Supplementary materials

BLINDED

Supplementary materials

Contents

Descriptive statistics

Table 1

Descriptive statistics

strength	N studies	N samples	k	N	Sample Size	CS short	CS long	CS other	Wellbeing	MentalHealt	Clinical	Youth	Adult	Old
Appreciation_of_beauty	92	112	206	193916	[32; 56998]	97	109	0	169	37	12	40	160	6
Bravery	93	113	201	194235	[26; 56998]	97	102	2	165	36	8	40	155	6
Creativity	95	115	207	196142	[32; 56998]	104	103	0	167	40	10	40	161	6
Curiosity	96	115	211	196450	[32; 56998]	104	107	0	174	37	8	40	166	5
Fairness	91	110	199	193138	[32; 56998]	97	102	0	165	34	8	41	152	6
Forgiveness	98	119	216	196010	[32; 56998]	102	114	0	174	42	15	47	162	7
Gratitude	104	125	231	212430	[26; 56998]	110	119	2	189	42	13	43	176	12
Honesty	92	111	199	194199	[32; 56998]	97	102	0	163	36	8	40	153	6
Hope	101	121	224	238842	[32; 56998]	108	116	0	183	41	14	43	175	6
Humility	93	112	204	237322	[32; 56998]	101	103	0	169	35	12	44	154	6
Humor	97	118	221	238185	[32; 56998]	101	120	0	184	37	17	44	171	6
Judgment	93	112	201	195537	[32; 56998]	97	104	0	163	38	10	40	155	6
Kindness	98	117	209	197301	[32; 56998]	103	104	2	173	36	12	46	157	6
Leadership	92	111	202	194570	[32; 56998]	102	100	0	167	35	12	45	151	6
Love_of_learning	95	115	208	196136	[26; 56998]	99	107	2	171	37	8	40	162	6
Love	96	116	212	194942	[26; 56998]	107	103	2	177	35	14	46	160	6
Perseverance	93	112	203	194361	[32; 56998]	98	105	0	166	37	11	42	155	6
Perspective	93	112	202	195402	[32; 56998]	97	105	0	165	37	11	40	156	6
Prudence	90	109	197	193610	[32; 56998]	97	100	0	162	35	8	40	151	6
Self_regulation	93	113	205	193949	[26; 56998]	97	106	2	168	37	11	40	159	6
Social_intelligence	96	116	213	196471	[32; 56998]	106	107	0	176	37	16	44	163	6
Spirituality	93	113	208	194116	[32; 56998]	97	111	0	170	38	14	40	162	6
Teamwork	93	112	203	194873	[32; 56998]	102	101	0	168	35	12	45	152	6
Zest	97	116	213	204403	[32; 56998]	103	109	1	176	37	15	42	165	6
CVQ_cautiousness	8	8	13	3448	[95; 716]	1	0	12	3	10	1	1	12	0
CVQ_interpersonal	8	8	13	3448	[95; 716]	1	0	12	3	10	1	1	12	0
CVQ_vitality	8	8	13	3448	[95; 716]	1	0	12	3	10	1	1	12	0
Caring	10	11	22	10178	[162; 4238]	7	1	14	10	12	7	2	20	0
Inquisitiveness	10	11	22	10178	[162; 4238]	7	1	14	10	12	7	2	20	0
Self-control	10	11	22	10178	[162; 4238]	7	1	14	10	12	7	2	20	0
FullSample	130	154	4995	275007	[26; 56998]	2423	2559	13	4104	891	279	1012	3833	150

* FullSample stats exclude papers with only virtues

Detailed results on mental health vs well-being moderator analysis

Table 2

Moderator analysis testing for differences between mental health (MH) and well-being (WB) outcomes

Strength	r MH	N MH	k MH	r WB	N WB	k WB	delta r	delta CI	se	z	tau2	Q	QM
Appreciation of beauty	0.049 [0.024; 0.075]	30,000	37	0.152 [0.133; 0.171]	267,966	169	0.104*	[0.083; 0.124]	0.011	9.760	0.007	1876.741*	95.250*
Bravery	0.140 [0.112; 0.168]	29,977	36	0.220 [0.198; 0.242]	267,186	165	0.082*	[0.061; 0.104]	0.011	7.514	0.011	2781.526*	56.466*
Creativity	0.092 [0.066; 0.118]	32,425	40	0.195 [0.176; 0.214]	267,746	167	0.105*	[0.084; 0.126]	0.011	9.835	0.008	3516.879*	96.736*
Curiosity	0.215 [0.185; 0.245]	31,432	37	0.326 [0.303; 0.349]	270,846	174	0.120*	[0.098; 0.141]	0.011	10.846	0.015	4103.610*	117.633*
Fairness	0.115 [0.092; 0.137]	28,645	34	0.176 [0.163; 0.190]	267,705	165	0.063*	[0.042; 0.083]	0.011	5.956	0.006	1149.414*	35.469*
Forgiveness	0.175 [0.152; 0.196]	31,394	42	0.211 [0.196; 0.227]	271,077	174	0.038*	[0.018; 0.058]	0.010	3.736	0.005	1109.798*	13.961*
Gratitude	0.251 [0.223; 0.278]	31,727	42	0.370 [0.350; 0.390]	289,831	189	0.132*	[0.111; 0.152]	0.011	12.614	0.013	5177.542*	159.119*
Honesty	0.164 [0.137; 0.191]	29,977	36	0.226 [0.205; 0.247]	267,124	163	0.064*	[0.043; 0.085]	0.011	5.874	0.009	2148.538*	34.506*
Hope	0.396 [0.362; 0.428]	31,472	41	0.465 [0.437; 0.492]	313,160	183	0.085*	[0.063; 0.107]	0.011	7.672	0.031	7128.935*	58.854*
Humility	0.045 [0.021; 0.069]	29,705	35	0.060 [0.044; 0.077]	312,427	169	0.015	[-0.006; 0.036]	0.011	1.423	0.005	1779.295*	2.025
Humor	0.169 [0.143; 0.195]	30,000	37	0.241 [0.222; 0.260]	316,424	184	0.075*	[0.054; 0.096]	0.011	6.932	0.009	2610.984*	48.054*
Judgment	0.134 [0.108; 0.161]	31,632	38	0.177 [0.157; 0.197]	267,007	163	0.043*	[0.022; 0.064]	0.011	4.044	0.008	2251.728*	16.354*
Kindness	0.113 [0.085; 0.140]	29,977	36	0.213 [0.192; 0.233]	272,276	173	0.102*	[0.081; 0.123]	0.011	9.362	0.010	1855.444*	87.656*
Leadership	0.155 [0.131; 0.179]	29,705	35	0.237 [0.220; 0.254]	269,507	167	0.085*	[0.064; 0.106]	0.011	7.927	0.006	2005.695*	62.843*
Love of learning	0.158 [0.130; 0.185]	31,432	37	0.205 [0.183; 0.226]	269,943	171	0.049*	[0.028; 0.070]	0.011	4.476	0.011	3355.213*	20.031*
Love	0.275 [0.245; 0.304]	29,705	35	0.358 [0.335; 0.381]	270,610	177	0.092*	[0.070; 0.114]	0.011	8.263	0.015	4400.771*	68.281*
Perseverance	0.236 [0.210; 0.263]	30,705	37	0.302 [0.282; 0.322]	267,188	166	0.071*	[0.049; 0.092]	0.011	6.480	0.010	3270.691*	41.995*
Perspective	0.165 [0.138; 0.191]	31,432	37	0.254 [0.234; 0.274]	267,002	165	0.093*	[0.072; 0.114]	0.011	8.587	0.009	2652.845*	73.729*
Prudence	0.144 [0.116; 0.171]	29,705	35	0.157 [0.135; 0.178]	266,807	162	0.013	[-0.008; 0.035]	0.011	1.211	0.009	2125.283*	1.467
Self regulation	0.232 [0.207; 0.257]	30,181	37	0.245 [0.226; 0.264]	267,302	168	0.013	[-0.008; 0.034]	0.011	1.232	0.008	3412.153*	1.518
Social intelligence	0.192 [0.166; 0.219]	31,312	37	0.275 [0.255; 0.295]	274,687	176	0.087*	[0.067; 0.107]	0.010	8.516	0.010	2230.926*	72.529*
Spirituality	0.116 [0.090; 0.142]	30,200	38	0.200 [0.181; 0.220]	268,166	170	0.086*	[0.065; 0.107]	0.011	8.088	0.008	4855.399*	65.422*
Teamwork	0.186 [0.161; 0.212]	29,705	35	0.246 [0.227; 0.264]	269,810	168	0.062*	[0.041; 0.083]	0.011	5.726	0.008	1574.225*	32.782*
Zest	0.363 [0.330; 0.396]	30,231	37	0.456 [0.429; 0.482]	287,912	176	0.111*	[0.089; 0.133]	0.011	9.941	0.026	5762.106*	98.822*

* QM indicates the Q test for the moderator analysis

Detailed results on clinical vs non-clinical population (WB)

Table 3

Moderator analysis testing for differences between clinical and non-clinical population on WB outcomes

Strength	r clinical	N	k	r not clinical	N	k	delta r	delta CI	se	z	tau2	Q	QM
Appreciation of beauty	0.213 [0.105; 0.315]	736	9	0.156 [0.137; 0.176]	267,230	160	-0.058*	[-0.169; 0.054]	0.057	-1.019	0.006	1545.426*	1.039
Bravery	0.127 [-0.014; 0.262]	541	6	0.236 [0.214; 0.257]	266,645	159	0.112*	[-0.030; 0.251]	0.073	1.544	0.009	2378.246*	2.385
Creativity	0.189 [0.084; 0.289]	835	8	0.2 [0.178; 0.221]	266,911	159	0.012*	[-0.096; 0.118]	0.055	0.210	0.009	3056.944*	0.044
Curiosity	0.254 [0.092; 0.403]	541	6	0.328 [0.302; 0.354]	270,305	168	0.081*	[-0.089; 0.246]	0.087	0.935	0.017	3747.449*	0.875
Fairness	0.165 [0.041; 0.284]	541	6	0.188 [0.17; 0.206]	267,164	159	0.024*	[-0.103; 0.149]	0.065	0.366	0.006	887.618*	0.134
Forgiveness	0.228 [0.144; 0.308]	3,061	11	0.212 [0.195; 0.23]	268,016	163	-0.016*	[-0.104; 0.073]	0.045	-0.351	0.006	892.563*	0.123
Gratitude	0.296 [0.177; 0.407]	839	9	0.375 [0.352; 0.398]	288,992	180	0.088*	[-0.041; 0.215]	0.066	1.344	0.015	4614.118*	1.806
Honesty	0.173 [0.044; 0.297]	541	6	0.239 [0.219; 0.258]	266,583	157	0.069*	[-0.064; 0.199]	0.068	1.018	0.007	1779.311*	1.037
Hope	0.365 [0.21; 0.502]	936	10	0.479 [0.447; 0.509]	312,224	173	0.138*	[-0.035; 0.303]	0.089	1.565	0.035	6410.363*	2.448
Humility	0.136 [0.041; 0.229]	2,861	10	0.062 [0.044; 0.08]	309,566	159	-0.075	[-0.171; 0.023]	0.050	-1.497	0.006	1647.152*	2.240
Humor	0.234 [0.141; 0.322]	3,089	14	0.249 [0.229; 0.269]	313,335	170	0.017*	[-0.082; 0.115]	0.050	0.330	0.008	2304.208*	0.109
Judgment	0.146 [0.029; 0.26]	741	7	0.184 [0.161; 0.205]	266,266	156	0.038*	[-0.082; 0.157]	0.061	0.623	0.009	1927.603*	0.388
Kindness	0.271 [0.157; 0.377]	2,861	10	0.22 [0.198; 0.243]	269,415	163	-0.053*	[-0.173; 0.068]	0.062	-0.864	0.010	1566.264*	0.746
Leadership	0.245 [0.152; 0.333]	2,861	10	0.241 [0.223; 0.259]	266,646	157	-0.004*	[-0.102; 0.094]	0.050	-0.079	0.006	1659.616*	0.006
Love of learning	0.175 [0.027; 0.315]	541	6	0.209 [0.185; 0.232]	269,402	165	0.035*	[-0.116; 0.185]	0.077	0.454	0.011	2927.249*	0.207
Love	0.34 [0.224; 0.446]	2,959	12	0.364 [0.339; 0.389]	267,651	165	0.028*	[-0.102; 0.156]	0.066	0.418	0.016	3534.890*	0.175
Perseverance	0.295 [0.177; 0.405]	736	9	0.305 [0.283; 0.327]	266,452	157	0.011*	[-0.116; 0.137]	0.065	0.169	0.010	2884.703*	0.028
Perspective	0.259 [0.143; 0.368]	736	9	0.266 [0.244; 0.287]	266,266	156	0.007*	[-0.116; 0.130]	0.063	0.116	0.009	2306.838*	0.014
Prudence	0.136 [-0.001; 0.269]	541	6	0.16 [0.138; 0.182]	266,266	156	0.025	[-0.115; 0.163]	0.072	0.345	0.009	1535.270*	0.119
Self regulation	0.238 [0.126; 0.343]	736	9	0.25 [0.23; 0.27]	266,566	159	0.013	[-0.103; 0.130]	0.060	0.225	0.008	3019.271*	0.051
Social intelligence	0.257 [0.172; 0.338]	3,355	13	0.286 [0.265; 0.306]	271,332	163	0.031*	[-0.060; 0.121]	0.046	0.666	0.009	1709.413*	0.443
Spirituality	0.162 [0.059; 0.261]	936	10	0.202 [0.181; 0.223]	267,230	160	0.042*	[-0.065; 0.147]	0.054	0.771	0.008	4473.693*	0.594
Teamwork	0.276 [0.181; 0.367]	2,861	10	0.251 [0.233; 0.27]	266,949	158	-0.027*	[-0.129; 0.076]	0.053	-0.510	0.007	1177.968*	0.260
Zest	0.324 [0.185; 0.451]	1,034	12	0.457 [0.426; 0.488]	286,878	164	0.156*	[0.003; 0.302]	0.079	1.998	0.031	4831.587*	3.991

* QM indicates the Q test for the moderator analysis

Detailed results on short vs long VIA formats (WB)

Table 4

Moderator analysis testing for differences between short and long VIA formats on WB outcomes

Strength	r long	N	k	r short	N	k	delta r	delta CI	se	z	tau2	Q	QM
Appreciation of beauty	0.164 [0.142; 0.185]	132,486	100	0.148 [0.123; 0.173]	135,480	69	-0.016	[-0.040; 0.008]	0.012	-1.307	0.007	1481.047*	1.709
Bravery	0.237 [0.214; 0.259]	131,644	94	0.221 [0.195; 0.247]	135,480	69	-0.016	[-0.041; 0.009]	0.013	-1.260	0.009	2330.102*	1.589
Creativity	0.201 [0.177; 0.224]	131,630	94	0.197 [0.171; 0.223]	136,116	73	-0.004	[-0.028; 0.021]	0.012	-0.297	0.009	2578.919*	0.088
Curiosity	0.344 [0.317; 0.372]	133,907	98	0.296 [0.265; 0.326]	136,939	76	-0.054*	[-0.081; -0.027]	0.014	-3.920	0.017	3747.610*	15.369*
Fairness	0.188 [0.168; 0.208]	131,845	95	0.186 [0.163; 0.209]	135,860	70	-0.002	[-0.025; 0.021]	0.012	-0.171	0.006	818.375*	0.029
Forgiveness	0.215 [0.196; 0.234]	132,897	100	0.21 [0.188; 0.232]	138,180	74	-0.005	[-0.029; 0.018]	0.012	-0.433	0.006	920.616*	0.188
Gratitude	0.364 [0.34; 0.389]	150,549	108	0.38 [0.354; 0.406]	139,220	79	0.018	[-0.007; 0.044]	0.013	1.415	0.015	4302.989*	2.002
Honesty	0.243 [0.222; 0.265]	131,644	94	0.227 [0.203; 0.252]	135,480	69	-0.017	[-0.041; 0.007]	0.012	-1.374	0.007	1465.742*	1.887
Hope	0.469 [0.437; 0.501]	175,967	103	0.48 [0.446; 0.513]	137,193	80	0.014	[-0.015; 0.042]	0.015	0.934	0.035	6436.417*	0.872
Humility	0.067 [0.047; 0.088]	174,627	96	0.06 [0.036; 0.083]	137,800	73	-0.008	[-0.032; 0.016]	0.012	-0.640	0.006	1163.076*	0.409
Humor	0.273 [0.252; 0.294]	178,624	111	0.203 [0.177; 0.227]	137,800	73	-0.075*	[-0.099; -0.051]	0.012	-6.088	0.008	1652.281*	37.061*
Judgment	0.193 [0.169; 0.216]	131,527	94	0.164 [0.139; 0.19]	135,480	69	-0.029*	[-0.050; -0.008]	0.011	-2.687	0.009	1856.884*	7.222*
Kindness	0.224 [0.201; 0.246]	132,264	96	0.204 [0.179; 0.23]	138,375	75	-0.020	[-0.045; 0.005]	0.013	-1.578	0.009	1437.624*	2.489
Leadership	0.253 [0.233; 0.273]	131,327	93	0.222 [0.199; 0.244]	138,180	74	-0.033*	[-0.056; -0.009]	0.012	-2.742	0.006	1645.168*	7.517*
Love of learning	0.225 [0.199; 0.251]	133,907	98	0.176 [0.146; 0.205]	135,974	71	-0.052*	[-0.078; -0.025]	0.013	-3.856	0.012	2840.249*	14.869*
Love	0.361 [0.334; 0.386]	131,742	96	0.364 [0.335; 0.391]	138,806	79	0.003	[-0.023; 0.030]	0.014	0.252	0.015	3581.524*	0.064
Perseverance	0.31 [0.287; 0.333]	131,522	96	0.296 [0.269; 0.322]	135,666	70	-0.016	[-0.042; 0.009]	0.013	-1.247	0.010	2855.072*	1.555
Perspective	0.287 [0.265; 0.31]	131,522	96	0.228 [0.202; 0.253]	135,480	69	-0.064*	[-0.087; -0.040]	0.012	-5.260	0.009	2245.139*	27.665*
Prudence	0.168 [0.144; 0.192]	131,327	93	0.147 [0.12; 0.174]	135,480	69	-0.021	[-0.047; 0.004]	0.013	-1.657	0.009	1355.696*	2.747
Self regulation	0.265 [0.243; 0.286]	131,760	97	0.221 [0.195; 0.246]	135,480	69	-0.047*	[-0.071; -0.022]	0.013	-3.739	0.008	2941.797*	13.980*
Social intelligence	0.288 [0.266; 0.31]	136,065	98	0.279 [0.254; 0.303]	138,622	78	-0.010	[-0.035; 0.015]	0.013	-0.791	0.009	1746.220*	0.626
Spirituality	0.212 [0.189; 0.235]	132,686	101	0.178 [0.151; 0.205]	135,480	69	-0.035*	[-0.060; -0.010]	0.013	-2.751	0.009	3826.707*	7.569*
Teamwork	0.265 [0.244; 0.286]	131,630	94	0.232 [0.208; 0.256]	138,180	74	-0.036*	[-0.059; -0.012]	0.012	-2.966	0.007	1197.554*	8.795*
Zest	0.447 [0.414; 0.478]	151,426	101	0.454 [0.42; 0.487]	136,486	75	0.009	[-0.019; 0.038]	0.015	0.649	0.032	4874.354*	0.422

* QM indicates the Q test for the moderator analysis

Detailed results on specific well-being outcomes

Table 5

Moderator analysis testing for differences between specific WB outcomes

Strength	Domain satisfaction	Happyness	Life satisfaction	Negative affect	Positive affect	Psychological wellbeing	Subjective wellbeing	Overall effect	tau2	Q	QM
Appreciation of beauty	0.126 [0.090; 0.161]	0.180 [0.144; 0.215]	0.155 [0.133; 0.177]	0.080 [0.053; 0.107]	0.227 [0.202; 0.253]	0.154 [0.127; 0.180]	0.141 [0.060; 0.219]	0.152 [0.133; 0.171]	0.007	1876.741(204)*	95.250(1)*
Bravery	0.157 [0.120; 0.193]	0.345 [0.312; 0.378]	0.212 [0.189; 0.235]	0.104 [0.076; 0.132]	0.267 [0.241; 0.293]	0.297 [0.271; 0.323]	0.170 [0.089; 0.249]	0.220 [0.198; 0.242]	0.008	2781.526(199)*	56.466(1)*
Creativity	0.138 [0.102; 0.174]	0.274 [0.239; 0.309]	0.189 [0.165; 0.212]	0.022 [-0.007; 0.051]	0.303 [0.276; 0.328]	0.253 [0.226; 0.280]	0.144 [0.061; 0.224]	0.195 [0.176; 0.214]	0.008	3516.879(205)*	96.736(1)*
Curiosity	0.211 [0.171; 0.250]	0.466 [0.433; 0.498]	0.317 [0.291; 0.342]	0.120 [0.088; 0.152]	0.400 [0.373; 0.427]	0.349 [0.320; 0.377]	0.299 [0.217; 0.376]	0.326 [0.303; 0.349]	0.013	4103.610(209)*	117.633(1)*
Fairness	0.192 [0.157; 0.226]	0.257 [0.223; 0.291]	0.174 [0.152; 0.196]	0.153 [0.126; 0.180]	0.193 [0.167; 0.219]	0.187 [0.161; 0.213]	0.157 [0.077; 0.235]	0.176 [0.163; 0.190]	0.007	1149.414(197)*	35.469(1)*
Forgiveness	0.206 [0.172; 0.239]	0.276 [0.243; 0.308]	0.212 [0.191; 0.233]	0.222 [0.197; 0.247]	0.238 [0.213; 0.262]	0.169 [0.143; 0.194]	0.172 [0.093; 0.250]	0.211 [0.196; 0.227]	0.006	1109.798(214)*	13.961(1)*
Gratitude	0.258 [0.219; 0.297]	0.448 [0.415; 0.481]	0.416 [0.392; 0.439]	0.189 [0.158; 0.219]	0.371 [0.344; 0.398]	0.359 [0.331; 0.386]	0.335 [0.255; 0.411]	0.370 [0.350; 0.390]	0.014	5177.542(229)*	159.119(1)*
Honesty	0.173 [0.138; 0.207]	0.284 [0.251; 0.316]	0.224 [0.203; 0.245]	0.130 [0.103; 0.156]	0.235 [0.210; 0.259]	0.311 [0.287; 0.335]	0.216 [0.138; 0.291]	0.226 [0.205; 0.247]	0.006	2148.538(197)*	34.506(1)*
Hope	0.298 [0.253; 0.340]	0.600 [0.569; 0.629]	0.485 [0.457; 0.512]	0.328 [0.293; 0.363]	0.511 [0.482; 0.539]	0.453 [0.422; 0.484]	0.484 [0.409; 0.553]	0.465 [0.437; 0.492]	0.025	7128.935(222)*	58.854(1)*
Humility	0.096 [0.059; 0.132]	0.075 [0.038; 0.111]	0.076 [0.053; 0.098]	0.041 [0.014; 0.069]	0.043 [0.016; 0.070]	0.050 [0.023; 0.078]	0.053 [-0.029; 0.134]	0.060 [0.044; 0.077]	0.007	1779.295(202)*	2.025(1)
Humor	0.206 [0.172; 0.240]	0.382 [0.351; 0.412]	0.234 [0.213; 0.254]	0.108 [0.082; 0.133]	0.282 [0.259; 0.305]	0.274 [0.250; 0.298]	0.252 [0.176; 0.326]	0.241 [0.222; 0.260]	0.006	2610.984(219)*	48.054(1)*
Judgment	0.156 [0.119; 0.193]	0.217 [0.181; 0.253]	0.176 [0.151; 0.200]	0.057 [0.028; 0.087]	0.233 [0.206; 0.261]	0.232 [0.204; 0.260]	0.138 [0.055; 0.219]	0.177 [0.157; 0.197]	0.009	2251.728(199)*	16.354(1)*
Kindness	0.201 [0.164; 0.237]	0.273 [0.236; 0.308]	0.207 [0.183; 0.230]	0.091 [0.062; 0.120]	0.234 [0.207; 0.261]	0.260 [0.233; 0.286]	0.181 [0.099; 0.261]	0.213 [0.192; 0.233]	0.009	1855.444(207)*	87.656(1)*
Leadership	0.184 [0.184; 0.184]	0.304 [0.277; 0.331]	0.238 [0.223; 0.253]	0.119 [0.096; 0.141]	0.282 [0.262; 0.302]	0.285 [0.265; 0.305]	0.185 [0.112; 0.255]	0.237 [0.220; 0.254]	0.003	2005.695(200)*	62.843(1)*
Love of learning	0.207 [0.168; 0.245]	0.300 [0.264; 0.336]	0.177 [0.150; 0.203]	0.133 [0.102; 0.164]	0.277 [0.249; 0.305]	0.219 [0.189; 0.248]	0.173 [0.088; 0.255]	0.205 [0.183; 0.226]	0.012	3355.213(206)*	20.031(1)*
Love	0.313 [0.277; 0.349]	0.418 [0.385; 0.450]	0.387 [0.365; 0.409]	0.163 [0.133; 0.192]	0.328 [0.301; 0.354]	0.383 [0.357; 0.408]	0.370 [0.294; 0.441]	0.358 [0.335; 0.381]	0.011	4400.771(210)*	68.281(1)*
Perseverance	0.225 [0.188; 0.261]	0.361 [0.327; 0.394]	0.310 [0.287; 0.333]	0.160 [0.130; 0.189]	0.340 [0.314; 0.366]	0.354 [0.328; 0.380]	0.251 [0.170; 0.329]	0.302 [0.282; 0.322]	0.009	3270.691(201)*	41.995(1)*
Perspective	0.179 [0.142; 0.216]	0.332 [0.297; 0.365]	0.271 [0.247; 0.294]	0.115 [0.086; 0.144]	0.326 [0.300; 0.352]	0.308 [0.281; 0.335]	0.220 [0.139; 0.298]	0.254 [0.234; 0.274]	0.009	2652.845(200)*	73.729(1)*
Prudence	0.140 [0.102; 0.178]	0.163 [0.125; 0.201]	0.172 [0.147; 0.197]	0.101 [0.071; 0.131]	0.163 [0.134; 0.192]	0.180 [0.150; 0.208]	0.078 [-0.007; 0.161]	0.157 [0.135; 0.178]	0.009	2125.283(195)*	1.467(1)
Self regulation	0.155 [0.119; 0.191]	0.274 [0.240; 0.308]	0.269 [0.247; 0.290]	0.227 [0.201; 0.254]	0.284 [0.259; 0.309]	0.255 [0.229; 0.281]	0.165 [0.085; 0.244]	0.245 [0.226; 0.264]	0.007	3412.153(203)*	1.518(1)
Social intelligence	0.216 [0.181; 0.250]	0.367 [0.335; 0.399]	0.278 [0.256; 0.299]	0.138 [0.111; 0.164]	0.335 [0.311; 0.358]	0.326 [0.301; 0.350]	0.242 [0.164; 0.318]	0.275 [0.255; 0.295]	0.007	2230.926(211)*	72.529(1)*
Spirituality	0.146 [0.109; 0.183]	0.287 [0.252; 0.321]	0.219 [0.195; 0.242]	0.087 [0.058; 0.116]	0.222 [0.195; 0.249]	0.194 [0.166; 0.222]	0.183 [0.101; 0.262]	0.200 [0.181; 0.220]	0.008	4855.399(206)*	65.422(1)*
Teamwork	0.245 [0.211; 0.278]	0.282 [0.248; 0.316]	0.251 [0.229; 0.272]	0.163 [0.136; 0.190]	0.248 [0.222; 0.273]	0.274 [0.248; 0.299]	0.240 [0.162; 0.315]	0.246 [0.227; 0.264]	0.007	1574.225(201)*	32.782(1)*
Zest	0.352 [0.314; 0.389]	0.607 [0.575; 0.637]	0.447 [0.416; 0.478]	0.248 [0.208; 0.287]	0.522 [0.491; 0.551]	0.422 [0.387; 0.456]	0.403 [0.320; 0.480]	0.456 [0.429; 0.482]	0.029	5762.106(211)*	98.822(1)*

* QM indicates the Q test for the moderator analysis

Detailed results on clinical vs non-clinical populations (MH)

Table 6

Moderator analysis testing for differences between clinical and non-clinical populations on MH outcomes

Strength	r MH	N MH	k MH	r WB	N WB	k WB	delta r	delta CI	se	z	tau2	Q	QM
Appreciation of beauty	-0.05 [-0.17; 0.07]	1,302	3	0.03 [-0.01; 0.07]	28,698	34	0.080	[-0.043; 0.201]	0.063	1.277	0.007	316.195*	1.630
Bravery	0 [-0.16; 0.16]	1,248	2	0.12 [0.07; 0.17]	28,729	34	0.119	[-0.052; 0.283]	0.088	1.360	0.012	376.350*	1.851
Creativity	0.02 [-0.11; 0.15]	1,248	2	0.11 [0.08; 0.15]	31,177	38	0.093	[-0.038; 0.222]	0.067	1.394	0.007	449.430*	1.943
Curiosity	0.23 [0.1; 0.35]	1,248	2	0.21 [0.17; 0.24]	30,184	35	-0.025	[-0.164; 0.115]	0.072	-0.352	0.008	350.378*	0.124
Fairness	0 [-0.12; 0.12]	1,248	2	0.09 [0.05; 0.12]	27,397	32	0.087	[-0.038; 0.209]	0.064	1.367	0.006	252.068*	1.870
Forgiveness	0.14 [0.05; 0.24]	1,502	4	0.16 [0.13; 0.19]	29,892	38	0.019	[-0.081; 0.118]	0.051	0.367	0.005	177.684*	0.135
Gratitude	0.16 [0.04; 0.28]	1,502	4	0.26 [0.21; 0.3]	30,225	38	0.101	[-0.034; 0.232]	0.069	1.465	0.013	526.271*	2.145
Honesty	0.14 [-0.06; 0.33]	1,248	2	0.11 [0.05; 0.17]	28,729	34	-0.028	[-0.232; 0.179]	0.106	-0.259	0.019	365.045*	0.067
Hope	0.31 [0.16; 0.45]	1,502	4	0.37 [0.32; 0.42]	29,970	37	0.066	[-0.104; 0.233]	0.087	0.759	0.022	671.131*	0.577
Humility	0 [-0.09; 0.09]	1,248	2	0 [-0.02; 0.03]	28,457	33	0.004	[-0.086; 0.093]	0.046	0.077	0.002	100.592*	0.006
Humor	0.01 [-0.12; 0.13]	1,302	3	0.16 [0.12; 0.19]	28,698	34	0.151	[0.023; 0.274]	0.066	2.316	0.008	268.692*	5.366
Judgment	0.17 [0.06; 0.27]	1,448	3	0.11 [0.07; 0.15]	30,184	35	-0.064	[-0.179; 0.053]	0.060	-1.069	0.007	320.848*	1.144
Kindness	-0.04 [-0.16; 0.08]	1,248	2	0.07 [0.03; 0.11]	28,729	34	0.110	[-0.015; 0.231]	0.064	1.725	0.006	215.360*	2.977
Leadership	0.08 [-0.07; 0.23]	1,248	2	0.15 [0.11; 0.19]	28,457	33	0.069	[-0.088; 0.223]	0.080	0.862	0.010	338.076*	0.743
Love of learning	0.16 [0; 0.31]	1,248	2	0.15 [0.1; 0.19]	30,184	35	-0.012	[-0.174; 0.150]	0.083	-0.147	0.011	427.704*	0.022
Love	0.18 [-0.03; 0.38]	1,248	2	0.26 [0.19; 0.32]	28,457	33	0.078	[-0.147; 0.296]	0.116	0.679	0.023	796.924*	0.461
Perseverance	0.26 [0.1; 0.4]	1,248	2	0.22 [0.17; 0.26]	29,457	35	-0.047	[-0.214; 0.122]	0.087	-0.543	0.012	385.437*	0.295
Perspective	-0.02 [-0.15; 0.11]	1,248	2	0.15 [0.11; 0.18]	30,184	35	0.165	[0.032; 0.293]	0.069	2.420	0.007	314.056*	5.854
Prudence	0.1 [-0.08; 0.28]	1,248	2	0.11 [0.05; 0.17]	28,457	33	0.013	[-0.178; 0.202]	0.098	0.128	0.016	585.947*	0.016
Self regulation	0.23 [0.07; 0.37]	1,248	2	0.24 [0.23; 0.25]	28,933	35	0.009	[-0.150; 0.167]	0.081	0.105	0.012	392.450*	0.011
Social intelligence	0.12 [-0.02; 0.26]	1,448	3	0.17 [0.12; 0.22]	29,864	34	0.049	[-0.101; 0.197]	0.077	0.641	0.013	480.730*	0.411
Spirituality	0.12 [0.01; 0.23]	1,502	4	0.12 [0.08; 0.17]	28,698	34	-0.004	[-0.123; 0.115]	0.061	-0.069	0.009	370.803*	0.005
Teamwork	0.06 [-0.08; 0.2]	1,248	2	0.15 [0.1; 0.19]	28,457	33	0.087	[-0.064; 0.235]	0.077	1.130	0.009	360.489*	1.277
Zest	0.4 [0.22; 0.55]	1,448	3	0.38 [0.32; 0.44]	28,783	34	-0.020	[-0.225; 0.188]	0.107	-0.182	0.027	885.156*	0.033

* QM indicates the Q test for the moderator analysis

Detailed results on short vs long VIA formats (MH)

Table 7

Moderator analysis testing for differences between short and long VIA formats on MH outcomes

Strength	r long	N	k	r short	N	k	delta r	delta CI	se	z	tau2	Q	QM
Appreciation of beauty	0.02 [-0.05; 0.09]	8,148	9	0.02 [-0.03; 0.07]	21,852	28	0.003*	[-0.084; 0.091]	0.045	0.076	0.008	309.345*	0.006
Bravery	0.1 [0.01; 0.19]	8,125	8	0.11 [0.05; 0.17]	21,852	28	0.009*	[-0.101; 0.119]	0.056	0.154	0.014	395.030*	0.024
Creativity	0.07 [0.01; 0.12]	9,580	9	0.13 [0.09; 0.17]	22,845	31	0.064*	[-0.004; 0.132]	0.035	1.842	0.007	407.474*	3.394
Curiosity	0.23 [0.16; 0.29]	9,580	9	0.2 [0.15; 0.24]	21,852	28	-0.030*	[-0.109; 0.049]	0.041	-0.752	0.007	308.861*	0.566
Fairness	0.07 [0; 0.14]	7,853	7	0.08 [0.04; 0.12]	20,792	27	0.011*	[-0.069; 0.091]	0.041	0.267	0.006	261.226*	0.071
Forgiveness	0.19 [0.15; 0.23]	9,542	14	0.13 [0.12; 0.14]	21,852	28	-0.068*	[-0.112; -0.024]	0.022	-3.045	0.005	171.521*	9.271*
Gratitude	0.21 [0.13; 0.28]	8,708	11	0.27 [0.21; 0.32]	23,019	31	0.062*	[-0.037; 0.159]	0.050	1.231	0.013	539.412*	1.515
Honesty	0.05 [-0.05; 0.15]	8,125	8	0.15 [0.08; 0.22]	21,852	28	0.103*	[-0.019; 0.221]	0.062	1.656	0.016	362.492*	2.743
Hope	0.32 [0.24; 0.39]	9,620	13	0.41 [0.38; 0.44]	21,852	28	0.109*	[0.022; 0.195]	0.045	2.443	0.020	672.510*	5.966
Humility	-0.01 [-0.05; 0.04]	7,853	7	0.01 [-0.01; 0.04]	21,852	28	0.020*	[-0.032; 0.071]	0.026	0.749	0.002	93.642*	0.561
Humor	0.19 [0.12; 0.25]	8,148	9	0.13 [0.13; 0.13]	21,852	28	-0.057*	[-0.123; 0.009]	0.034	-1.685	0.009	303.011*	2.839
Judgment	0.13 [0.07; 0.19]	9,780	10	0.1 [0.06; 0.15]	21,852	28	-0.023*	[-0.101; 0.054]	0.040	-0.591	0.007	312.441*	0.350
Kindness	0.07 [0; 0.13]	8,125	8	0.06 [0.01; 0.1]	21,852	28	-0.012*	[-0.091; 0.068]	0.040	-0.286	0.007	227.166*	0.082
Leadership	0.11 [0.03; 0.19]	7,853	7	0.16 [0.11; 0.2]	21,852	28	0.048*	[-0.045; 0.140]	0.047	1.016	0.010	337.771*	1.033
Love of learning	0.15 [0.07; 0.22]	9,580	9	0.15 [0.1; 0.2]	21,852	28	0.004*	[-0.090; 0.098]	0.048	0.087	0.011	423.460*	0.008
Love	0.19 [0.07; 0.3]	7,853	7	0.27 [0.2; 0.34]	21,852	28	0.090*	[-0.055; 0.230]	0.074	1.219	0.021	811.155*	1.485
Perseverance	0.17 [0.09; 0.25]	8,853	9	0.24 [0.19; 0.3]	21,852	28	0.073*	[-0.028; 0.172]	0.052	1.414	0.011	383.695*	2.000
Perspective	0.16 [0.1; 0.23]	9,580	9	0.11 [0.06; 0.16]	21,852	28	-0.053*	[-0.136; 0.030]	0.042	-1.263	0.009	340.488*	1.596
Prudence	0.07 [-0.03; 0.17]	7,853	7	0.13 [0.06; 0.19]	21,852	28	0.058*	[-0.065; 0.179]	0.063	0.928	0.015	573.706*	0.861
Self regulation	0.19 [0.11; 0.27]	8,329	9	0.22 [0.17; 0.28]	21,852	28	0.038*	[-0.063; 0.138]	0.051	0.733	0.011	392.432*	0.538
Social intelligence	0.13 [0.05; 0.21]	9,460	9	0.19 [0.13; 0.24]	21,852	28	0.056*	[-0.048; 0.158]	0.053	1.057	0.013	482.404*	1.117
Spirituality	0.11 [0.04; 0.18]	8,348	10	0.13 [0.07; 0.18]	21,852	28	0.014*	[-0.075; 0.104]	0.046	0.315	0.009	369.683*	0.099
Teamwork	0.1 [0.01; 0.17]	7,853	7	0.16 [0.1; 0.21]	21,852	28	0.062*	[-0.035; 0.159]	0.050	1.253	0.009	351.751*	1.569
Zest	0.31 [0.21; 0.41]	8,053	8	0.43 [0.36; 0.49]	21,852	28	0.132*	[-0.006; 0.265]	0.071	1.879	0.023	854.484*	3.532

* QM indicates the Q test for the moderator analysis

Detailed results on specific mental health outcome

Table 8

Moderator analysis testing for differences between specific MH outcomes

Strength	Anxiety	Depression	General mental health	Stress	Overall effect	tau2	Q	QM
Appreciation of beauty	-0.04 [-0.1; 0.01]	0.02 [-0.02; 0.07]	0.06 [-0.01; 0.12]	0 [-0.06; 0.06]	0.05 [0.02; 0.07]	0.008	1876.741*	95.250*
Bravery	0.06 [0; 0.12]	0.14 [0.09; 0.19]	0.12 [0.05; 0.19]	0.09 [0.03; 0.15]	0.14 [0.11; 0.17]	0.011	2781.526*	56.466*
Creativity	0.02 [-0.03; 0.07]	0.12 [0.08; 0.17]	0.14 [0.07; 0.2]	0.06 [0.01; 0.11]	0.09 [0.07; 0.12]	0.009	3516.879*	96.736*
Curiosity	0.1 [0.05; 0.15]	0.24 [0.2; 0.28]	0.22 [0.16; 0.27]	0.16 [0.1; 0.21]	0.22 [0.18; 0.24]	0.008	4103.610*	117.633*
Fairness	0.05 [0; 0.1]	0.07 [0.03; 0.1]	0.09 [0.03; 0.14]	0.11 [0.06; 0.16]	0.12 [0.09; 0.14]	0.006	1149.414*	35.469*
Forgiveness	0.11 [0.08; 0.15]	0.16 [0.13; 0.18]	0.14 [0.09; 0.19]	0.21 [0.16; 0.25]	0.17 [0.15; 0.2]	0.005	1109.798*	13.961*
Gratitude	0.12 [0.06; 0.18]	0.29 [0.24; 0.33]	0.2 [0.14; 0.27]	0.19 [0.12; 0.25]	0.25 [0.22; 0.28]	0.015	5177.542*	159.119*
Honesty	0.1 [0.05; 0.16]	0.16 [0.11; 0.2]	0.12 [0.05; 0.18]	0.13 [0.07; 0.19]	0.16 [0.14; 0.19]	0.009	2148.538*	34.506*
Hope	0.25 [0.19; 0.32]	0.41 [0.36; 0.46]	0.3 [0.22; 0.37]	0.29 [0.22; 0.36]	0.4 [0.36; 0.43]	0.023	7128.935*	58.854*
Humility	-0.01 [-0.03; 0.01]	-0.02 [-0.03; 0]	0.03 [-0.01; 0.08]	0.03 [-0.01; 0.06]	0.04 [0.02; 0.07]	0.002	1779.295*	2.025
Humor	0.1 [0.08; 0.12]	0.16 [0.14; 0.18]	0.2 [0.14; 0.26]	0.11 [0.07; 0.16]	0.17 [0.14; 0.2]	0.011	2610.984*	48.054*
Judgment	0.09 [0.04; 0.14]	0.12 [0.08; 0.16]	0.11 [0.05; 0.17]	0.12 [0.07; 0.17]	0.13 [0.11; 0.16]	0.007	2251.728*	16.354*
Kindness	0.01 [-0.04; 0.07]	0.07 [0.03; 0.11]	0.05 [-0.01; 0.11]	0.06 [0; 0.12]	0.11 [0.09; 0.14]	0.007	1855.444*	87.656*
Leadership	0.09 [0.04; 0.15]	0.15 [0.1; 0.2]	0.15 [0.08; 0.22]	0.09 [0.03; 0.15]	0.16 [0.13; 0.18]	0.012	2005.695*	62.843*
Love of learning	0.08 [0.02; 0.13]	0.17 [0.12; 0.21]	0.17 [0.11; 0.24]	0.11 [0.05; 0.16]	0.16 [0.13; 0.18]	0.012	3355.213*	20.031*
Love	0.14 [0.06; 0.22]	0.3 [0.23; 0.36]	0.19 [0.1; 0.27]	0.16 [0.08; 0.24]	0.28 [0.24; 0.3]	0.025	4400.771*	68.281*
Perseverance	0.14 [0.08; 0.2]	0.26 [0.21; 0.32]	0.16 [0.09; 0.23]	0.15 [0.08; 0.22]	0.24 [0.21; 0.26]	0.015	3270.691*	41.995*
Perspective	0.05 [-0.01; 0.11]	0.15 [0.1; 0.2]	0.13 [0.06; 0.2]	0.1 [0.04; 0.16]	0.16 [0.14; 0.19]	0.011	2652.845*	73.729*
Prudence	0.08 [0.02; 0.15]	0.12 [0.06; 0.18]	0.08 [0; 0.16]	0.13 [0.06; 0.2]	0.14 [0.12; 0.17]	0.017	2125.283*	1.467
Self regulation	0.2 [0.15; 0.25]	0.21 [0.17; 0.25]	0.23 [0.17; 0.29]	0.29 [0.23; 0.34]	0.23 [0.21; 0.26]	0.010	3412.153*	1.518
Social intelligence	0.1 [0.04; 0.16]	0.17 [0.12; 0.22]	0.18 [0.12; 0.25]	0.16 [0.1; 0.22]	0.19 [0.17; 0.22]	0.013	2230.926*	72.529*
Spirituality	0.04 [-0.02; 0.09]	0.15 [0.11; 0.2]	0.08 [0.02; 0.14]	0.07 [0.01; 0.13]	0.12 [0.09; 0.14]	0.009	4855.399*	65.422*
Teamwork	0.09 [0.03; 0.15]	0.15 [0.1; 0.2]	0.13 [0.06; 0.2]	0.11 [0.05; 0.18]	0.19 [0.16; 0.21]	0.011	1574.225*	32.782*
Zest	0.23 [0.15; 0.3]	0.44 [0.37; 0.5]	0.32 [0.24; 0.4]	0.27 [0.19; 0.34]	0.36 [0.33; 0.4]	0.030	5762.106*	98.822*

* QM indicates the Q test for the moderator analysis

Table results overall

Table 9

Meta-analytical associations between character strengths and mental health and well-being

Strength	N	k	r	CI	se	tau2	Q
Appreciation of beauty	297,966	206	0.134*	[0.115; 0.152]	0.010	0.008	2258*
Bravery	297,163	201	0.210*	[0.189; 0.231]	0.011	0.012	3267*
Creativity	300,171	207	0.173*	[0.154; 0.191]	0.010	0.009	3809*
Curiosity	302,278	211	0.308*	[0.285; 0.330]	0.013	0.016	4814*
Fairness	296,350	199	0.171*	[0.153; 0.188]	0.009	0.007	1355*
Forgiveness	302,471	216	0.205*	[0.190; 0.220]	0.008	0.006	1183*
Gratitude	321,558	231	0.353*	[0.333; 0.372]	0.011	0.014	5678*
Honesty	297,101	199	0.216*	[0.197; 0.235]	0.010	0.010	2305*
Hope	344,632	224	0.456*	[0.429; 0.482]	0.017	0.032	7841*
Humility	342,132	204	0.056*	[0.041; 0.072]	0.008	0.005	1820*
Humor	346,424	221	0.231*	[0.213; 0.250]	0.010	0.010	2940*
Judgment	298,639	201	0.166*	[0.148; 0.184]	0.010	0.008	2363*
Kindness	302,253	209	0.197*	[0.176; 0.218]	0.011	0.013	2472*
Leadership	299,212	202	0.225*	[0.207; 0.242]	0.009	0.008	2409*
Love of learning	301,375	208	0.195*	[0.175; 0.216]	0.011	0.011	3443*
Love	300,315	212	0.348*	[0.326; 0.370]	0.013	0.016	4610*
Perseverance	297,893	203	0.291*	[0.273; 0.309]	0.010	0.009	3441*
Perspective	298,434	202	0.243*	[0.223; 0.264]	0.011	0.012	3168*
Prudence	296,512	197	0.156*	[0.137; 0.175]	0.010	0.008	2126*
Self regulation	297,483	205	0.242*	[0.225; 0.260]	0.009	0.008	3454*
Social intelligence	305,999	213	0.262*	[0.242; 0.281]	0.011	0.011	2562*
Spirituality	298,366	208	0.192*	[0.174; 0.211]	0.010	0.008	5252*
Teamwork	299,515	203	0.238*	[0.220; 0.256]	0.010	0.008	1799*
Zest	318,143	213	0.447*	[0.423; 0.471]	0.015	0.025	6003*

* See the shiny app for additional info