

Tailoring Gamification for Adolescents: a Validation Study of Big Five and Hexad in Dutch



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tailoring



model

instrument

personality traits

gamification user types

Big Five Inventory
Hexad framework

BFI-44 + BFI-10
Hexad

Openness
Conscientiousness
Extraversion
Agreeableness
Neuroticism



tailoring



model

instrument

personality traits

gamification user types

Big Five Inventory
Hexad framework

BFI-44 + BFI-10
Hexad

Free Spirit
Achiever
Player
Philanthropist
Disruptor
Socialiser



Adolescents are underexplored in gamification research:
BFI and Hexad have only been validated for adults



Adolescents exhibit complex behaviours which are
different from adults

Are BFI and Hexad suitable for tailoring gamification for adolescents?



Validation study

- 1** *Instruments in Dutch*
BFI-44 (validated) + Hexad (back-translation with 3 language experts)
- 2** *Data collection*
Visited 6 schools to collect responses from 402 adolescents (aged 13 – 19)
- 3** *Preparation for factor analysis*
Filtered data + checked statistical assumptions

Validation study

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Confirmatory factor analysis

Tested models by fitting to the data

Fit indices are mostly substandard

Low loadings for items

Index	BFI-10	BFI-44	Hexad
χ^2 df, p	60.59 25, 0.00	2412.74 892, 0.00	679.12 237, 0.00
χ^2/df	2.42	2.70	2.87
SRMR	0.06	0.10	0.09
RMSEA 90%-CI	0.07 [0.05, 0.09]	0.08 [0.07, 0.08]	0.08 [0.07, 0.09]
GFI	0.96	0.68	0.84
AGFI	0.91	0.65	0.80
CFI	0.88	0.62	0.77
TLI	0.78	0.59	0.73

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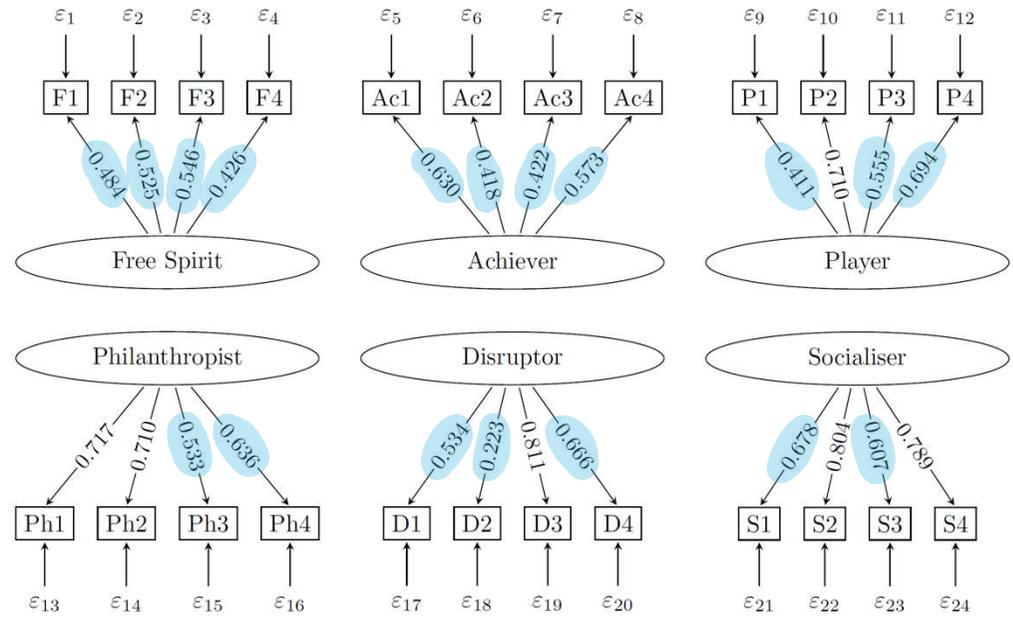
Validation study

Confirmatory factor analysis

Tested models by fitting to the data

Fit indices are mostly substandard

Low loadings for items



5

Validation study

Exploratory factor analysis

Analysed factor structure of data

Existing factor structures

acceptable for BFI-44 and BFI-10

vaguely recognisable for Hexad

Item	1 (F)	2 (Ac)	3 (S)	4 (Ph)	5 (P)	6 (D)	Com.
F1				0.546			0.26
F2			0.218			0.345	0.29
F3	0.370			0.396			0.40
F4				0.357		0.279	0.30
Ac1				0.463			0.37
Ac2		0.575					0.47
Ac3		0.689					0.43
Ac4		0.497					0.42
S1			0.590				0.48
S2			0.898				0.72
S3		0.351	0.637				0.50
S4			0.760				0.63
Ph1			0.330	0.530			0.51
Ph2				0.528			0.45
Ph3				0.669			0.40
Ph4	-0.233		0.420	0.397			0.47
P1	0.544						0.44
P2					0.604		0.47
P3					0.516		0.34
P4					0.969		0.76
D1						0.506	0.32
D2							0.16
D3						0.889	0.65
D4						0.719	0.46

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Validation study

Exploratory factor analysis

Analysed factor structure of data

Alternative factor structures

4 instead of 6 factors for Hexad

Item	1 (Ac)	2 (PhS)	3 (P)	4 (D)	Com.
Ac2	0.534				0.37
Ac3	0.737				0.48
Ac4	0.488				0.36
S1		0.624			0.48
S2		0.846			0.64
S3		0.520			0.45
S4		0.786			0.60
Ph1		0.613			0.38
Ph2		0.543			0.34
Ph4		0.580			0.34
P2			0.623		0.42
P3			0.526		0.33
P4			0.948		0.74
D1				0.518	0.32
D3				0.892	0.70
D4				0.670	0.46

Are BFI and Hexad suitable for tailoring gamification for adolescents?



Not entirely



Are the issues due to the models or the instruments?

	model	instrument
<i>personality traits</i>	Big Five Inventory	BFI-44 + BFI-10
<i>gamification user types</i>	Hexad framework	Hexad

We need reliable models and instruments
to tailor gamification for adolescents



We need more research
with adolescents



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