.0416
Relevance	0.0895	0.5922	0.1651	0.4547	-0.1621	0.2421
Satisfaction	0.1029	0.4949	0.5324	0.2405	0.3502	0.3528

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
Gains in Skill/Knowledge	0.0000	0.8730	0.2195		0.5084	0.1248
Intrinsic Motivation	0.8730	0.0000	0.0011	0.0000	0.1036	0.0539
Interest/Enjoyment	0.2195	0.0011	0.0000	0.3698	0.1215	0.3083
Perceived Choice	0.6313	0.0000	0.3698	0.0000	0.4511	0.5854
Pressure/Tension	0.5084	0.1036	0.1215	0.4511	0.0000	0.7321
m Effort/Importance	0.1248	0.0539	0.3083	0.5854	0.7321	0.0000
Level of Motivation	0.8972	0.0000	0.0000	0.1342	0.0541	0.2536
Attention	0.4351	0.0871	0.0000	0.8457	0.0126	0.8041
Relevance	0.5930	0.0001	0.3220	0.0041	0.3310	0.1432
Satisfaction	0.5385	0.0016	0.0006	0.1458	0.0311	0.0298
method: spearman						

 ${\bf 2} \quad {\bf Gains \ in \ Skill/Knowledge \ and \ Motivation \ for} \\ \quad {\bf the \ group \ ont\hbox{-}gamified}$

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

ffort/Importance	0.2093	0.1940	-0.2110	0.0522	0.0088	1.0000	0.0925	-0.0773	-0.2079	0.3090	
Pressure/Tension E	0.0253	-0.0739	0.3154	-0.2072	1.0000	0.0088	0.5504	0.5536	-0.0715	0.6035	
Perceived Choice	-0.0169	0.7843	0.1496	1.0000	-0.2072	0.0522	0.1879	0.0275	0.6438	0.1474	
Interest/Enjoyment	-0.2286	0.5509	1.0000	0.1496	0.3154	-0.2110	0.8134	0.8406	0.2951	0.6218	
Intrinsic Motivation	-0.0519	1.0000	0.5509	0.7843	-0.0739	0.1940	0.5303	0.3777	0.6890	0.4179	
Gains in Skill/Knowledge	1.0000	-0.0519	-0.2286	-0.0169	0.0253	0.2093	-0.0309	-0.0911	0.0057	0.1789	
round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	${ m Effort/Importance}$	Level of Motivation	Attention	Relevance	Satisfaction	

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
Gains in Skill/Knowledge	0.0000	0.8280	0.3323	0.9435	0.9158	0.3758
Intrinsic Motivation	0.8280	0.0000	0.0118	0.0000	0.7568	0.4125
Interest/Enjoyment	0.3323	0.0118	0.0000	0.5289	0.1756	0.3720
Perceived Choice	0.9435	0.0000	0.5289	0.0000	0.3806	0.8271
Pressure/Tension	0.9158	0.7568	0.1756	0.3806	0.0000	0.9707
${ m Effort/Importance}$	0.3758	0.4125	0.3720	0.8271	0.9707	0.0000
Level of Motivation	0.8973	0.0162	0.0000	0.4277	0.0119	0.6982
Attention	0.7025	0.1006	0.0000	0.9084	0.0113	0.7461
Relevance	0.9811	0.0008	0.2065	0.0022	0.7647	0.3792
Satisfaction	0.4504	0.0667	0.0034	0.5352	0.0048	0.1850
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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 $\rm w/o\mbox{-}gamified$ between motivation factors and in the third empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Intrinsic Motivation Interest/Enjoyment Perceived Choice Pressure/Tension	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	1.0000	-0.0155	-0.2437	0.1507	0.1529	-0.0073
Intrinsic Motivation	-0.0155	1.0000	0.4000	0.6518	-0.4447	0.4098
Interest/Enjoyment	-0.2437	0.4000	1.0000	0.1119	0.2815	0.0348
Perceived Choice	0.1507	0.6518	0.1119	1.0000	-0.0427	-0.0489
Pressure/Tension	0.1529	-0.4447	0.2815	-0.0427	1.0000	-0.1765
${ m Effort/Importance}$	-0.0073	0.4098	0.0348	-0.0489	-0.1765	1.0000
Level of Motivation	-0.0497	0.4465	0.5088	0.3078	0.1316	0.4530
Attention	-0.0891	0.1315	0.5283	0.1173	0.3768	0.2830
Relevance	0.1152	0.4946	-0.0662	0.2041	-0.2925	0.6107
Satisfaction	-0.0789	0.5018	0.4029	0.2651	0.0303	0.4898
method: spearman						

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

tance]	.9772	.0913	0.8909	.8473	.4836	.0000	.0591	.2551	0.0071	0.0391	
Effort/Importance	0	0	0	0	0	0	0	0	0	0	
Pressure/Tension	0.5447	0.0645	0.2578	0.8664	0.0000	0.4836	0.6026	0.1233	0.2389	0.9051	
Perceived Choice Pressure/Tension	0.5506	0.0034	0.6584	0.0000	0.8664	0.8473	0.2141	0.6430	0.4166	0.2878	
Interest/Enjoyment	0.3299	0.1000	0.0000	0.6584	0.2578	0.8909	0.0311	0.0242	0.7941	0.0974	
Intrinsic Motivation	0.9513	0.0000	0.1000	0.0034	0.0645	0.0913	0.0632	0.6031	0.0369	0.0338	
Gains in Skill/Knowledge	0.0000	0.9513	0.3299	0.5506	0.5447	0.9772	0.8448	0.7251	0.6491	0.7557	
round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	m Effort/Importance	Level of Motivation	Attention	Relevance	Satisfaction	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	Intrinsic Motivation Interest/Enjoyment		Pressure/Tension	Effort/Importance]
Gains in Skill/Knowledge	1.0000	-0.1809	-0.2540	-0.1308	0.2112	0.1097
Intrinsic Motivation	-0.1809	1.0000	0.5435	0.6597	-0.1370	0.3033
Interest/Enjoyment	-0.2540	0.5435	1.0000	0.0122	0.2728	-0.1747
Perceived Choice	-0.1308	0.6597	0.0122	1.0000	-0.0982	0.0763
Pressure/Tension	0.2112	-0.1370	0.2728	-0.0982	1.0000	-0.0355
${ m Effort/Importance}$	0.1097	0.3033	-0.1747	0.0763	-0.0355	1.0000
Level of Motivation	-0.0166	0.6215	0.7084	0.1930	0.2973	0.2293
Attention	-0.0570	0.3963	0.7508	-0.0053	0.3435	-0.0036
Relevance	-0.0185	0.5590	0.1332	0.4063	-0.0323	0.1666
Satisfaction	0.1012	0.6120	0.5688	0.2274	0.3996	0.3998
method: spearman						

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
Gains in Skill/Knowledge	0.0000	0.3764	0.2106	0.5243	0.3003	0.5938
Intrinsic Motivation	0.3764	0.0000	0.0041	0.0002	0.5045	0.1320
Interest/Enjoyment	0.2106	0.0041	0.0000	0.9529	0.1776	0.3934
Perceived Choice	0.5243	0.0002	0.9529	0.0000	0.6331	0.7110
Pressure/Tension	0.3003	0.5045	0.1776	0.6331	0.0000	0.8632
Effort/Importance	0.5938	0.1320	0.3934	0.7110	0.8632	0.0000
Level of Motivation	0.9358	0.0007	0.0001	0.3448	0.1403	0.2598
Attention	0.7819	0.0450	0.0000	0.9794	0.0858	0.9860
Relevance	0.9284	0.0030	0.5166	0.0394	0.8755	0.4161
Satisfaction	0.6227	0.0009	0.0024	0.2639	0.0432	0.0430

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

Effort/Importance	0.0741	0.5211	0.0952	0.0919	-0.4668	1.0000	0.0564	-0.1484	0.6243	0.0639
Pressure/Tension	-0.5822	-0.5456	0.2840	-0.3256	1.0000	-0.4668	0.3000	0.6351	-0.4661	0.0468
Perceived Choice	0.5536	0.7263	0.4200	1.0000	-0.3256	0.0919	0.4394	0.1162	0.5518	0.2832
Interest/Enjoyment	0.0316	0.4518	1.0000	0.4200	0.2840	0.0952	0.7684	0.5870	0.1807	0.5318
Intrinsic Motivation	0.2977	1.0000	0.4518	0.7263	-0.5456	0.5211	0.3012	-0.0632	0.7811	0.2293
Gains in Skill/Knowledge	1.0000	0.2977	0.0316	0.5536	-0.5822	0.0741	0.0474	-0.3040	0.3053	-0.0106
round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	${ m Effort/Importance}$	Level of Motivation	Attention	Relevance	Satisfaction

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
Gains in Skill/Knowledge	0.0000	0.3473	0.9224	0.0619	0.0470	0.8190
Intrinsic Motivation	0.3473	0.0000	0.1403	0.0075	0.0665	0.0823
Interest/Enjoyment	0.9224	0.1403	0.0000	0.1740	0.3711	0.7684
Perceived Choice	0.0619	0.0075	0.1740	0.0000	0.3017	0.7764
Pressure/Tension	0.0470	0.0665	0.3711	0.3017	0.0000	0.1260
m Effort/Importance	0.8190	0.0823	0.7684	0.7764	0.1260	0.0000
Level of Motivation	0.8838	0.3414	0.0035	0.1530	0.3434	0.8617
Attention	0.3367	0.8454	0.0448	0.7191	0.0265	0.6453
Relevance	0.3346	0.0027	0.5741	0.0629	0.1266	0.0300
Satisfaction	0.9739	0.4735	0.0751	0.3724	0.8852	0.8435
method: spearman						

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

Effort/Importance	-0.2072	0.2305	0.0474	-0.0505	0.0865	1.0000	0.1086	0.0325	-0.2061	0.1852	
Pressure/Tension	0.1514	0.4746	0.6303	0.1406	1.0000	0.0865	0.7702	0.7083	0.5022	0.7497	
Perceived Choice	-0.1689	0.7652	0.1802	1.0000	0.1406	-0.0505	0.2638	0.1071	0.5794	0.2511	
l	-0.0910	0.6541	1.0000	0.1802	0.6303	0.0474	0.8591	0.9301	0.2634	0.8343	
Intrinsic Motivation Interest/Enjoyment	-0.2750	1.0000	0.6541	0.7652	0.4746	0.2305	0.6315	0.5435	0.6195	0.6417	
Gains in Skill/Knowledge	1.0000	-0.2750	-0.0910	-0.1689	0.1514	-0.2072	0.0815	0.0771	-0.0377	0.1049	
round	Gains in Skill/Knowledge	Intrinsic Motivation	$\operatorname{Interest/Enjoyment}$	Perceived Choice	Pressure/Tension	m Effort/Importance	Level of Motivation	Attention	Relevance	Satisfaction	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

Effort/Importance	0.4772	0.4280	0.8721	0.8638	0.7687	0.0000	0.7116	0.9122	0.4796	0.5262	
	0.6054	0.0864	0.0157	0.6315	0.0000	0.7687	0.0013	0.0046	0.0672	0.0020	
Perceived Choice	0.5639	0.0014	0.5376	0.0000	0.6315	0.8638	0.3621	0.7156	0.0299	0.3865	
Interest/Enjoyment	0.7570	0.0112	0.0000	0.5376	0.0157	0.8721	0.0001	0.0000	0.3629	0.0002	
Intrinsic Motivation Interest/Enjoyment Perceived Choice Pressure/Tension	0.3413	0.0000	0.0112	0.0014	0.0864	0.4280	0.0154	0.0446	0.0181	0.0134	
Gains in Skill/Knowledge	0.0000	0.3413	0.7570	0.5639	0.6054	0.4772	0.7818	0.7934	0.8983	0.7213	
round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	m Effort/Importance	Level of Motivation	Attention	Relevance	Satisfaction	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

${ m Effort/Importance}$	0.5798	0.8117	0.1160	0.7537	-0.7941	1.0000	0.4638	-0.1324	0.5508	0.2941	
Pressure/	-0.8697	-0.9856	0.0290	-0.9856	1.0000	-0.7941	0.0290	0.6912	-0.8986	0.0000	
Perceived Choice	0.8857	0.9429	-0.1429	1.0000	-0.9856	0.7537	-0.1429	-0.7247	0.9429	-0.1160	
Intrinsic Motivation Interest/Enjoyment Perceived Choice	-0.0857	0.0857	1.0000	-0.1429	0.0290	0.1160	0.6571	0.2319	-0.2571	0.7247	
Intrinsic Motivation	0.8286	1.0000	0.0857	0.9429	-0.9856	0.8117	0.0857	-0.6377	0.8286	0.1160	
Gains in Skill/Knowledge	1.0000	0.8286	-0.0857	0.8857	-0.8697	0.5798	-0.0857	-0.6377	0.7714	0.1160	
round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	${ m Effort/Importance}$	Level of Motivation	Attention	Relevance	Satisfaction	method: spearman

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

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 $\rm w/o\text{-}gamified$. Apprentice between motivation factors and in the third empirical study

on Effort/Importance	24 0.1849	74 0.5729	39 0.0335		00 -0.4346	46 1.0000	0.7570	.08 0.5532	84 0.6802	29 0.8053	
Pressure/Tensic	-0.2324	-0.9174	-0.0739	-0.6268	1.0000	-0.4346	-0.4366	-0.0408	-0.6184	-0.3929	
Perceived Choice	0.1526	0.5954	-0.4211	1.0000	-0.6268	0.2342	0.0860	-0.1396	0.2782	0.0265	
Interest/Enjoyment	-0.5158	0.2102	1.0000	-0.4211	-0.0739	0.0335	0.2561	0.2968	-0.1989	0.1340	
Intrinsic Motivation	0.1821	1.0000	0.2102	0.5954	-0.9174	0.5729	0.3958	0.0600	0.5554	0.4754	
Gains in Skill/Knowledge	1.0000	0.1821	-0.5158	0.1526	-0.2324	0.1849	-0.0982	-0.2403	0.2905	0.0370	
round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	${ m Effort/Importance}$	Level of Motivation	Attention	Relevance	Satisfaction	

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	Γ
Gains in Skill/Knowledge	0.0000	0.5710	0.0861	0.6358	0.4673	0.5652	
Intrinsic Motivation	0.5710	0.0000	0.5121	0.0411	0.0000	0.0515	
Interest/Enjoyment	0.0861	0.5121	0.0000	0.1729	0.8193	0.9178	
Perceived Choice	0.6358	0.0411	0.1729	0.0000	0.0292	0.4639	
Pressure/Tension	0.4673	0.0000	0.8193	0.0292	0.0000	0.1580	
${ m Effort/Importance}$	0.5652	0.0515	0.9178	0.4639	0.1580	0.0000	
Level of Motivation	0.7613	0.2028	0.4216	0.7905	0.1559	0.0044	
Attention	0.4519	0.8531	0.3488	0.6653	0.8999	0.0621	
Relevance	0.3597	0.0609	0.5353	0.3813	0.0321	0.0149	
Satisfaction	0.9090	0.1183	0.6779	0.9350	0.2064	0.0016	

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

Effort/Importance	-0.7537	0.2000	0.0290	-0.5508	0.0338	1.0000	0.0857	0.0857	0.4638	-0.0857	1
Pressure/Tension	0.4459	-0.0338	0.5659	0.3773	1.0000	0.0338	0.7775	0.7775	-0.2229	0.5409	
Perceived Choice	0.2794	0.4058	0.7059	1.0000	0.3773	-0.5508	0.6377	0.6377	-0.0735	0.8407	
Interest/Enjoyment	0.0000	0.6957	1.0000	0.7059	0.5659	0.0290	0.8117	0.8117	0.1324	0.7537	
Intrinsic Motivation	-0.4638	1.0000	0.6957	0.4058	-0.0338	0.2000	0.5429	0.5429	0.7247	0.5429	
Gains in Skill/Knowledge	1.0000	-0.4638	0.0000	0.2794	0.4459	-0.7537	0.0580	0.0580	-0.6765	-0.0580	
round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	${ m Effort/Importance}$	Level of Motivation	Attention	Relevance	Satisfaction	

Table 18: Correlation matrix with p-values 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
Gains in Skill/Knowledge	0.0000	0.3542	1.0000	0.5918	0.3755	0.0835
Intrinsic Motivation	0.3542	0.0000	0.1248	0.4247	0.9493	0.7139
Interest/Enjoyment	1.0000	0.1248	0.0000	0.1170	0.2417	0.9565
Perceived Choice	0.5918	0.4247	0.1170	0.0000	0.4609	0.2574
Pressure/Tension	0.3755	0.9493	0.2417	0.4609	0.0000	0.9493
m Effort/Importance	0.0835	0.7139	0.9565	0.2574	0.9493	0.0000
Level of Motivation	0.9131	0.2972	0.0499	0.1731	0.0687	0.9194
Attention	0.9131	0.2972	0.0499	0.1731	0.0687	0.9194
Relevance	0.1401	0.1032	0.8026	0.8899	0.6711	0.3542
Satisfaction	0.9131	0.2972	0.0835	0.0361	0.2678	0.9194
method: spearman						