

Polish adaptation of GEMS - factor structure and reliability

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Steps of the analysis

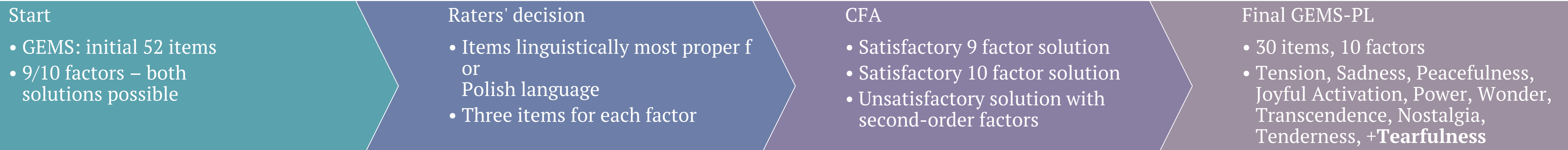


Fig. 1. Procedure of the analysis

Introducion

Original GEMS constructed by Zentner, Grandjean and Scherer (2008) consists of 9 scales and is available in three versions: full 45 items, short 25 items and a brief version with 9 items.

In order to use GEMS in Polish studies on affective reactions to music, we have begun work on Polish adaptation of this scale. In the previous study, we used a 72-item version of GEMS (Chełkowska-Zacharewicz, Janowski, 2016). The EFA results allowed us to shorten the scale to 52 items on 9- or 10-factor solution.

The 9-factor solution consisted of scales similar to original scales, with two differences: 1. Tearfulness - which separated from Sadness scale, and 2. a merged scale which consisted of items from original Peacefulness and Tenderness scales.

In the 10-factor solution, Peacefulness and Tenderness scales were separated like it occurred in the original GEMS.

AIM of this study:

- Reduction of a number of items from the first study
- Confirmation of the factor structure of the Polish adaptation of GEMS
- Verification of the reliability of obtained scales.

CFA model - measures

Chi ² *	df	p	Chi ² /df	RMSEA (90% CI)	SRMR	NFI	CFI	GFI
9-factor solution								
927.280	288	<.001	3.2	.072 (.067-.077)	.059	.899	.928	.856
10-factor solution								
1138.105	360	<.001	3.2	.071 (.067-.076)	.063	.892	.923	.841

Table 2. CFA measures for 9- and 10-factor solutions

* Minimum Fit Function Chi-Square

CFA model - loadings

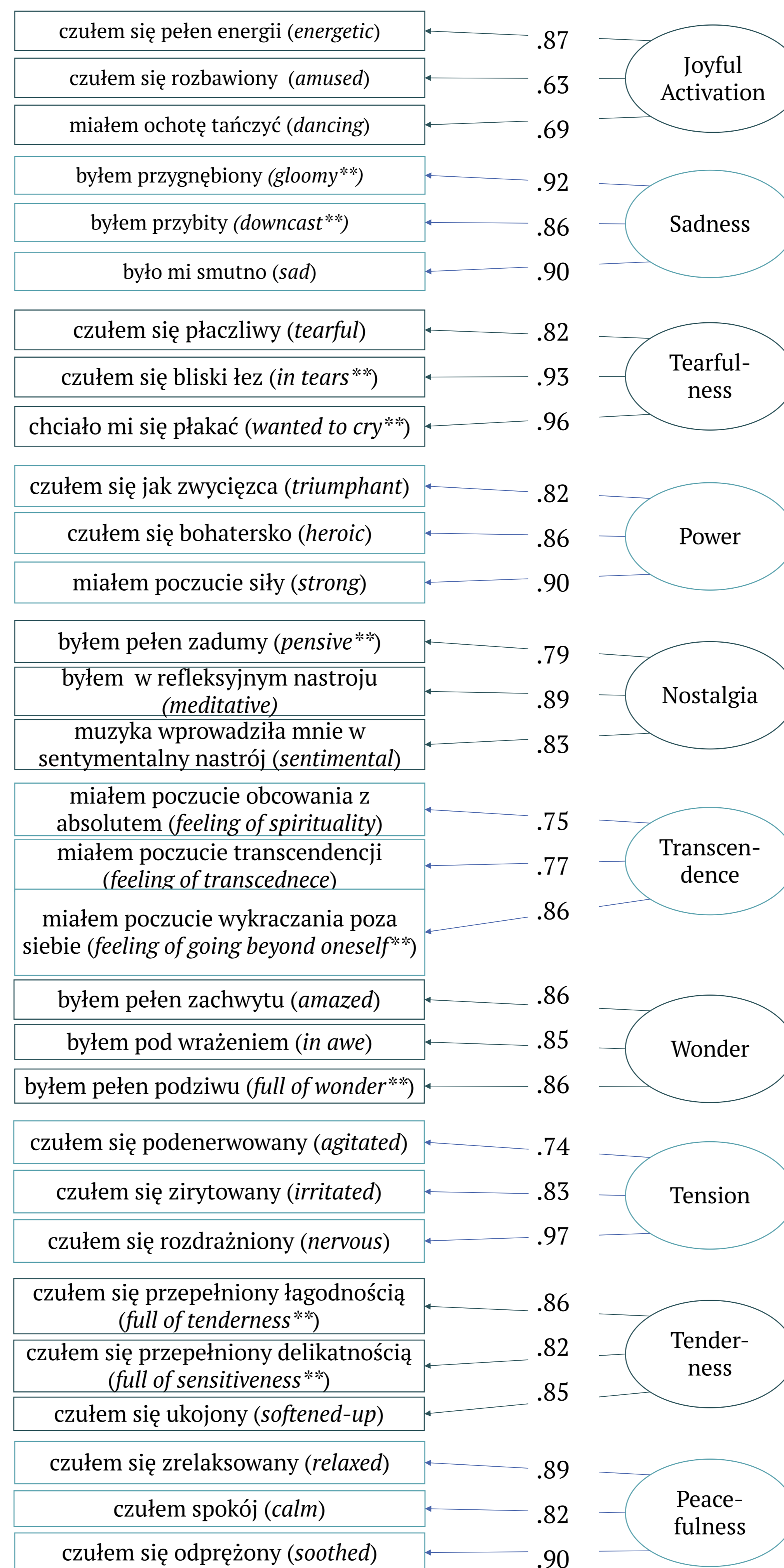


Fig. 2. CFA model for a 10-factor solution

** translation from Polish item, not present in the original GEMS

MAIN DIFFERENCES

SADNESS – IN POLISH ADAPTATION THIS SCALE HAS SPLIT INTO **SADNESS** AND **TEARFULNESS**

ADDITIONALLY

9-FACTOR SOLUTION – **PEACEFULNESS** AND **TENDERNESS** MERGES INTO ONE FACTOR

10-FACTOR SOLUTION – POLISH VERSION CONTAINS ADDITIONAL FACTOR: **TEARFULNESS**

Procedure and sample

SCALE	SAMPLE
<ul style="list-style-type: none"> • GEMS-PL • 52 items • Response on a scale from 1 <i>not at all</i> to 5 <i>very much</i> 	<ul style="list-style-type: none"> • 398 responses (262 participants, 59 male, 136 took part in both parts of the study) • M_{age}=23,44 • SD_{age}=5,18

The study was conducted online on the *Concerto v.3* platform. Respondents were collected via *Facebook* and University websites from July to August 2016. The study started with a consent form and participant filled GEMS using five-point Likert scale, while a random piece of music was played. The procedure was repeated, although part of the participants had signed off the study before the second part. Only full responses for all 52 items of the scale were taken for analyses.

Table 1. Music pieces used in the study

Composer /Performer – music piece title	Number of respondents
Joseph Haydn – Piano concerto in D major Hob XVIII/II - Vivace	51
Edgar Varese – Arcana	60
Ferenz Liszt – Tasso, Lamento e Trionfo	50
Joseph Haydn – 10 Sinfonia concertante B-flat major - Andante	49
Derek Fiechter – Halfing Hills	44
Armand Amar & Levon Minassian – Ar intch laver	45
John Dreamer – End of My Journey	48
Jean-Baptiste Lully – Marche Royal	43

Internal Consistency

Table 3. Cronbach's alpha for 10 scales with 3 items each

Factor	Cronbach's alpha
Tearfulness	0,929
Transcendence	0,830
Power	0,884
Tension	0,860
Nostalgia	0,865
Peacefulness	0,901
Tenderness	0,885
Sadness	0,909
Tearfulness	0,929
Joyful Activation	0,786

Summary

Polish adaptation of GEMS has a different factor structure than the original one. In Polish sample, Tearfulness occurred to be a separate factor from Sadness. It should be noticed, however, that authors of the original version did not conduct the CFA after adding 'tearful' to the Sadness scale (Zentner et al. 2008), therefore in fact we cannot compare these results. Both: 9- and 10-factor models are possible to maintain with similar psychometric values so for the future research we **decide to use the 10-factor solution, as it is closer in structure to the original version and it will be easier to compare obtained results with outcomes of studies that use English version of GEMS.**

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Literature

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