

Validation of Lumina Spark and Emotion against the Great Eight Competencies

Purpose

The paper outlines research presented at the BPS DOP Conference 2018 by Dr. Stewart Desson on the validation of Lumina Spark 24 and at the EAWOP Congress 2019 on the validation of Lumina Emotion 16, establishing criterion validity of the models against the Great Eight Competencies. Criterion validity of a combined model is also considered, in order to establish a criterion-centric justification for the merging of Lumina Spark 24 and Lumina Emotion 16 into one model – Lumina Spark 40.

Measures

Lumina Spark 24 is a personality measure based on the Big Five model of personality with Jungian influences. It assesses four of the Big Five – Openness, Conscientiousness, Extraversion, and Agreeableness. The four factors are bifurcated into their opposite poles, with a total of 8 discrete factors being assessed. Each factor is further divided into 3 sub-factors each, with a total of 24 sub-factors. Each quality is assessed on 3 “personas”, reflecting the dynamic nature of personality. These personas aim to capture within-individual dynamics in personality with regards to preferences, everyday behaviours, and maladaptive manifestations of personality. The factors and sub-factors assessed, and their mappings to Big Five factors and Jungian measures are detailed in Table 1.

Lumina Emotion 16 is a measure of Neuroticism, the Big Five factor missing from Lumina Spark 24, along with 8 sub-factors of the 8 factors of Lumina Spark 24 which reflect emotional components of the aspects. As with the factors assessed in Lumina Spark 24, Neuroticism is also bifurcated into opposite poles, with each end divided into 4 sub-factors. The factors and sub-factors assessed here, along with mappings to the Big Five, are also detailed in Table 1.

The Great Eight Competencies are competencies identified by Kurz and Bartram (2002) that represent an overarching framework of work-related competencies, designed to be a concise and generalisable competency framework by concentrating previous work on developing competency frameworks into 8 general factors of work performance; these were later adapted by Kurz (2003) in order to provide more applied titles to the competencies. The original Great Eight Competencies and their adaptations are shown in Table 2.

Table 1

Lumina Spark 24 and Lumina Emotion 16 Factors and Sub-Factors Mapped to Jungian Measures and Big Five Factors

Jungian	Big Five	Lumina Spark 24	Lumina Emotion 16
Intuition	Openness	Big Picture Thinking	Conceptual Imaginative Radical Introspective
Sensing		Down to Earth	Practical Evidence-Based Cautious Grounded
Extraversion	Extraversion	Extraverted	Sociable Demonstrative Takes-Charge Expresses Emotions
Introversion		Introverted	Observing Measured Intimate Contains Emotions
Feeling	Agreeableness	People Focused	Accommodating Collaborative Empathetic Regard for Others
Thinking		Outcome Focused	Tough Competitive Logical Independent of Others
Judging	Conscientiousness	Discipline Driven	Purposeful Structured Reliable Focuses Feelings
Perceiving		Inspiration Driven	Adaptable Flexible Spontaneous Follows Feelings
(not applicable)	Neuroticism	(not applicable)	Reward Reactor Optimistic Confident Even-Tempered Resilient
			Risk Reactor Vigilant Modest Impassioned Responsive

Table 2
The Great Eight Competencies and their Adapted Titles

Kurz and Bartram (2002)	Kurz (2003)
Analysis and Interpreting	Analysing Situations
Creating and Conceptualising	Creating Concepts
Interacting and Presenting	Relating to People
Leading and Deciding	Controlling Resources
Supporting and Cooperating	Respecting People
Adapting and Coping	Adapting to Demands
Organising and Executing	Delivering Results
Enterprising and Performance	Driving Performance

Method

In order to establish criterion validity of the measures, a standard methodology proposed by Bartram (2005) was used. This method involved the mapping of scale sub-factors to the Great Eight Competencies, which is then used to create composites of the sub-factors.

The Bartram (2005) methodology proposes that a composite would be comprised of 3 sub-factors, with a double weight for the top sub-factor, and a single weight for the 2 subsequent factors. In this study, an additional rule was used, whereby at least one sub-factor from each end of each factor-spectrum had to be used; this rule was applied in order to adhere to the Jungian principle of valuing both ends of each spectrum equally.

Mapping of sub-factors to the Great Eight Competencies was informed by validity coefficients of the sub-factors against the competencies, where self-assessed sub-factor scores were assessed against externally-rated competency scores using Pearson correlations. For the purpose of this study, “effective” sub-factor scores (Underlying + Everyday) were used. The strength of validity coefficients was used as the main criteria for the creation of sub-factor composites, further informed by expert judgement in order to maintain adherence to the aforementioned rules.

Sample

375 professionals had self-rated on Lumina Spark 24, and had received external-ratings on the Great Eight Competencies. The mean age was 44.84 years, with 46.9% male and 53.1% female; of this sample, 307 had additionally self-rated on Lumina Emotion 16.

Results

Validity coefficients and trait mappings of Lumina Spark 24 sub-factors against the Great Eight Competencies are shown in Table 3, of Lumina Emotion 16 in Table 4, and of the combined Lumina Spark 40 model in Table 5.

Table 3
Validity coefficients and mappings of Lumina Spark 24 sub-factors against the Great Eight Competencies

Big Five Marker	Competency Sub-Factor	Competency							
		Analysing Situations	Creating Concepts	Relating to People	Controlling Resources	Respecting People	Adapting to Demands	Delivering Results	Driving Performance
O+	Conceptual	.24**	.21**	.07	.06	.02	.07	-.02	.11*
	Imaginative	.14**	.32**	.12*	.11*	.13*	.13**	.05	.09
	Radical	.11*	.27**	.01	.05	-.04	-.01	-.03	.09
O-	Practical	.06	-.05	.00	.18**	-.04	.17**	.28**	.07
	Evidence-Based	.08	-.15**	-.23**	-.05	-.13*	-.02	.10*	-.04
	Cautious	.02	-.15**	-.14**	-.10	-.04	-.03	.10*	-.03
E+	Sociable	-.14**	.00	.16**	.05	.13*	-.05	.00	-.02
	Demonstrative	-.11*	.01	.19**	.02	.17**	-.01	.00	-.02
	Takes Charge	.08	.15**	.10*	.24**	.00	.18**	.09	.19**
E-	Observing	.14**	.08	-.12*	-.05	-.13*	.00	.12*	.04
	Measured	.12*	.00	-.20**	-.02	-.18**	.00	.10	-.01
	Intimate	.04	.10*	.08	-.07	.13*	.00	.03	-.05
A+	Accommodating	-.03	-.07	.05	-.08	.15**	-.03	-.07	-.09
	Collaborative	-.12*	-.02	.21**	.04	.31**	.04	.03	.00
	Empathetic	-.03	.02	.25**	.05	.26**	.00	-.03	-.07
A-	Tough	.05	.08	.00	.18**	-.11*	.12*	.13*	.14**
	Competitive	.02	-.04	-.12*	-.09	-.22**	-.03	.02	.14**
	Logical	.10*	-.02	-.09	.10	-.09	.05	-.03	-.03
C+	Purposeful	.16**	.02	-.06	.10	-.09	.07	.30**	.18**
	Structured	.15**	-.11*	-.13**	.06	-.07	.11*	.26**	.10
	Reliable	.11*	.04	.03	.12*	-.02	.16**	.33**	.23**
C-	Adaptable	-.10	.10	.03	.00	-.02	-.03	-.14**	-.08
	Flexible	-.09	.03	.07	-.09	.07	-.01	-.20**	-.11*
	Spontaneous	-.12*	.10	.09	.02	.07	-.09	-.06	-.07

n = 375

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

Note: Dark shadings indicate a double weighting; light shadings indicate a single weighting

Table 4
Validity coefficients and mappings of Lumina Emotion 16 sub-factors against the Great Eight Competencies

Big Five Marker	Competency		Analysing Situations	Creating Concepts	Relating to People	Controlling Resources	Respecting People	Adapting to Demands	Delivering Results	Driving Performance
	Sub-Factor	Competency								
O+	Introspective		.09	.28**	.15*	.03	.08	-.08	.02	.12*
O-	Grounded		.12*	-.16**	-.06	.12*	.00	.17**	.29**	.01
E+	Expresses Emotions		-.24**	-.01	.06	-.08	.06	-.09	-.09	-.01
E-	Contains Emotions		.10	.00	-.11*	.04	-.17**	-.02	.04	.00
A+	Regard for Others		.09	.15**	.24**	.06	.21**	.12*	.00	.05
A-	Independent of Others		.14*	.00	-.08	-.01	-.13*	-.01	.05	.03
C+	Focuses Feelings		.31**	.10	-.13*	.15**	-.03	.19**	.35**	.23**
C-	Follows Feelings		-.13*	.17**	.08	.13*	.01	.03	.05	.12*
N-	Optimistic		.04	.12*	.28**	.21**	.28**	.28**	.13*	.15**
	Confident		.12*	.24**	.15**	.28**	.10	.32**	.07	.24**
	Even-Tempered		.16**	.15**	.24**	.21**	.22**	.28**	.05	.04
	Resilient		.14*	.14*	.14*	.11*	.10	.23**	-.01	.12*
N+	Vigilant		.02	-.16**	-.19**	-.21**	-.09	-.26**	.02	-.15**
	Modest		.10	.13*	-.05	-.01	-.02	-.14*	.08	-.01
	Impassioned		-.18**	-.14*	-.22**	-.14*	-.20**	-.27**	-.05	-.10
	Responsive		-.05	-.05	-.07	-.16**	-.12*	-.24**	-.01	-.07

n = 307

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

Note: Dark shadings indicate a double weighting; light shadings indicate a single weighting

Table 5
Validity coefficients and mappings of Lumina Spark 40 sub-factors against the Great Eight Competencies

Big Five Marker	Competency								
	Sub-Factor	Analysing Situations	Creating Concepts	Relating to People	Controlling Resources	Respecting People	Adapting to Demands	Delivering Results	Driving Performance
O+	Conceptual	.22**	.23**	.06	.00	.00	.06	-.01	.13*
	Imaginative	.10	.32**	.05	.09	.08	.11*	.00	.10
	Radical	.10	.26**	-.06	.03	-.11	-.03	-.03	.07
O-	Introspective	.09	.28**	.15*	.03	.08	-.08	.02	.12*
	Practical	.10	-.04	.05	.25**	.00	.21**	.30**	.11
	Evidence-Based	.14*	-.09	-.17**	-.02	-.07	.03	.12*	.00
E+	Cautious	.04	-.12*	-.05	-.06	.00	-.06	.13*	-.05
	Grounded	.12*	-.16**	-.06	.12*	.00	.17**	.29**	.01
	Sociable	-.17**	.00	.15**	.02	.11*	-.04	-.02	-.02
E-	Demonstrative	-.17**	-.01	.19**	-.02	.19**	-.01	-.05	-.02
	Takes Charge	.08	.13*	.07	.26**	.01	.22**	.11*	.21**
	Expresses Emotions	-.24**	-.01	.06	-.08	.06	-.09	-.09	-.01
A+	Observing	.16**	.13*	-.06	-.01	-.10	.02	.13*	.06
	Measured	.15**	.07	-.16**	.04	-.17**	.01	.12*	.04
	Intimate	.06	.11	.10	-.07	.12*	-.02	-.01	-.08
A-	Contains Emotions	-.10	-.11*	-.11*	-.04	-.17**	-.02	-.04	.00
	Accommodating	-.02	-.10	.07	-.08	.21**	-.04	-.04	-.14*
	Collaborative	-.13*	-.04	.22**	.02	.33**	.05	.00	.01
C+	Empathetic	.03	-.01	.24**	.04	.28**	.03	-.01	-.08
	Regard for Others	.09	.15**	.24**	.06	.21**	.12*	.00	.05
	Tough	.05	.08	-.02	.19**	-.14*	.15**	.14*	.18**
C-	Competitive	-.01	-.03	-.12*	-.12*	-.23**	-.01	.03	.13*
	Logical	.12*	-.01	-.09	.10	-.10	.07	-.10	.02
	Independent of Others	.14*	.00	-.08	-.01	-.13*	-.01	.05	.03
N-	Purposeful	.21**	.05	-.03	.16**	-.03	.14*	.40**	.26**
	Structured	.19**	-.10	-.07	.09	.02	.19**	.32**	.13*
	Reliable	.18**	.05	.03	.15**	.01	.22**	.38**	.31**
N+	Focuses Feelings	.31**	.10	-.13*	.15**	-.03	.19**	.35**	.23**
	Adaptable	-.14*	.08	.04	.03	-.05	-.05	-.21**	-.10
	Flexible	-.15**	.05	.04	-.10	.03	-.08	-.28**	-.13*
N+	Spontaneous	-.15**	.13*	.12*	.02	.06	-.10	-.12*	-.08
	Follows Feelings	-.13*	.17**	.08	.13*	.01	.03	.05	.12*
	Optimistic	.04	.12*	.28**	.21**	.28**	.28**	.13*	.15**
N+	Confident	.12*	.24**	.15**	.28**	.10	.32**	.07	.24**
	Even-Tempered	.16**	.15**	.24**	.21**	.22**	.28**	.05	.04
	Resilient	.14*	.14*	.14*	.11*	.10	.23**	-.01	.12*
N+	Vigilant	.02	-.16**	-.19**	-.21**	-.09	-.26**	.02	-.15**
	Modest	.10	.13*	-.05	-.01	-.02	-.14*	.08	-.01
	Impassioned	-.18**	-.14*	-.22**	-.14*	-.20**	-.27**	-.05	-.10
N+	Responsive	-.05	-.05	-.07	-.16**	-.12*	-.24**	-.01	-.07

n = 307

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

Note: Dark shadings indicate a double weighting; light shadings indicate a single weighting

Based on the validity coefficients and mappings shown in Tables 3, 4, and 5, composites were created by combining the three mapped sub-factors for each competency. These were then combined into aggregate scores which were assessed against externally-rated competency scores using Pearson correlations in order to assess the criterion-validity of each composite; the results for these are shown in Table 6 (Lumina Spark 24), Table 7 (Lumina Emotion 16), and Table 8 (Lumina Spark 40).

Validity coefficients of the composites created using Lumina Spark 24 sub-factors ranged from $r = .20$ to $r = .37$, $p < .01$; for composites created from Lumina Emotion 16, the range was $r = .28$ to $r = .39$, $p < .01$; and for the combined Lumina Spark 40 model, $r = .34$ to $r = .45$, $p < .01$. Mean validity coefficients across the eight competencies was $r = .29$ for Lumina Spark 24, $r = .33$ for Lumina Emotion 16, and $r = .38$ for Lumina Spark 40.

Table 6
Pearson correlations between Lumina Spark 24 sub-factor composites and externally-rated competencies

Composites	Sub-Factors	Big Five Marker	Competency	Analysing Situations	Creating Concepts	Relating to People	Controlling Resources	Respecting People	Adapting to Demands	Delivering Results	Driving Performance
Analysing Situations	Conceptual	O+									
	Logical	O-		.26**	.16**	-.04	.06	-.08	.07	.09	.08
	Observing	E-									
Creating Concepts	Imaginative	O+		.19**	.34**	.10	.10	.08	.10	.01	.11*
	Conceptual	O+									
	Radical	O+									
Relating to People	Demonstrative	E+									
	Empathetic	A+		-.12*	.01	.24**	.05	.22**	-.02	-.01	-.04
	Sociable	E+									
Controlling Resources	Takes Charge	E+		.11*	.14**	.08	.27**	-.05	.21**	.22**	.25**
	Reliable	C+									
	Tough	A-									
Respecting People	Collaborative	A+									
	Accommodating	A+		-.09	-.03	.22**	.01	.32**	.01	-.02	-.06
	Empathetic	A+									
Adapting to Demands	Practical	O-									
	Takes Charge	E+		.15**	.17**	.10	.30**	.02	.28**	.30**	.18**
	Imaginative	O+									
Delivering Results	Reliable	C+									
	Structured	C+		.14**	-.03	-.03	.15**	-.05	.18**	.37**	.19**
	Practical	O-									
Driving Performance	Competitive	A-									
	Purposeful	C+		.08	.01	-.11*	.02	-.23**	.04	.15**	.20**
	Tough	A-									

n = 375
 **, Correlation is significant at the 0.01 level (2-tailed)
 *, Correlation is significant at the 0.05 level (2-tailed)
 Note: Top sub-factors for each composite are double weighted
 Note: Shaded cells represent validity coefficient of composites against competencies

Table 7
Pearson correlations between Lumina Emotion 16 sub-factor composites and externally-rated competencies

Composites	Sub-Factors	Big Five Marker	Competency	Analysing Situations	Creating Concepts	Relating to People	Controlling Resources	Respecting People	Adapting to Demands	Delivering Results	Driving Performance
Analysing Situations	Focuses Feelings	C+									
	Independent of Others	A-		.35**	.14*	-.02	.20**	.03	.26**	.29**	.19**
	Even-Tempered	N-									
Creating Concepts	Introspective	O+		.16**	.35**	.14*	.13*	.09	.00	.08	.17**
	Confident	N-									
	Modest	N+									
Relating to People	Regard for Others	A+									
	Optimistic	N-		.11	.25**	.33**	.14*	.29**	.18**	.06	.14*
	Introspective	O+									
Controlling Resources	Even-Tempered	N-									
	Focuses Feelings	C+		.19**	.23**	.19**	.28**	.17**	.30**	.18**	.16**
	Follows Feelings	C-									
Respecting People	Optimistic	N-									
	Regard for Others	A+		.11*	.18**	.34**	.24**	.32**	.32**	.11	.13*
	Even-Tempered	N-									
Adapting to Demands	Resilient	N-									
	Optimistic	N-		.13*	.19**	.22**	.22**	.18**	.32**	.05	.19**
	Confident	N-									
Delivering Results	Grounded	O-									
	Focuses Feelings	C+		.22**	-.03	.02	.23**	.10	.30**	.39**	.15**
	Optimistic	N-									
Driving Performance	Confident	N-									
	Focuses Feelings	C+		.25**	.31**	.11	.27**	.09	.28**	.20**	.31**
	Introspective	O+									

n = 307
 **, Correlation is significant at the 0.01 level (2-tailed)
 *, Correlation is significant at the 0.05 level (2-tailed)
 Note: Top sub-factors for each composite are double weighted
 Note: Shaded cells represent validity coefficient of composites against competencies

Table 8

Pearson correlations between Lumina Spark 40 sub-factor composites and externally-rated competencies

Composites	Sub-Factors	Big Five Marker	Competency	Analysing Situations	Creating Concepts	Relating to People	Controlling Resources	Respecting People	Adapting to Demands	Delivering Results	Driving Performance
Analysing Situations	Focuses Feelings	C+									
	Conceptual Observing	O+		.38**	.20**	-.11	.11	-.07	.17**	.32**	.24**
	Imaginative	E-									
Creating Concepts	Follows Feelings	O+									
	Modest	C-		.06	.35**	.06	.12*	.05	.04	.05	.12*
Relating to People	Optimistic Regard for Others	N-									
	Even-Tempered	A+		.11*	.18**	.34**	.24**	.32**	.32**	.11	.13*
		N-									
Controlling Resources	Confident	O-									
	Practical Takes Charge	E+		.15**	.20**	.15**	.38**	.07	.38**	.21**	.28**
Respecting People	Collaborative	A+									
	Empathetic	A+		-.05	.02	.32**	.11*	.40**	.15**	.05	.05
	Optimistic	N-									
Adapting to Demands	Even-Tempered	N-									
	Optimistic	N-		.19**	.16**	.28**	.27**	.25**	.36**	.19**	.17**
	Reliable	C+									
Delivering Results	Purposeful	C+									
	Reliable	C+		.27**	.07	-.05	.18**	-.03	.21**	.45**	.31**
	Focuses Feelings	C+									
Driving Performance	Reliable	C+									
	Tough	A-		.18**	.13*	.06	.26**	-.02	.31**	.34**	.35**
	Confident	N-									

n = 307

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

Note. Top sub-factors for each composite are double weighted

Note. Shaded cells represent validity coefficient of composites against competencies

Discussion

The aim of the research presented in this paper was to provide evidence for the criterion validity of the Lumina Spark 24 and Lumina Emotion 16 models, through application of the methodology of Bartram (2005) against the Great Eight Competencies. Results found that through the mapping of sub-factors to the competencies and the creation of composites, both models were able to demonstrate robust criterion validity when assessed against the Great Eight competencies.

A further purpose of the research was to assess a criterion-centric justification for the merging of Lumina Spark 24 and Lumina Emotion 16 into a combined model – Lumina Spark 40. By applying the Bartram (2005) methodology to the combined model, results show evidence for incremental validity provided by the merging of the two models, with a high mean validity when compared to the two models separately, providing a robust argument for the combined Lumina Spark 40 model.

Finally, this research also provides evidence that even when valuing both ends of each Big Five spectrum, through having to incorporate at least one sub-factor from each end, robust criterion validity is still achievable, while contributing to the construct validity of the models through a high-fidelity approach.

Limitations

A limitation of the research presented is the lack of criterion validity for sub-factors of low Conscientiousness in the Lumina Spark 24 model, whereby no sub-factors were able to be mapped to the criterion-variables. This, however, does provide more evidence for the combined model, as the low Conscientiousness sub-factor from Lumina Emotion 16 – ‘Follows Feelings’ was used in the predictive composite for the competency ‘Creating Concepts’, showing that

through combining both models, robust criterion validity can be evidenced while also valuing all ends of all personality spectrums considered.

Future Research

Future research should aim to cross-validate these findings across different samples in order to provide evidence for the generalisability of these findings, building on the robust evidence-base provided in the current research; this research should focus on the combined Lumina Spark 40 model as evidence presented in this paper suggests improved validity over and above the separate models.

References

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