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Author: Małgorzata Górnik-Durose, Łukasz Jach

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Małgorzata Górnik-Durose*
Łukasz Jach*

The Structure of Goal Contents Revisited. A Verification of the Model in Polish Samples

Abstract: The article presents an attempt to confirm the circumplex structure of goal contents, identified in 15 cultures around the world (Grouzet et al., 2005), in nine Polish samples. The procedure followed steps from the original study and included testing the assumed 11-factor goal structure and the two-dimensional circular organization of the goal contents. None of the analyses showed outcomes that would explicitly confirm the results attained in the original study. The CFA showed rather poor fits. Results of the MDS generally supported the assumption about the two-dimensional goal contents structure, however ipsative distance analysis reproduced only one of the two assumed dimensions. Finally, although the CIRCUM analysis showed in principle that in the Polish sample the organization of goal contents on the circumference was quite similar to original, the RMSEA indicated poor fit. Methodological and conceptual reasons for the replication failure are analyzed and discussed.

Key words: goals, Self-Determination Theory, Aspiration Index

In 2005 Frederick M.E. Grouzet and his ten co-workers from various countries published an article in which they stated that it is possible to organize the complexity of human goals and aspirations within a coherent two-dimensional circumplex structure (Grouzet et al., 2005). One dimension of the structure extended from intrinsic to extrinsic aspirations, the second, which was orthogonal to the first, from self-transcendence to physical self.

The intrinsic – extrinsic distinction is rooted in self-determination theory (Deci, & Ryan, 2000; Kasser, & Ryan, 1993, 1996; Ryan, & Deci, 2000). Intrinsic goals, such as self-acceptance, affiliation, community feeling and physical health, are congruent with desires of relatedness, autonomy, and competence that – according to self-determination theory – are basic psychological needs. Thus the pursuit of intrinsic goals is inherently satisfying. Extrinsic goals, on the other hand, such as financial success, image and popularity are directed to obtain certain external rewards. They are rather a means to other ends than ends themselves. Thus, they are less likely to be a source of inherent satisfaction (Kasser, 2002; Kasser, Ryan, Couchman & Sheldon, 2004). The intrinsic – extrinsic dimension is clearly distinguishable in various nations, e.g. USA, Germany, Russia and South Korea (Grouzet et al., 2005).

The second dimension was added, because Grouzet and his colleagues assumed that the above-mentioned seven goals might not represent a complete array of people's strivings in life. Being inspired by the work on human values by Shalom Schwartz (1992), they proposed four additional goals, which were neither clearly intrinsic nor extrinsic in nature. They were: conformity (to fit in with others), safety (to feel safe and believe that survival is likely), hedonism (to experience a variety of sensual pleasure) and spirituality (to find a true meaning in life). These goals seemed to extend from the self-transcendent to physical pursuits. The second dimension was supposed to differentiate and define more precisely the intrinsic and extrinsic goals. As the authors stated, among intrinsic goals community feeling would be seen as more self-transcendent than health, the latter being more "physical", and among extrinsic – financial success would be more "physical" than popularity and image, both being more self-transcendent. However, the intrinsic – extrinsic dimension might also differentiate the goals from the other dimension. Conformity was assumed to be closer to the extrinsic pole, whereas community feeling and safety to the intrinsic.

The authors assumed also that these two-dimensional organization of goals and aspirations would construct

* University of Silesia in Katowice, Institute of Psychology

a “circumplex” structure, similar to the value configuration proposed by Schwartz (1992). It means that certain goals would be compatible with each other and in conflict with other goals. And finally they expected that the goal content and structure would be universal, i.e. similar across different cultures.

To test their hypotheses they conducted a cross-cultural study in 15 countries (Australia, Bulgaria, Canada, China – Beijing and Hong Kong, Colombia, Dominican Republic, Egypt, France, Germany, India, Romania, South Korea, Spain, United States) on 1,854 undergraduate students. The importance of goals was measured by an extended version of the Aspiration Index. Initially it consisted of 57 goals, and the subjects had to assess their importance on a scale ranging from 1 (not at all) to 9 (extremely). The goals were organized within 11 presumed aspiration domains, as described above. As a result of an internal reliability analysis 10 items were removed. The subscales of the final version of the AI showed relatively good, or at least acceptable, levels of internal consistency measured by Cronbach’s alpha (see Table 2).

In order to test the presumed 11-factor structure of the AI a confirmatory factor analysis (CFA) was conducted. Taking into consideration the complexity of the model the decision rules of Hu and Bentler (1999) was applied based on $RMSEA < .05$ and $SRMR < .06$. The results showed that the model adequately fitted the data ($RMSEA = .045$; $SRMR = .05$). The authors concluded also that the AI reliability was sufficiently invariant across culture, although the mean of the subscales were varying and some parameters were slightly below the required level.

In order to test the hypothesis about the two-dimensional organization of the goal structure nonmetric multidimensional scaling (MDS) was conducted, followed by circular stochastic modeling proposed by Browne (1992). The authors found strong support for the two-dimensional solution – the stress indicators were from .40 to .01 for one to five dimensions, the addition of a second dimension increased the fit significantly (Δ stress = .30), whereas more added dimensions did not have a significant effect (Δ stress \leq .05). Finally the authors found support for their hypothesis that the structure of goal contents across cultures could be presented as a circle in the results of an analysis conducted with CIRCUM, a program created by Browne (1992) to evaluate the extent to which an observed correlation matrix fits a circulant matrix. The fit index RMSEA was 0.065 (90% CI: .058, .072) and was considered by authors as indicating a close fit. They also accepted ratios of reproduced variances to input variances as close enough to 1 (from 0.98 to 1.019) and the estimated item communality indices (from .54 to .85). They concluded that “the result confirms that the nature of the relationships among goal contents can be described as an ordering of variables along the circumference of a circle” (Grouzet et al., 2005, p. 811).

Since the publication in 2005 the article was cited 459 times according to Google Scholar (6th July 2016). However, none of the “followers” did any empirical analysis which would include at least a partial replication

of the results on a different sample. Authors of most articles acknowledged the existence of the proposed two-dimensional circumplex model of goal contents without any comments. The model was usually quoted as another example of an attempt to systematize driving forces in human life alongside the value structure model developed by Shalom Schwartz. In some articles it was reviewed and theoretically confronted with Schwartz’s model (e.g. Duriez, Soenens, & Vansteenkiste, 2007; Duriez, Luyckx, Soenens, & Berzonsky, 2012; Kasser, 2011; Kasser, Cohn, Kanner, & Ryan, 2007; Maio, 2010; Maio, Pakizeh, Cheung, & Rees, 2009; Sheldon, Gunz, Nichols, & Ferguson, 2010), but in the vast majority of papers it was just a reference, mentioned once or twice in the text, and its theoretical accuracy was not questioned at all. Maio, Pakizeh, Cheung and Rees (2009) referred to the model of goals and aspirations in their analysis of the dynamics of the value system, caused by changes in one value domain. Unfortunately as they stated “we have chosen to focus on the latent motivational interconnections implied by Schwartz’s (1992) model of values, which has received more direct tests thus far” (p. 701). And indeed, the values model found strong empirical support in a number of studies over the years (e.g. Cieciuch, 2013; Cieciuch, & Davidov, 2012; Davidov, 2008, 2010; Davidov, Schmidt, & Schwartz, 2008; Fontaine, Poortinga, Delbeke, & Schwartz, 2008; Knoppen, & Saris, 2009; Schwartz, & Boehnke, 2004; Schwartz, Melech, Lehmann, Burgess, & Harris, 2001) and was recently “refined” (Schwartz et al., 2012), whereas the goal contents model was hardly confronted with any other than original sets of data since its publication.

In addition the Aspiration Index, that consisted of 47 items, which was supposed to possess good statistical validity and reflect goal contents structure valid across cultures, was not widely used in further studies on life goals and aspirations. Usually other, often more simplistic and less time-consuming methods or a different versions of the Aspiration Index were applied (cf. Duriez, 2011; Kasser et al., 2014; Martos, & Kopp, 2012; Romero, Gomez-Fraguela, & Villar, 2012; Van Hiel, & Vansteenkiste, 2009; Visser, & Pozzebon, 2013). In some studies only selected subscales, usually related to the intrinsic – extrinsic dimension, were used (e.g. Otero-Lopez, & Villardefrancos, 2015). Sporadically the internal consistency of the scale was tested in EFA again in order to adjust the measurement to a different cultural context (e.g. Spanish – Romero et al., 2012, Peruvian – Guillen-Royo, & Kasser, 2014).

Conducting and publishing replications as a mean to provide validity, accuracy and reliability of psychological findings has recently received a lot of attention from scholars (Koole, & Lakens, 2012; Makel, Plucker, & Hegarty, 2012; Schmidt, 2009; Stanley & Spence, 2014). Despite controversies of various types, the importance of replication and reproducibility for the progress of science is now unquestioned. As Jasny, Chin, Chong and Vignieri (2011) state “replication – the confirmation of results and conclusions from one study obtained independently in another – is considered the scientific gold standard”

(p. 1225), and according to Schmidt (2009) “replication is one of the most obvious ingredients of science” (p. 91). Makel, Plucker, and Hegarty (2012) suggest that if a publication is cited 100 times it definitely deserves replication to avoid flawed findings going unquestioned over an extended period of time.

The first question for any replication attempt is whether the original study is worth replicating. The theoretical coherency and elegance of the model of goal contents, as well as its potential universality and explanation power, promised it to be a useful framework for further studies. Furthermore the circumplex model of goal context was presented in one of the most prominent psychological journals – “Journal of Personality and Social Psychology”, and has been cited by many researchers all over the world. These indicated its potential significance. Thus, we decided to validate the model and confront it with data other than the original set.

The Present Study

The circumplex model of goal contents was tested in 15 countries and the basic configuration was replicated with some slight differences in goals positions between wealthier and poorer societies. The studied nations differed in respect to geographical locations, individualism and collectivism, as well as economic development. We assumed that if the configuration was culturally universal it should appear also in other nations, which were not included in the original study.

Thus the aim of the current study was to verify the circumplex model of goal contents in a different cultural context. We expected to confirm the 11-factor structure of life goals and aspirations, as well as the two-dimensional circular configuration of goal contents in a group of Polish subjects. We followed the steps of Grouzet and his co-workers, which included: (a) checking the internal reliability of the AI, (b) testing the assumed 11-factor structure of the AI by the confirmatory factor analysis (CFA), (c) proving the two-dimensional structure of the goal contents by applying the multidimensional scaling (MDS) and an analysis of compatibilities and conflicts among goal types, (d) investigating the circularity of the model by verification of the circumplex structure with the structural equation modeling program, used by authors of the original study.

Method

Measure: The Aspiration Index – a Polish version (AI-PL)

The Aspiration Index, consisting of all 57 items, was translated into Polish by two bilingual collaborators, then back translated by another two bilinguals. Discrepancies were dealt with through several iterations. The initial version of the AI-PL was tested on a group of University of Silesia students ($N = 247$) of which 72.9% were women (Górnik-Durose, Janiec, 2010). As a result final alterations were implemented, including changing the scale from 1–9 points to 1–5 points, which was considered by subjects

as more manageable. A comparison of results obtained with 9-point and 5-point versions showed no significant differences.

Samples

The AI-PL was applied in nine separate research projects over five years (2009–2013)¹. Data was obtained from 1,762 subjects, mainly university students (as in the original study).

The numbers of subjects in each group as well as their age and sex are shown at the bottom of Table 1.

Procedure

The questionnaire was distributed among participants at universities, workplaces and activity centers. No incentives were provided to the subjects in exchange for their participation. In all cases the AI-PL was included in larger survey packets. Participants were asked to state how important each goal was to them on a scale from 1 (not at all) to 5 (very important). Statistical analyses were conducted in IBM SPSS Statistics 21, LISREL 9.2. and CIRCUMPL (Browne, 2014).

Results

Internal reliability of the AI-PL

All analyses included 47 items selected by the authors of the original study. Descriptive statistics for AI-PL subscale scores obtained from all samples as well as results calculated for the combined sample are presented in Table 1.

Table 2 shows a summary of internal reliability analyses of 11 subscales in all samples. For comparison purposes it shows also the alpha coefficients reported by Grouzet et al. (the third shaded column).

When judging the internal consistency of a scale a domain to which it is related and a number of items should be taken into consideration. In broad domains, such as values or goals, internal consistency is usually smaller than in narrow domains. Furthermore, in the case of small number of items widely used Cronbach’s alpha coefficients are not the best measures of reliability. Nevertheless the authors of the original study based their judgment on alpha coefficients, so in Table 2 these coefficients are presented in relation to the AI-PL alongside the more suitable in this case mean inter-item correlations in the combined sample. The mean inter-item correlations show acceptable consistency of all subscales, whereas Cronbach’s alpha coefficients suggest that conformity, hedonism, safety and popularity are relatively less reliable than the rest of the subscales.

¹ Special thanks to the MSc and PhD students who supported us in our data collection: Kinga Dziedzic, Dominika Król, Kinga Gregorczyk (University of Silesia in Katowice), Paweł Kot (John Paul II Catholic University in Lublin) and Magdalena Poraj-Weder (University of Warsaw). Although the data were collected in larger survey packages used for other research purposes there is no overlap between the content of this article and any other published work.

Table 1. Descriptive statistics of results obtained with the AI-PL in nine groups and the combined sample

Subscale		Group_1	Group_2	Group_3	Group_4	Group_5	Group_6	Group_7	Group_8	Group_9	Combined
Financial success	<i>M</i>	13.67	12.42	13.81	14.40	13.38	13.82	14.13	14.15	13.81	13.70
	<i>SD</i>	3.66	3.22	3.06	2.69	2.98	3.13	3.41	3.37	3.07	3.34
Image	<i>M</i>	16.01	14.87	15.50	17.27	15.11	16.50	16.30	16.41	16.23	15.95
	<i>SD</i>	4.04	3.94	3.98	3.57	3.47	3.70	3.72	3.95	3.41	3.89
Popularity	<i>M</i>	8.45	7.58	8.00	9.68	7.75	8.92	8.84	8.75	8.41	8.43
	<i>SD</i>	2.54	2.28	2.47	2.78	2.29	2.27	2.43	2.62	2.26	2.51
Confirmity	<i>M</i>	12.52	11.96	13.37	13.95	12.08	13.21	12.08	12.21	12.97	12.63
	<i>SD</i>	2.60	2.29	2.50	2.49	2.51	2.39	2.60	2.86	2.41	2.60
Self-acceptance	<i>M</i>	30.25	30.21	29.68	28.73	30.06	31.09	29.63	29.76	29.94	29.99
	<i>SD</i>	3.32	2.78	3.22	3.58	2.72	3.54	3.70	4.23	3.38	3.41
Affiliation	<i>M</i>	21.97	22.01	21.55	20.79	22.10	22.72	21.10	21.61	22.77	21.82
	<i>SD</i>	3.04	2.86	2.82	3.42	2.38	2.52	3.47	3.57	5.18	3.21
Community	<i>M</i>	11.70	11.69	11.54	11.69	11.51	12.51	11.31	11.19	12.07	11.65
	<i>SD</i>	2.44	2.46	2.33	2.15	2.18	2.29	2.55	2.91	2.28	2.44
Health	<i>M</i>	16.42	15.94	16.56	17.69	16.41	16.52	16.69	16.66	16.60	16.54
	<i>SD</i>	2.78	2.78	2.56	2.41	2.18	2.40	2.78	3.02	2.42	2.68
Spirituality	<i>M</i>	17.32	17.13	16.88	17.04	17.40	19.81	16.59	16.98	17.40	17.31
	<i>SD</i>	4.62	4.93	4.45	3.95	4.60	4.01	4.46	4.37	4.62	4.56
Hedonism	<i>M</i>	11.67	11.38	11.10	11.90	11.19	11.73	11.82	11.87	11.66	11.58
	<i>SD</i>	3.11	2.12	2.49	1.90	1.95	2.44	2.36	2.36	2.07	2.55
Safety	<i>M</i>	17.08	16.82	17.08	16.17	16.80	17.12	16.23	16.87	16.94	16.85
	<i>SD</i>	2.92	1.99	2.20	2.23	1.94	2.16	2.69	2.66	2.24	2.51
	<i>N</i>	528	170	224	118	154	130	210	140	88	1762
Age (<i>M</i>)		22.08	22.72	31.23	22.84	24.50	22.32	–	–	–	–
Sex (% of female)		66.1	–	61.6	37.0	–	57.6	52.9	73.6	62.5	–

Table 2. Internal reliability of the subscales reported in Grouzet et al. (2005) and obtained in the present study (in Polish samples)

Subscale	Number of items	Cronbach's alpha Mean/median (Grouzet et al., 2005)	Polish samples			
			Cronbach's alpha		Inter-item correlations	
			Min. – Max. in 9 samples	Mean/Median in 9 samples		Combined sample
Financial success	4	.84/.83	.62 – .85	.78/.79	.81	.53
Image	5	.76/.74	.71 – .80	.76/.76	.77	.41
Popularity	3	.73/.71	.54 – .77	.62/.63	.64	.37
Self-acceptance	7	.79/.73	.64 – .84	.73/.74	.75	.31
Affiliation	5	.81/.75	.69 – .82	.76/.76	.71	.42
Community feeling	3	.75/.71	.68 – .84	.75/.75	.76	.52
Physical health	4	.72/.74	.60 – .82	.74/.74	.75	.44
Spirituality	5	.90/.87	.78 – .86	.81/.81	.82	.43
Conformity	4	.67/.62	.43 – .64	.56/.60	.59	.26
Hedonism	3	.70/.72	.49 – .75	.64/.66	.61	.36
Safety	4	.71/.70	.39 – .69	.57/.59	.53	.23

The factor structure of the AI-PL

The next step was to conduct a CFA to confirm the 11-factor structure of the model. Eleven correlated latent factors indicating the listed goal domains were specified. Fit indices for all groups are shown in Table 3. Following Grouzet et al.'s recommendation χ^2/df , the comparative fit index (CFI), the root-mean-square error of approximation (RMSEA) and the standardized root-mean-square residual (SRMR) are presented.

According to Hu and Bentler's (1999) decision rules for the goodness of fit (a cutoff value close to .95 for CFI, .08 for SRMR and .06 for RMSEA; or a cutoff value close to .95 for CFI in combination with .09 for SRMR) none of the analyses provided results which would fully support the assumed 11-factor model. The relatively close fit was achieved for the combined sample, group_1 and group_2. In those cases RMSEA was only slightly higher and SRMR below the cutoff point. The next step of the analyses was

executed on the combined sample ($N=1,762$), only to take advantage from the large number of subjects.

Validation of the two-dimensional model

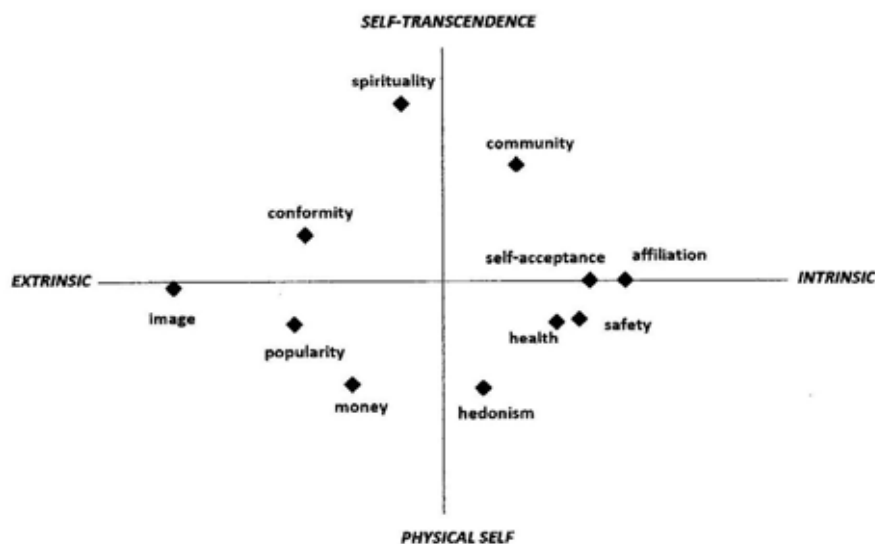
In the MDS analyses the mean scores for each of the factors were used. The applied matrix was generated with Euclidian distances. Following the original study the stress indicators for one to five-dimensional solutions were analyzed. The stress indicators (Kruskal's stress1) were respectively: .29, .06, .05, .03 and .02 for one to five dimensions. The addition of a second dimension increased the fit significantly ($\Delta = .23$) and added on 14% of explained variance. The effects of adding the third and further dimensions did not enlarge the variance substantially ($< .1\%$). To conclude, the results of the MDS supported the assumption of the two-dimensional goal contents configuration. The model fit appeared to be good. The graphic representation of the configuration resulting from MDS for the combined sample is shown in Figure 1.

Table 3. Fit indices in all samples – results of CFA on the AI-PL

Sample	<i>N</i>	χ^2/df (<i>df</i> =979)	CFI	RMSEA [90% CI]	SRMR
Combined	1762	3.287	.92	.066 [.065, .068]	.087
Group_1	528	1.544	.92	.066 [.063, .068]	.088
Group_2	170	1.763	.93	.057 [.051, .062]	.088
Group_3	224	1.224	.93	.058 [.054, .063]	.098
Group_4	118	1.607	.97	.044 [.034, .052]	.120
Group_5	154	1.699	.89	.063 [.057, .069]	.110
Group_6	130	1.771	.92	.074 [.068, .080]	.120
Group_7	210	1.935	.94	.061 [.056, .065]	.100
Group_8	140	1.338	.93	.082 [.076, .088]	.140
Group_9	88	3.287	.92	.062 [.053, .071]	.120

Note. Satorra-Bentler scaled χ^2 was calculated.

Figure 1.



The configuration generally seemed to reproduce the two dimensions that organize 11 goal contents described by Grouzet et al. On top of the vertical representation of the first dimension was spirituality. In relatively close proximity was community feeling on one side and conformity on the other. On the opposite pole of this dimension money and hedonism were located. The horizontal dimension reflected fully the intrinsic – extrinsic distinction with self-acceptance, affiliation, health and safety on the one side and image, popularity and financial

success on the other. However some differences were revealed. On the extrinsic side conformity seemed to fall very strongly towards image, popularity and financial success. Image and financial success changed their position and image, not popularity, was an extreme of the extrinsic pole. The intrinsic cluster was compacted and hedonism clearly gravitated towards it. As a result there was no aspiration left which would safely anchor the bottom end of the vertical dimension, whereas spirituality at the top seems to keep its full strength.

Table 4. Compatibilities and conflicts among goal types

Compatibilities	r_d	Conflicts	r_d
health-safety	1.886	image-affiliation	-2.312
selfaccept-affiliation	1.767	image-selfaccept	-1.967
selfaccept-safety	1.722	image-safety	-1.873
self-accept-health	1.589	image-health	-1.652
affiliation-safety	1.523	image-community	-1.450
affiliation-health	1.323	popularity-affiliation	-1.157
money-popularity	1.298	image-hedonism	-1.072
popularity-conformity	1.243	conformity-affiliation	-1.052
health-hedonism	1.151	popularity-selfaccep	-0.814
hedonism-safety	0.957	spirituality-hedonism	-0.759
popularity-image	0.877	money-affiliation	-0.746
community-spirituality	0.836	image-spirituality	-0.743
money-hedonism	0.832	conformity-selfaccept	-0.710
selfaccept-community	0.786	conformity-safety	-0.692
image-conformity	0.726	popularity-safety	-0.679
selfaccept-hedonism	0.633	affiliation-spirituality	-0.668
money-conformity	0.594	money-spirituality	-0.650
affiliation-community	0.573	spirituality-safety	-0.608
popularity-health	0.541	popularity-community	-0.554
community-health	0.541	money-community	-0.552
conformity-spirituality	0.529	health-spirituality	-0.495
community-safety	0.500	conformity-health	-0.488
affiliation-hedonism	0.369	money-selfaccep	-0.424
popularity-hedonism	0.163	self-acceptspirituality	-0.407
money-image	0.126	popularity-spirituality	-0.268
money-health	0.025	money-safety	-0.199
		conformity-hedonism	-0.175
		community-hedonism	-0.072
		conformity-community	-0.065
Dimensional perspective by cluster			
INTRINSIC	1.221	INTRINSIC vs. EXTRINSIC	-0.768
EXTRINSIC	0.811	SELF-TRANSCENDENCE	
SELF-TRANSCENDECE	0.433	vs. PHYSICAL SELF	0.126
PHYSICAL SELF	0.775		

To examine in detail the structure of goal contents we checked how close or distant goals were in every pair. We followed the procedure applied in the original study, i.e. first, for each pair of aspirations the distance between two points showing their position in the two-dimensional space was calculated, then the distance scores were transformed into ipsative distance scores (i_d). The formulae used are presented in the original paper (Grouzet et al., 2005, p. 805). As the authors stated, positive ipsative distance scores indicated compatibilities between goals, and negative were a sign of a conflicting relationship. Zero represented neither conflict nor compatibility. The full list of possible compatibilities and conflicts between goals together with their indicators (i_d) is included in Table 4.

There were more than expected strong compatibilities between aspirations in clusters occupying the opposite sides of intrinsic and extrinsic dimensions and less between aspirations in clusters anchoring the other dimension. It is shown quite clearly in the bottom part of Table 4, which contains the results of the analysis relating to clusters of goals. The mean indicators for all clusters were high, confirming their internal compatibilities. A confrontation of the extremes of two assumed dimensions showed a salient opposition between intrinsic and extrinsic clusters, but not between self-transcendence and physical self clusters. For the latter the i_d value was positive; that indicated a compatibility rather than an assumed conflict. At this point the elegant circumplex configuration of the model became questionable. The vertical dimension seemed to lose one end.

Taking into consideration how close the goals forming ends of the intrinsic – extrinsic dimension were, an additional analysis was conducted testing the relationships in a triangle with spirituality on its own, intrinsic cluster (community feeling/self-acceptance/affiliation/health/safety/hedonism), and extrinsic cluster (money/popularity/image/conformity) at the tops of the triangle. The i_d values were as follows: for spirituality – extrinsic goals $i_d = -.189$, for spirituality – intrinsic goals $i_d = -.279$, and for intrinsic – extrinsic goals $i_d = -.605$. All the values were negative that suggested conflicts between all clusters of aspirations. Such a configuration might suggest then a triangular rather than circular organization of goal contents.

Investigating the circumplex representation of the goal structure

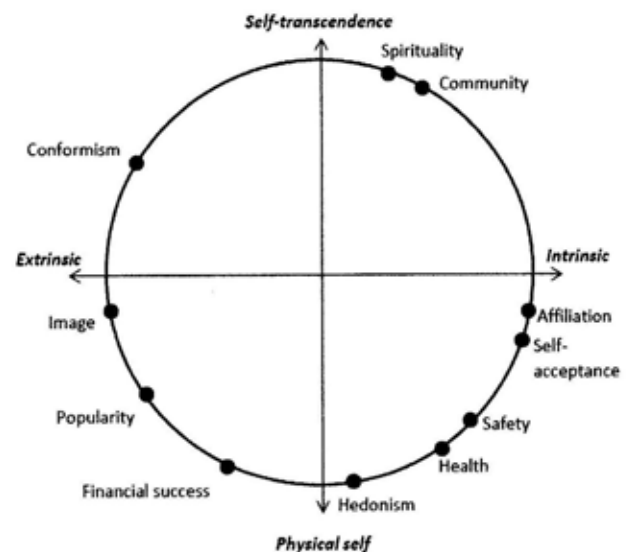
Following the procedure applied by Grouzet et al. we also checked if the goals were located along the circumference of a circle. CIRCUMML was used, which is a newer version of a program implementing Browne's tests of a circular stochastic model of the circumplex, providing maximum likelihood estimates of model parameters (Browne, 2014). It has to be noted that the tested model did not fully comply to a circumplex structure as such, because the variables were not equally spaced on the circumference. In the original study no assumption was made about the equal distribution of the latent variables, also the communality estimates of all variables seemed to

be left free to vary, so that the model should be described rather as quasi-circumplex.

In our analyses we relaxed both equal spacing and equal communalities, so that the least restrictive model was applied to test the assumed quasi-circumplex structure (see in relation to the value model: Perrinjaquet, Furrer, Usunier, Cestre, & Valette-Florence, 2007; Schwartz, & Boehnke, 2004). As a result we obtained an angle on the circle for each variable and a 95% confidence interval for that angle, also communality indices, which were the square root of the proportion of variance of each variable explained by the CIRCUM model. To assess model fit the RMSEA was taken into consideration. As in Grouzet et al. affiliation was designated as the reference variable (its location was fixed at 0°), relative to which the locations of other variables were estimated.

The analysis converged on a solution in 14 iterations (residual cosine = 0.0001). The RMSEA was .099 (90% CI: .092, .106). Ratios of reproduced variances to input variances ranged from 0.96 to 1.04; the communality indices ranged from .59 to .84. The estimated polar angles for the goals are shown graphically in Figure 2 and their exact values are presented in Table 5 together with the values from Grouzet et al. (2005) for comparison.

Figure 2.



First of all it has to be stated that the fit was relatively poor. If we ignore that fact and look at the configuration of the goal contents, a pattern similar to that described in Grouzet et al. appeared. However there were some clear differences. Safety and health as well as popularity and image exchanged their positions on the circumference (the same effect was identified in MDS). Safety seemed to be more intrinsic and less physical than health, and image seemed to be more extrinsic and closer to the self-transcendence pole than popularity. Spirituality and community feeling were closer to each other than in the original configuration. Financial success, popularity and

Table 5. Point estimates and 95% confidence intervals of variable polar angles for the Polish sample in comparison to results obtained by Grouzet et al. (2005)

Goal type	Original sample (Grouzet et al., 2005)		Polish sample	
	Estimate total	Estimate wealthier/poorer cultures	Estimate	95%CI
Affiliation	0°	0°/ 0°	0°	[0°, 0°]
Self-acceptance	6°	6°/ 1°	8°	[1°, 15°]
Safety	31°	37°/ 32°	34°	[26°, 42°]
Health	31°	32°/ 34°	45°	[36°, 53°]
Hedonism	59°	67°/ 63°	71°	[62°, 79°]
Financial success	105°	108°/ 81°	106°	[98°, 114°]
Popularity	147°	139°/144°	135°	[127°, 142°]
Image	138°	135°/129°	160°	[152°, 192°]
Conformity	184°	174°/192°	201°	[192°, 210°]
Spirituality	248°	252°/274°	279°	[270°, 289°]
Community	297°	284°/292°	289°	[282°, 297°]

image were distributed more equally. It is difficult to decide if the configuration of goals in the Polish sample was more similar to that identified in poorer or in wealthier cultures. Self-acceptance, hedonism, money, popularity and image were located more like in wealthier cultures, whereas health, conformity and spirituality more like in the samples from poorer countries.

Discussion

The aim of the presented study was to confirm the structure of goal contents, identified by Grouzet and his collaborators in 15 cultures around the world, in Polish samples. The assumed configuration of 11 goals was described by the authors as a circumplex, i.e. they were located in a given sequence around the circumference of the circle. The study presented in this article combined data from nine samples of Polish subjects, mainly university students. The procedure followed steps from the original study. In relation to the procedure and the way data were analyzed the study could be considered as direct replication. However, we did not repeat the procedure in other cultures, but only extended the investigation into one more cultural context, thus it was rather a follow-up (cf. Schmidt, 2009).

Overview of Results

None of the analyses conducted on data obtained from Polish samples revealed outcomes that would explicitly confirm the results achieved in the study by Grouzet and his colleagues. The internal consistency analysis of 11 subscales that were parts of the Polish version of the Aspiration Index showed that seven subscales (financial success, image, self-acceptance, affiliation, community feeling, physical health and spirituality) had

fully acceptable reliability (Cronbach's alpha > .70; inter-item correlations in the range of .31–.53). In the case of conformity, hedonism, safety and popularity the reliability was relatively lower (Cronbach's alpha < 0.70, but inter-item correlations still higher than .20). Excepting popularity they were the same problematic subscales which were reported by Grouzet et al. in their paper. They were added *ad hoc* by authors to the previous version of the AI, but were not sufficiently theoretically justified. As a result their status in the model appeared to be problematic.

Confirmatory factor analyses conducted to confirm the 11-factor structure of the goal contents in Polish samples showed rather poor fits in all samples. Values of fit indices achieved in the sample which was created by congregating data from all groups within one database marginally met the Hu and Bentler's two-index criterion for acceptable fit (Hu, & Bentler, 1999). Further analyses were conducted on data from that sample. Results of the multidimensional scaling generally supported the assumption about the two-dimensional goal contents structure. However ipsative distance analysis reproduced only one of the two assumed dimensions. It was the extrinsic – intrinsic dimension, but not the self-transcendence – physical self dimension. The assumed conflict between goals located at the ends of that dimension did not appear. Therefore an alternative analysis was conducted which revealed a different configuration of goals, signified by conflicts in a triangle: spirituality – intrinsic goals (community feeling/self-acceptance/ affiliation/health/safety/ hedonism) – extrinsic goals (money/popularity/image/conformity). Finally, although the CIRCUM analysis showed in principle that in the Polish sample the organization of goal contents on the circumference was quite similar to that described by Grouzet et al., the RMSEA indicated poor fit.

What makes a successful replication?

Conclusions that can be drawn from the conducted analyses are vague. The façade presented in Figures 1 and Figure 2 seems to support the general assumption of the study by Grouzet et al. The figures show a two-dimensional space in which the goals are placed. The organization of the goals at least suggests a circular structure. However, statistical indicators coming from CFA and CIRCUML show rather poor fits. It means that the replication cannot be considered as “successful”.

The reasons for an “unsuccessful” replication might be twofold. One is that the design of the follow-up/replication study did not reflect correctly the crucial aspects of the primary study, the other – that the findings of the primary study were questionable at their roots (Stanley, & Spence, 2014).

Regarding first the latter it has to be stressed that a single non-confirmatory finding is no evidence of a lack of a true effect (Cumming, 2008, Stanley, & Spence, 2014). To demonstrate that Stanley and Spence (2014) performed a series of computer simulations to create thousands of “ideal” replications. The “ideal” meant that the participants were the same and the only difference across replications was random measurement error. In the one set of simulations results differed across replications as a result of measurement error alone. In another set they included sampling error alongside measurement error. When both sampling error and measurement error were taken into consideration, the range of replication results was even wider. Their simulations showed that the range of results that could be expected from replication studies could be substantial. That could cause inherent difficulties when trying to interpret replication attempts as a verification or falsification of results of an original study. The authors recommended then viewing results obtained in a single replication study as a data point in a broader data set. Such a data set should be further examined via meta-analysis, which finally could deliver a foundation for verification or falsification of the primary results. Therefore authors of any replication would be entitled only to present their findings without drawing any conclusions about the validity of the primary research findings and hope for other researchers to focus their attention on the same target. We generally concur with this point of view. On the other hand we also admit that the differences between the original and follow-up studies might be responsible for the “failure” of replication as well.

Possible differences are connected with various aspects of a research situation and could be classified within several categories. The most important category is related to a particular stimulus complex, created for participants by researchers, including instructions, materials and events. Other categories specify a contextual background in which the primary information is implanted, such as: various characteristics of participants, a cultural and historical context in which the study is embedded, physical conditions of the research, a person interacting with participants during a data collection, other specific tasks variables (e.g. typing font, etc.) and finally the modes

of data reduction and presentation (Hendrick, 1991; as cited in: Schmidt, 2009).

In relation to the presented study we would consider the stimulus complex, characteristics of participants and the cultural context as important “landmarks” for explanation of the lack of support for the findings from the primary study. The solutions to some of the problems listed above might be a good measure, which produces reliable data, and an appropriate sample size.

The measure

In the present study the Aspiration Index, used to measure the goal contents, might be a primary cause of the replication “failure”. Any adaptation of any questionnaire to different cultural conditions is always a challenge. Dealing with this challenge involves a minimization of bias related to the measured construct, sampling, structural features of the measurement and administration processes, as well as an evaluation of equivalence (He, & van de Vijver, 2012). We regarded the Polish version of the Aspiration Index (AI-PL) as an adaptation rather than an adoption, i.e. a straightforward translation of items (see He, & van de Vijver, 2012). The items had been carefully analyzed taking into consideration the vocabulary and cultural meanings of terms included in the final version of the instrument. Its structure, as well as procedures and conditions of data collecting did not differ from those taking place in the original study in 15 cultures. However we were not able to implement a procedure to evaluate equivalence of the AI-PL and versions of AI used in the primary study, due to the lack of access to the primary data.

There is however a crucial issue related to the applied instrument. Since the publication of a seminal work by Kasser and Ryan in 1993 a questionnaire named the Aspiration Index had been widely employed in studies on life goals in the self-determination theory framework. Originally it measured seven goal domains: financial success, image, popularity, self-acceptance, affiliation, community feeling and physical health (Kasser, & Ryan, 1993, 1996). These domains were located along a simple lucid dimension with extrinsic and intrinsic ends. Its accuracy had been confirmed over the years in many empirical studies in various countries (e.g. Kasser, & Ahuvia, 2002; Kim, Kasser, & Lee, 2003; Martos, & Kopp, 2012; Ryan et al., 1999). In the study by Grouzet et al. (2005) four additional domains were added to the original questionnaire: spirituality, investigated also in earlier study by Kasser (1996), and conformity, hedonism and safety. For the last three domains new subscales were developed *ad hoc* – for that particular study. Unfortunately their internal reliability appeared to be lower than the others. The same reliability problem was identified in relation to the Polish version of the AI. In such a situation a measure of better psychometric characteristics should be developed, at least for the Polish study. It would probably improve the parameters of the measurement, but at the same time rule out the possibility of direct replication. Judging from the fact that in later empirical studies concerning life goals the problematic subscales were dropped out (e.g. Duriez,

2011; Guillen-Royo, & Kasser, 2014; Kasser et al., 2014; Martos, & Kopp, 2012; Otero-Lopez, & Villardefrancos, 2015; Romero, Gomez-Fraguela, & Villar, 2012; Van Hiel, & Vansteenkiste, 2009; Visser, & Pozzebon, 2013; Zawadzka, Duda, Rymkiewicz, & Kondratowicz-Nowak, 2015), the problem with consistency of the measure seems to be widely acknowledged. The relatively poorer internal consistency of some subscales of the Aspiration Index probably finally influenced the results obtained in the Polish sample. As Stanley and Spence (2014) state, unreliability can have large and irregular effects on observed relations and can greatly influence the success of replication efforts. The problem though is not innate to the AI-PL, but is inherently allied with the 11-factor version of the Aspiration Index.

The second issue connected with the measure, that might affect the results, is the change from the 9-point scale applied in the original study to the 5-point scale used in the current study. However, the latter appeared to be more convenient for the Polish subjects (cf. Górnik-Durose, Janiec, 2010), and furthermore a comparison of results obtained with both versions showed no significant differences, so we decided to return to the original scale used by Kasser and Ryan in their first study on aspirations (Kasser, & Ryan, 1993).

Sampling

Sampling error, beside measurement error, is usually mentioned as a serious cause of fluctuations in estimates. Sampling error is the most publicized in the context of replication (Stanley, & Spence, 2014). Subjects in the original study were college students, who very often are considered to constitute appropriate matching samples in cross-cultural studies, of which various parameters (demographic, cultural) are at least controlled or constant. The follow-up study was also conducted mainly on groups of university students. By collecting data from different groups of Polish students the general sample size was significantly increased (according to the suggestion formed by Stanley and Spence, 2014). The parallel analyses were run in single groups, and in combined sample, which consisted of 1,762 subjects. In our opinion the sampling bias was sufficiently minimized. The most significant difference between subjects from the original study and the presented study was their origin from different cultures. However that was intended and fully controlled.

The cultural context

The main reason to take on the challenge of replicating the study by Grouzet et al. was their claim that the assumed configuration of goal contents – as examined in 15 different cultures – is culturally universal. Therefore it should reveal also in other nations, not included in the original study. This central claim did not find a definite justification in the presented follow-up study and the questionable reliability of the instrument – the Aspiration Index – was pointed out as one of the reasons. The other explanation however could be that the structure is not really culturally universal and it changes with time and cultural context. As the attempt

to implement it to the Polish culture was not successful, a question arose – was that because the model was not really universal, or because the Polish cultural background was highly specific.

Poland is a country placed “in the heart of Europe” (Davies, 2001), which 25 years ago initiated the process of democratic change in Central and Eastern Europe that involved a sharp turn towards the market economy. The political and economic transformation was connected with significant changes in values, aspirations and life styles of Polish people (cf. Boni, 2011; Skarżyńska, 2003). They easily adopted some attitudes and behaviors from individualistic consumer societies, but at the same time did not give up traditional values and viewpoints rooted in their history (which was developing quite dramatically at the bridge between Eastern and Western Europe) and religion (Catholicism). The Polish economy was growing dynamically after 1989. Comparing to the situation at the time of presenting the article by Grouzet et al. for publication (2004) the GNI *per capita* in Poland doubled by 2015 (from \$6,340 in 2004 to \$13,240 in 2015). It places Poland between the wealthy and poor countries examined in the Grouzet et al.’s study then and now² (World Bank, 2015). Taking into consideration this short description it would be difficult to claim that Polish cultural and economic context might be the source of unique and specific values, beliefs, attitudes and aspirations that would explain the lack of fit of the assumed model of life goal contents and their structure in Poland. Consequently it might be that the assumed model of goals is more sensitive to relatively small cultural differences that the authors would like to believe it really is.

Such a point of view could be supported even by the data presented by Grouzet et al. The authors identified differences in goal configurations between wealthy and poor nations. Not only the position of certain goals within the space defined by two dimensions and on the circumference of the circle was slightly different in these two groups of countries, but also compatibilities of the clusters of goals anchoring the self-transcendence and physical self dimension were weaker in poorer countries. It suggests that at least the self-transcendence – physical self dimension is not stable across cultures.

As shown above, this dimension was not clearly reproduced in the current study. The self-transcendence cluster which contains spirituality, community feeling and conformity was relatively weak, mainly because of an almost non-existent relation between community feeling and conformity. In addition there was a compatibility rather than assumed conflict between self-transcendence and physical self clusters, mainly because conformity was leaning strongly towards extrinsic goals, and community feeling appeared to be compatible with health and safety

² The authors of the original study reported that in their wealthier cluster of countries the GNI per capita ranged from \$11,400 to \$30,030 and in the poorer countries from \$420 to \$2,500. The equivalents in 2015 are \$25,920 – \$65,390 in the wealthier group and \$1,570 – \$9,060 in the poorer.

that formed the opposite cluster. This is why an additional analysis was conducted which suggested the existence of a triangular structure of goals: spiritual – intrinsic – extrinsic with spirituality in opposition to both intrinsic and extrinsic goals, the latter two forming the powerful and well established dimension. The intrinsic cluster absorbed fully community feeling from the assumed self-transcendence end of the second dimension as well as health, safety and hedonism from the other end. Conformity appeared to be closer to financial success than to spirituality and especially to community feelings, and the conflict between community feeling and hedonism was not present so that there was no justification to assign the physical self cluster as an opposite pole to the elusive self-transcendence. Only spirituality maintained its position against health, safety, hedonism and financial success and on its own appeared to be a core of the transcendent goal orientation.

The issue of the cross-cultural accuracy of the model would be easier to address if the authors of the original study gave more information about criteria used to select cultures for their comparisons. They stated that the 15 countries differed in relation to geography, individualism versus collectivism and economic wealth, but they were controlling only GNI *per capita*, assuming that it coincides with individualism in wealthier nations and collectivism in the poorer nations. Perhaps the understanding of the goal contents and meanings of the extremes of the dimensions varied not only because of the two aspects, but also were underpinned by different cultural factors, e.g. religious and philosophical foundations of the examined cultures.

Deceptive charm of (too much) elegance

The authors of the original study admitted that the two-dimensional circular structure of goal contents looked like an appealing theoretical solution also because of their relative intuitive simplicity and theoretical elegance. However the beauty of elegant conceptualizations could be misleading. In our opinion in the proposed model physical self as an opposition to self-transcendence should be rethought. Grouzet and his co-workers evoked the distinction between “the spirit and the flesh” in religious thinking, “bodily me” and “spiritual me” of William James and even Sigmund Freud differentiation between the id and the superego as a sufficient justification for introducing both categories anchoring the disputed dimension. One can add to that the Plato’s idea that the soul and body are separate substances and Cartesian claim about duality between mind and body. However, there is another side of the coin. Aristotle reckoned that a human being is a “hylomorphic composite” – a psychosomatic unity, Cartesian dualism was questioned and discarded on the base of wide evidence from contemporary neuropsychology and immunopsychology, in Christian theology body is an immanent component of a person and will be restored to life to join the immortal soul. Even William James did not put “bodily me” and “spiritual me” in conflict – rather in hierarchy, pointing out that “a certain amount of bodily selfishness is required as a basis for all the other selves”

(James, 1892, p. 194), and the Freudian separation of the id and the superego is not really relevant to the distinction discussed between physicality and self-transcendence. In contemporary culture physicality gained a status of the core, foundation and expression of self (Krueger, 1989, Turner, 1996), so that the attempts towards providing and securing bodily welfare not only has to be treated as an indispensable part of intrinsic (i.e. congruent with vital psychological needs) pursuits, but also as connected rather with than being opposite to self-transcendence.

The more convincing end of the self-transcendence dimension is present in the value model proposed by Schwartz and his collaborators (e.g. Schwartz, 1992, Schwartz et al., 2012). This is self-enhancement, which is not physical in nature – as Grouzet et al. seem to suggest, but definitely social, involving a desire for power, achieved through control of certain human and material resources. In the goals model they are equivalent of money, image and fame. This proposal leads back to the result obtained in the present study which showed a triangular rather than circular organization of goals. However this new assumption requires further examination.

The self-transcendence – physical self dimension appear to be relatively weak, especially in comparison to the solid, well-established intrinsic – extrinsic dimension, but spirituality seems to hold its importance as a meaningful striving in life. It has to be noted that recently the concept of spirituality reclaims its position in psychological theory and empirical investigations, despite its ambiguous and elusive conceptualizations. The PsycArticles database lists 656 articles related to spirituality and psychology, of which 574 were published after 2000 and 411 after 2010. It suggests that scholars see the need to examine this neglected aspect of human experience. There is an agreement that the term is related to transcendent, sacred and non-material aspects of life, an individual experience, which could be separated from religiosity, conceptualized in terms of collective, institutional, visible, and public factors (Masters, 2007; Reutter, Bigatti, 2014). It goes far beyond the intrinsic attempts to fulfill psychological needs that in their nature are self-centered. Spirituality points toward a completely different domain, which should not be excluded if the full spectrum of human aspirations has to be defined and described.

Future directions

The follow-up study in Polish samples delivered ambiguous results. It confirmed rather the weaknesses of the original study than its strengths. As mentioned before, we see the results of this study as a point in the broader data set, which would make the verification of the concept of the culturally universal organization of goal contents possible in future. However in order to achieve that a better assessment of the Aspiration Index is necessary, resulting in a culturally sound and psychometrically trustworthy instrument which could be used in cross-cultural research. Also precisely defined and controlled factors should specify differences between purposely selected cultures.

It also has to be stressed that both the original and follow-up studies were conducted on convenience samples of university students. As Sears (1986) argued, in comparison to older subjects students tend to have stronger cognitive skills, but less crystallized values and attitudes, a vague sense of self, more compliant behavior and unstable social relationships. It means that the results cannot be generalized to the entire population (see Peterson & Merunka, 2014). In order to describe the content and structure of goals further research is needed, ideally based on representative samples from various cultures, or at least on samples of different ages and life experiences.

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