A New Approach to Measuring Moral Virtues: The Multi-Component Gratitude Measure: Appendix A. Supplementary data

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Appendix 1: Table demonstrating the various scenarios, and questions, in the Conceptual Component of the MCGM.

Gratitude scenarios
(Nomination for award)
Baseline
A colleague nominates you for an award at work. If you win, you will receive recognition of your hard work and a voucher.
• You **are** grateful to this person for their help
(1=Strongly agree – 5=Strongly disagree)
• Please indicate the **degree** of gratitude you feel:
(Not at all grateful – Most grateful you could feel)
Ulterior Motive
A colleague nominates you for an award at work. If you win, you will receive recognition of your hard work and a voucher. The colleague has nominated you because she wants you to repay the favour by helping her with her own workload.
Cost to benefactor
A colleague nominates you for an award… The colleague had to spend a long time filling in the nomination form outside of work.
Non-realised benefit
A colleague nominates you for an award at work... In the end you do not win the award.
Malicious intent
A colleague nominates you for an award at work…. You do not get on with this colleague and you know that she only nominated you because she knew it would embarrass you.
Value of benefit
A colleague nominates you for an award…You do not want to win this award and would rather that you had not been nominated.
Mixed emotions
A colleague nominates you for an award at work… You feel thankful that your colleague nominated you but you also feel uncomfortable now that you are indebted to her.

Appendix 2: The number and demographics of participants who took part in Study 2 (the validation of the MCGM):

Demographics	Study 2 and 3		Estimates of UK population (%)	Demographics	Study 2 and 3		Estimates of UK population from 2011 UK Census (%)
	Numbers	%			Numbers	%	
No. participants	1599			Religion			
				Agnostic	160	10.00%	
% Female		52%	50.81	Atheist	374	23.40%	25.10%
Age range	18-83 yrs			Buddhism	5	0.30%	0.40%
Mean Age	51		39.9	Christianity	897	56.10%	59.30%
18-30yrs	67	4.20%	~15%	Hinduism	8	0.50%	1.50%
31-40yrs	331	20.70%	13.00%	Islam	9	0.60%	4.80%
41-50yrs	370	23.10%	14.30%	Judaism	6	0.40%	0.50%
51-60yrs	371	23.20%	12.50%	Sikhism	2	0.10%	0.80%
61-70yrs	365	22.80%	11.00%	Spirituality	25	1.60%	
>70yrs	95	5.90%	11.90%	Other	328	20.50%	0.40%
Employment				Practise Religion			
Higher	104	6.50%	No comparable estimates	Yes	336	21.00%	No comparable estimates
Intermediate	459	28.70%		No	646	40.40%	
Supervisory	347	21.70%		Relationship Status			
Skilled Manual	61	3.80%		Single	122	7.60%	68.50%
Semi-skilled manual	32	2.00%		Partner	27	1.70%	
Unskilled manual	31	1.90%		Long term partner	108	6.80%	
Casual	18	1.10%		Co-habiting	109	6.80%	
Pensioner	353	22.10%		Married	1064	66.50%	29.80%
State benefit	36	2.30%		Civil Partnership	11	0.70%	No comparable estimates
Other	144	9.00%		Separated	22	1.40%	
Ethnicity				Divorced	83	5.20%	1.50%
White-British	1490	93.20%	White: 87.1%	Widowed	50	3.10%	
White-Irish	26	1.60%		Other			
White Other	32	2.00%		Dependants YES	930	58.20%	No comparable estimates
Black British Caribbean	1	0.10%	Black British (African/Caribbean): 3%	Dependants NO	662	41.40%	
Black British African	1	0.10%		Average no. dependants	2.1		1.7
Black Other				Geographical location			
Asian-British Indian	15	0.90%	2.30%	England	1274	79.70%	84%
Asian-British Pakistani	4	0.30%	1.90%	Scotland	96	6.00%	8%
Asian-British Bangladeshi	1	0.10%	0.70%	Wales	53	3.30%	5%
Chinese	9	0.60%	0.70%	N. Ireland	19	1.20%	3%
Asian Other	2	0.10%	1.40%				
Mixed White and Black Caribbean	1	0.10%	Mixed/Multiple ethnicity: 2%				
Mixed White and Black African							
Mixed White and Asian	3	0.20%					
Mixed Other	2	0.10%					
Other Ethnicity	1	0.10%	0.90%				

Appendix 3: Summary of the final output of the three-step hierarchical regression when predicting Satisfaction with Life, Subjective Happiness and Positive Affect.

SWL Model	Variables entered	Method	β	t	p value	R	R²	R² change	F change	Significance of F change
1	Demographics: Gender	Enter	-.007	-.194	.846	.144	.021	.021	4.242	.002**
	Age		.112	3.217	.001					
	Religion		.003	.80	.936					
	Practise religion		.076	2.169	.030					
2	Big Five: Agreeableness	Enter	.153	4.382	.000	.367	.135	.114	21.817	.000**
	Conscientiousness		.074	2.156	.031					
	Neuroticism		-.161	-4.343	.000					
	Openness		.041	1.219	.223					
	Extraversion		.097	2.657	.008					
3	GQ6	Enter	.154	3.434	.001	.636	.400	.270	124.47	.000**
	GRAT		.494	10.787	.000					
	Appreciation Scale		-.006	-.178	.859					
4	MCGM: ConceptualARE	Enter	-.044	-1.215	.225	.654	.428	.023	6.626	.000**
	ConceptualDEGREE		.062	1.715	.087					
	Emotion		.048	1.210	.227					
	Attitude		-.159	-5.160	.000					
	Behaviour		.084	2.142	.033					
SH Model										
1	Gender	Enter	-.087	-2.559	0.11	.279	.078	.078	17.556	.000**
	Age		.213	6.281	.000					
	Religion		.001	.019	.985					
	Practise religion		.133	3.890	.000					
2	Agreeableness	Enter	.236	8.045	.000	.622	.387	.309	83.42	.000**
	Conscientiousness		.067	2.297	.022					
	Neuroticism		-.311	-9.960	.000					
	Openness		.057	2.032	.042					
	Extraversion		.165	5.386	.000					
3	GQ6	Enter	.183	4.615	.000	.731	.534	.147	86.685	.000**
	GRAT		.294	7.263	.000					
	Appreciation Scale		.011	.339	.734					
4	ConceptualARE	Enter	-.054	-1.673	.095	.741	.549	.016	5.661	.000**
	ConceptualDEGREE		.053	1.622	.101					
	Emotion		.054	1.524	.128					
	Attitude		-.095	-3.452	.001					
	Behaviour		.125	3.596	.000					
Positive Affect Model										
1	Gender	Enter	.022	.612	.541	.087	.007	.007	1.572	.180
	Age		.033	.931	.352					
	Religion		.012	.341	.733					
	Practise religion		.075	2.103	.036					
2	Agreeableness	Enter	.052	1.768	.077	.612	.374	.367	96.977	.000**
	Conscientiousness		.287	9.802	.000					
	Neuroticism		-.223	-7.044	.000					
	Openness		.208	7.354	.000					
	Extraversion		.213	6.883	.000					
3	GQ6	Enter	.229	5.404	.000	.683	.466	.092	47.416	.000**
	GRAT		.077	1.770	.077					
	Appreciation Scale		.099	2.974	.003					
4	ConceptualARE	Enter	-.007	-.217	.828	.694	.482	.015	4.898	.000**
	ConceptualDEGREE		.064	1.870	.062					
	Emotion		.109	2.890	.004					
	Attitude		-.104	-3.524	.000					
	Behaviour		.042	1.119	.263					

Appendix 4. Summary of results from MANOVA examining the effect of the conceptual stage on gratitude scores

Gratitude Scale		Low 'Are total'	Medium 'Are total'	High 'Are total'	Low 'Degree total'	Medium 'Degree total'	High 'Degree total'
GQ6	*Mean (SD)*	5.36 (.97)	5.47 (.94)	5.77 (.88)	5.33 (.98)	5.47 (.91)	5.72 (.91)
	F scores [a]	24.72***			23.68***		
	Sig [b] (Low/Med; Med/High)	.155		<.001	.046		< .001
GRAT	*Mean (SD)*	106.1 (17.82)	108.7 (17.22)	112.9 (17.30)	105.6 (18.22)	108.2 (16.76)	112.7 (17.29)
	F scores	19.16***			22.49***		
	Sig (Low/Med; Med/High)	.027		.001	.048		< .001
Appreciation Scale	*Mean (SD)*	75.64 (17.41)	78.30 (17.74)	83.08 (18.06)	74.83 (74.83)	76.75 (16.76)	84.11 (17.83)
	F scores	22.01***			41.72***		
	Sig (Low/Med; Med/High)	.030		< .001	.216		< .001
Emotion Component	*Mean (SD)*	32.70 (6.19)	33.88 (5.48)	35.89 (5.26)	32.53 (6.08)	33.86 (5.41)	35.51 (5.62)
	F scores	38.72***			36.43***		
	Sig (Low/Med; Med/High)	.001		< .001	< .001		< .001
Attitude Component	*Mean (SD)*	54.24 (8.34)	55.95 (7.75)	58.99 (7.55)	54.23 (8.38)	55.88 (7.72)	58.21 (7.81)
	F scores	44.66***			33.51***		
	Sig (Low/Med; Med/High)	.001		< .001	.002		< .001
Behaviour Component	*Mean (SD)*	60.65 (11.77)	62.55 (11.87)	65.11 (11.86)	60.18 (11.65)	61.63 (11.45)	65.73 (11.78)
	F scores	17.91***			32.63***		
	Sig (Low/Med; Med/High)	.016		.002	.125		< .001

Notes:

a. F scores are taken from Tests of Between-Subjects Effects.

b. Significance levels are taken from post-hoc Bonferroni tests exploring the mean difference between low and medium 'Are/Degree totals' and between medium and high 'Are/Degree totals'.

*** $p < .001$.

Appendix 5: Item means and standard deviations and corrected item-total correlations for Studies 1 and 2

MCGM Subscale:	Item	Study 1			Study 2		
		Item Mean	Item SD	Corrected Item-Total Correlation	Item Mean	Item SD	Corrected Item-Total Correlation
FEELINGS OF GRATITUDE [E]	There are so many people that I feel grateful towards	5.49	1.29	.703	5.19	1.38	.750
FEELINGS OF GRATITUDE [E]	There are so many people that I feel grateful for	5.65	1.27	.745	5.39	1.37	.762
FEELINGS OF GRATITUDE [E]	I feel appreciative of the support of many people in my life's journey	6.00	0.98	.647	5.80	1.16	.727
FEELINGS OF GRATITUDE [E]	I feel grateful for the people in my life	6.25	0.95	.668	6.07	1.04	.698
FEELINGS OF GRATITUDE [E]	Thinking about all I have to be grateful for makes me feel happy	5.55	1.20	.634	5.60	1.16	.644
FEELINGS OF GRATITUDE [E]	There are many things that I am grateful for	6.06	1.03	.677	5.90	1.08	.733
ATTITUDES TO APPROPRIATENESS [A]	Gratitude should be reserved for when someone does not want anything in return (*)	5.36	1.25	.661	4.60	1.68	.547
ATTITUDES TO APPROPRIATENESS [A]	Gratitude should be reserved for when someone intends to benefit you (*)	5.58	1.27	.655	5.25	1.46	.667
ATTITUDES TO APPROPRIATENESS [A]	I only show gratitude to people who have benefitted me without wanting anything in return (*)	5.20	1.32	.628	5.06	1.49	.645
ATTITUDES TO APPROPRIATENESS [A]	I only show gratitude for the things that are not already due to me/are mine by right (*)	5.18	1.27	.614	5.35	1.33	.601
ATTITUDES TO APPROPRIATENESS [A]	I only show gratitude towards people who clearly intended to benefit me (*)	5.57	1.21	.628	5.30	1.43	.674
ATTITUDES TO APPROPRIATENESS [A]	I only feel grateful when the benefit is of genuine value to me	5.32	1.22	.566	5.01	1.46	.486
BEHAVIOURAL SHORTCOMINGS [B]	I forget to let others know how much I appreciate them (*)	4.02	1.56	.574	4.51	1.75	.630
BEHAVIOURAL SHORTCOMINGS [B]	I forget to reflect on the things that I am grateful for (*)	4.01	1.65	.686	4.37	1.85	.752
BEHAVIOURAL SHORTCOMINGS [B]	I overlook how much I have to be grateful for (*)	4.09	1.66	.669	4.38	1.87	.723
BEHAVIOURAL SHORTCOMINGS [B]	I forget to remind myself that there is so much in life to be thankful for (*)	4.03	1.70	.641	4.30	1.88	.672
RITUALS/NOTICING BENEFITS [B]	I stop to recognize all the good things I have in my life	4.71	1.28	.806	4.39	1.57	.767
RITUALS/NOTICING BENEFITS [B]	I recognise how many things I have to be grateful for	5.04	1.24	.834	4.83	1.54	.809
RITUALS/NOTICING BENEFITS [B]	I stop and think about all the things I am grateful for	4.69	1.23	.814	4.39	1.55	.825
RITUALS/NOTICING BENEFITS [B]	I reflect on all the good things I have	4.92	1.27	.822	4.70	1.49	.833
RITUALS/NOTICING BENEFITS [B]	I remind myself of the benefits I have received	4.74	1.27	.758	4.36	1.56	.771
EXPRESSIONS (OF GRATITUDE) [B]	I make it a priority to thank others	5.82	1.19	.650	5.67	1.34	.752
EXPRESSIONS (OF GRATITUDE) [B]	I express thanks to those who help me	6.09	1.03	.582	5.77	1.25	.704
EXPRESSIONS (OF GRATITUDE) [B]	I notice the people who are kind to me	5.91	1.04	.611	5.63	1.29	.694
EXPRESSIONS (OF GRATITUDE) [B]	I go out of my way to thank others for their help	5.09	1.24	.571	5.22	1.41	.711
ATTITUDE OF GRATITUDE [A]	I don't think it is necessary to show your gratitude to others (*)	6.33	0.98	.530	6.29	1.10	.415
ATTITUDE OF GRATITUDE [A]	I believe it is important to thank people sincerely for the help they give me	6.29	0.86	.519	6.44	0.87	.568
ATTITUDE OF GRATITUDE [A]	I believe gratitude is an important value to have	6.27	0.79	.527	6.54	0.81	.573
ATTITUDE OF GRATITUDE [A]	It is important to acknowledge the kindness of other people	6.49	0.68	.586	6.28	0.92	.536

Notes:

[E]denotes an emotion item; [A] = Attitude item; [B] = Behaviour item

(*) = Reverse Scored Item.