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Controlling for Culture-Specific Response Bias using Ipsatization and Response Style Indicators:

Family Orientation in Seventeen Cultures and Two Generations

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“Value of Children and Intergenerational Relations”

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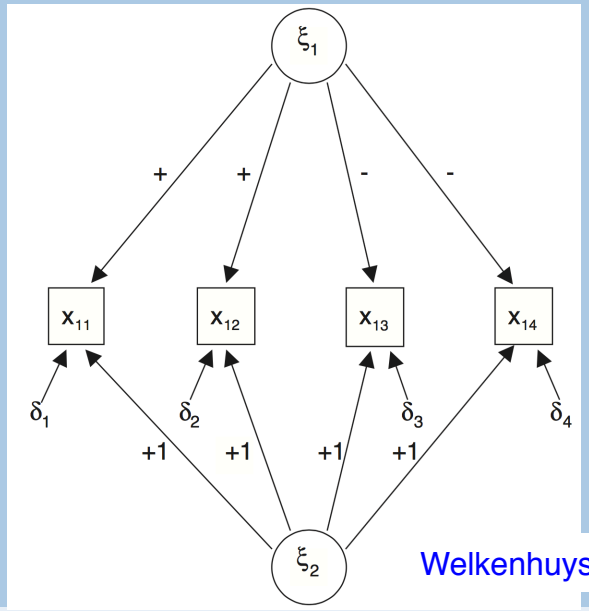
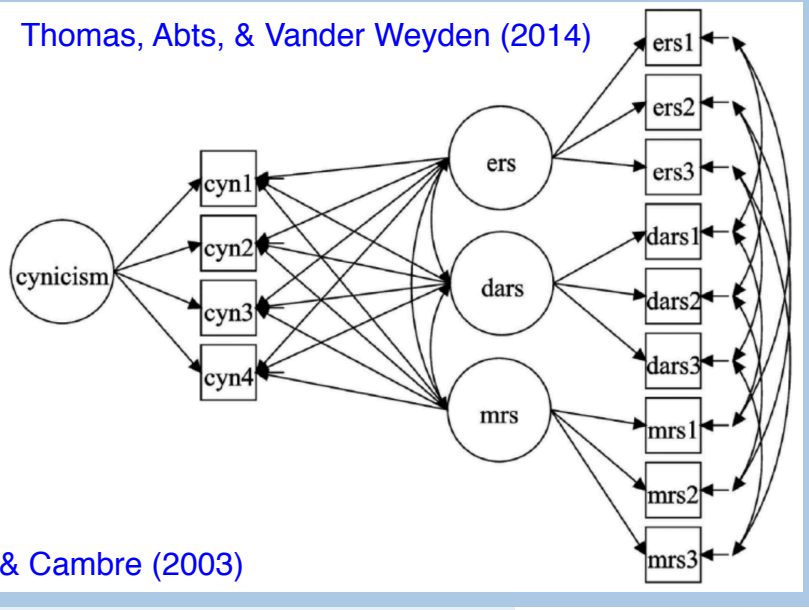
Measurement Equivalence and Response Bias Across Cultures

- "Strong" (scalar) equivalence as precondition for cross-cultural mean comparisons (Byrne, 2008; Cheung & Rensvold, 2000)
- But: MACS CFA cannot control for uniform response bias (Little, 2000)
- Single response style factor (He, Bartram, Inceoglu, & van de Vijver, 2014)
- Further recent developments:



Welkenhuysen-Gybels, Billiet, & Cambre (2003)

Thomas, Abts, & Vander Weyden (2014)



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(Within-subject) Standardization / Ipsatization

- Ipsatization recommended to control for culture-specific response bias in mean comparisons (Fischer, 2004; Fischer & Milfont, 2010)
- But which kind of ipsatization? “Single Construct” (e.g. Schwartz values) or “All items of a questionnaire”?
- Caution – “fixed pie” – possibly controlling for content in addition to bias!
- Psychological assessment literature: ipsatized measures appropriate with large number of constructs (> 10) and low intercorrelations among constructs (< .30) (Baron, 1996; Bartram, 1996)
- Alternative: random selection of items measuring different underlying constructs and are uncorrelated (Weijters, Schillewaert, & Geuens, 2008)

“Representative Indicators Response Style Means and Covariance Structure” (RIRSMACS)

Current Study: Using RIRS for 1) ipsatization and 2) response style indicators (acquiescence and extremity responding, ANCOVAs) and comparing results

VOC-Project: Mothers and Adolescents from 17 Cultural Groups

Culture	Mothers	Adolescents
China	309	306
Czech Republic	243	242
Estonia	300	300
France	197	199
Germany	311	311
Ghana	294	294
India	300	300
Indonesia	300	300
Israeli Jews	194	194
Jamaica	314	
Palestinians / IsraeliArabs	181	177
Poland	575	575
Russia	230	226
South Africa	317	317
South India	300	300
Turkey	308	308
USA	337	337
Total	**5010**	**4686**

Family Values

- Core aspect of collectivism, substantial cross-cultural variation documented (Triandis, 1990; Georgas, Berry, van de Vijver, Kagitcibasi, & Poortinga, 2006)
- Five-item short scale based on Georgas (1991)

1	2	3	4	5
Strongly disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Strongly agree

1. One should maintain good relationships with one's relatives.
2. Children have an obligation to care for their parents when their parents are old.
3. A family's problems should be solved within the family.
4. We should honor and protect our family's reputation.
5. Children should obey their parents.

Traditional family values including two main aspects: 1) hierarchy and 2) relationships within the family.

Internal consistencies mixed, but structural equivalence ok (using target rotation approach).

Response Style Indicators 1

- Ipsatization across all Likert-scale items of the questionnaire (including target construct)
  - Subtract grand mean (+ divide by grand SD)
  - Some items/constructs had to be discarded since...
    - not included all cultural groups
    - too many missings (e.g. relationhip with grandparents)
  - Mothers: 137 items from 13 constructs
  - Adolescents: 171 items from 17 constructs

Response Style Indicators 2

- Ipsatization across random subset of 15 items (excluding items from target construct)
  - Subtract grand mean based on 15 items (+ divide by grand SD)
  - Partly the same items for mothers and adolescents
- Acquiescence and Extremity indicators based on the same subset of 15 randomly selected items
  - Acquiescence: double count 5 + count 4
  - Extremity: count 1 + 5
- Check if randomly selected items are (mostly) uncorrelated (see next slide)

Correlations Among the 15 Randomly Selected Items

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Mothers: Mean of corrected item-total correlations: .11 (vs. .25)

	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10	Item 11	Item 12	Item 13	Item 14	Item 15
Item 1		.11	.06	.06	.12	-.01	.1	.08	.05	.09	.01	-.02	.02	.06	-.01
Item 2	.08		.04	.13	.03	-.02	.11	.14	**.17**	.11	.06	.01	-.04	**.15**	-.02
Item 3	.10	-.03		.07	.11	0	.04	.04	-.05	.02	-.01	.07	-.03	.03	.02
Item 4	.07	**.21**	.02		.08	-.04	.06	.1	.06	.07	.02	0	-.04	.1	.01
Item 5	**.15**	-.01	**.16**	.07		.06	.02	.01	-.02	.04	-.04	.04	-.03	0	-.02
Item 6	-.01	-.06	.04	-.06	.04		-.08	-.09	.01	-.01	-.04	**.17**	.09	-.04	.04
Item 7	.06	**.15**	.00	.12	.02	-.04		.09	.04	.05	.02	-.02	-.04	.05	-.01
Item 8	.05	**.20**	-.02	.14	.03	-.08	.12		.12	**.15**	.07	.03	-.04	**.18**	.00
Item 9	.04	.07	-.01	.04	.01	.08	.04	.15		.10	.00	-.04	.02	**.26**	-.06
Item 10	.02	-.11	.06	-.06	.02	.09	-.06	-.09	.03		**.16**	.01	-.03	.11	.03
Item 11	.05	.06	.02	.08	.02	-.04	.08	.10	-.04	.01		.02	-.02	.08	.10
Item 12	.07	-.06	.10	-.05	.10	.08	-.06	-.02	.00	.04	-.02		**-.16**	.00	.05
Item 13	.07	.06	-.01	.12	-.05	.01	.09	.09	.08	.05	.08	.02		-.04	.02
Item 14	.07	.11	.03	.14	.04	-.13	.13	**.16**	.01	-.09	.09	-.04	.04		-.02
Item 15	.02	-.02	.02	-.03	.04	**.25**	-.07	-.04	.07	.09	-.05	.09	-.04	-.07	

Adolescents: Mean of corrected item-total correlations: .11 (vs. .23)

Response Style Indicators Across Cultures

Culture	Grand-M Total		Grand-SD Total		Grand-M 15 Items		Grand-SD 15 Items		Acquiescence		Extremity	
	MO	AD	MO	AD	MO	AD	MO	AD	MO	AD	MO	AD
India (Pondicherry)	3.60	3.63	1.60	1.42	3.92	3.68	1.47	1.35	19.02	15.16	10.88	7.90
Indonesia	3.59	3.23	1.32	1.28	3.91	3.17	1.22	1.30	17.19	9.91	7.33	4.47
Ghana	3.59	3.51	1.31	1.33	3.84	3.69	1.23	1.28	16.17	14.31	6.92	6.63
Palestinians / Israeli Arabs	3.58	3.48	1.39	1.41	3.80	3.58	1.33	1.37	16.28	13.76	7.94	6.86
South Africa	3.56	3.37	1.54	1.58	4.09	3.57	1.27	1.54	19.82	15.51	9.91	9.32
India (Varanasi)	3.52	3.48	1.41	1.39	3.71	3.48	1.37	1.38	15.85	13.36	8.31	7.00
Jamaica	3.51		1.47		3.97		1.34		18.68		9.47	
Turkey	3.44	3.32	1.33	1.35	3.86	3.45	1.18	1.31	16.39	12.28	6.68	5.84
Israeli Jews	3.35	3.17	1.52	1.46	3.75	3.27	1.39	1.43	16.05	11.26	8.19	6.57
Poland	3.33	3.16	1.27	1.26	3.70	3.30	1.22	1.25	14.43	10.38	5.82	4.50
Russia	3.32	3.16	1.14	1.18	3.61	3.22	1.08	1.14	12.37	8.56	3.98	3.24
China	3.31	3.17	1.25	1.32	3.49	3.10	1.25	1.37	12.38	9.24	4.97	5.41
Estonia	3.22	3.08	1.19	1.20	3.65	3.24	1.12	1.24	13.08	9.63	4.47	4.27
USA	3.10	3.17	1.42	1.34	3.72	3.28	1.29	1.37	14.99	11.00	6.66	5.73
France	3.02	2.98	1.36	1.35	3.72	3.21	1.20	1.37	14.08	10.29	5.74	5.42
Germany	3.00	2.99	1.28	1.25	3.77	3.18	1.06	1.29	14.18	9.49	4.45	4.49
Czech Republic	2.91	3.14	1.58	1.38	3.96	3.33	1.29	1.37	10.84	7.45	5.30	4.00
R^2	.350	.310	.250	.210	.193	.232	.127	.109	.309	.293	.324	.246

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Controlling for Response Bias in Mothers' Family Values

Culture	Family Values (Original)	IPS Total Means	IPS Total M + SD	IPS 15 Means	IPS 15 M + SD	ADJ Means AQ	ADJ Means AQ + EX
Indonesia	4.70	1.12	0.85	0.79	0.65	4.62	4.63
India (Pondicherry)	4.70	1.10	0.67	0.78	0.51	4.52	4.47
South Africa	4.68	1.12	0.72	0.59	0.45	4.46	4.45
Palestinians / Israeli Arabs	4.65	1.08	0.76	0.86	0.63	4.61	4.59
India (Varanasi)	4.61	1.09	0.75	0.91	0.65	4.59	4.56
Ghana	4.54	0.96	0.72	0.71	0.55	4.51	4.52
Czech Republic	4.46	1.55	0.97	0.49	0.35	4.70	4.66
Jamaica	4.42	0.91	0.61	0.45	0.33	4.26	4.24
Israeli Jews	4.39	1.05	0.69	0.64	0.45	4.36	4.33
Turkey	4.39	0.95	0.71	0.52	0.43	4.34	4.36
Poland	4.30	0.97	0.75	0.60	0.48	4.35	4.36
China	4.25	0.95	0.76	0.77	0.61	4.41	4.41
Russia	4.25	0.93	0.81	0.64	0.59	4.41	4.44
USA	4.23	1.13	0.79	0.51	0.39	4.25	4.25
Estonia	4.03	0.81	0.67	0.38	0.33	4.15	4.18
France	3.98	0.96	0.70	0.26	0.21	4.04	4.05
Germany	3.90	0.90	0.70	0.13	0.12	3.97	4.01
R^2	.222	.104	.062	.151	.138	.137	.112

Controlling for Response Bias in Adolescents' Family Values

Culture	Family Values (Original)	IPS Total Means	IPS Total M + SD	IPS 15 Means	IPS 15 M + SD	ADJ Means AQ	ADJ Means AQ + EX
India (Varanasi)	4.54	1.06	0.75	1.06	0.76	4.43	4.43
Palestinians / Israeli Arabs	4.51	1.02	0.72	0.93	0.68	4.37	4.37
India (Pondicherry)	4.49	0.85	0.59	0.81	0.58	4.29	4.29
South Africa	4.45	1.08	0.69	0.88	0.57	4.23	4.22
Indonesia	4.32	1.09	0.85	1.16	0.89	4.40	4.40
Ghana	4.30	0.78	0.58	0.60	0.47	4.14	4.15
Turkey	4.24	0.92	0.68	0.79	0.61	4.19	4.20
China	4.22	1.05	0.79	1.12	0.83	4.33	4.32
Czech Republic	4.19	1.05	0.75	0.86	0.64	4.40	4.39
Israeli Jews	4.11	0.94	0.63	0.85	0.58	4.12	4.11
Poland	3.97	0.82	0.64	0.68	0.54	4.03	4.03
USA	3.96	0.79	0.59	0.68	0.50	3.98	3.98
Russia	3.91	0.75	0.63	0.69	0.62	4.05	4.06
France	3.82	0.84	0.62	0.61	0.45	3.88	3.88
Estonia	3.76	0.68	0.56	0.52	0.41	3.85	3.86
Germany	3.70	0.72	0.58	0.52	0.42	3.81	3.81
R^2	**.216**	**.090**	**.068**	**.127**	**.112**	**.119**	**.116**

Culture-level Correlations Among (Corrected) Family Values Scales

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Mothers

	Family Values (Original)	IPS Total Means	IPS Total M + SD	IPS 15 Means	IPS 15 M + SD	ADJ Means AQ	ADJ Means AQ + EX
Family Values (Orig.)		.47	.19	**.81****	**.71****	**.87****	**.85****
IPS Total Means	**.75****		**.76****	.24	.12	**.65****	**.61****
IPS Total M + SD	**.54***	**.89****		.21	.26	**.56***	**.59***
IPS 15 Means	**.72****	**.91****	**.92****		**.96****	**.84****	**.83****
IPS 15 M + SD	**.62***	**.80****	**.93****	**.96****		**.78****	**.80****
ADJ Means AQ	**.89****	**.86****	**.80****	**.88****	**.84****		**.99****
ADJ Means AQ + EX	**.89****	**.85****	**.80****	**.88****	**.84****	**1.00****	

Adolescents

Note. Mothers: Upper right triangle. Adolescents: lower left triangle. * $p < .05$ ** $p < .01$.

Culture-level Correlations with External Value Indicators (Hofstede, World Values Survey)

	Mothers				Adolescents			
n = 15-16	**Hofstede PDI**	**Hofstede IND**	**WVS TradSec**	**WVS SurvSelf**	**Hofstede PDI**	**Hofstede IND**	**WVS TradSec**	**WVS SurvSelf**
Family Values	.31	-.45	**-.69****	-.48	.36	-.45	**-.64****	-.45
IPS Total Means	.00	.16	.05	.19	.16	-.32	-.27	-.27
IPS Total M + SD	.29	-.04	.09	-.10	.36	-.50	-.20	-.44
IPS 15 Means	**.52***	**-.56***	**-.63****	**-.61***	.31	-.49	-.30	-.42
IPS 15 M + SD	**.61***	**-.64****	**-.64****	**-.73****	.46	**-.61***	-.29	**-.54***
ADJ Means AQ	.45	-.49	-.49	**-.55***	.43	**-.54***	-.43	-.49
ADJ Means AQ + EX	.50	**-.54***	**-.52***	**-.61***	.44	**-.55***	-.44	**-.51***

* $p < .05$ ** $p < .01$.

Culture-level Correlations with Family Values from Georgas et al. (2006)

	Mothers			Adolescents		
n = 8	**Family Hierarchy**	**Family Relation-ships**	**Family Values (Mean)**	**Family Hierarchy**	**Family Relation-ships**	**Family Values (Mean)**
Family Values	**.92****	**.89****	**.94****	**.90****	**.81***	**.90****
IPS Total Means	.60	.65	.63	.66	.55	.65
IPS Total M + SD	.23	.42	.29	.54	.43	.52
IPS 15 Means	**.91****	**.90****	**.94****	**.75***	.61	**.73***
IPS 15 M + SD	**.88****	**.91****	**.91****	**.72***	.58	.70
ADJ Means AQ	**.92****	**.91****	**.94****	**.90****	**.79***	**.89****
ADJ Means AQ + EX	**.89****	**.90****	**.92****	**.90****	**.79***	**.89****

Note. Mean values from Georgas et al. kindly provided by Fons van de Vijver. * $p < .05$ ** $p < .01$.

Discussion

- Very similar results for RIRS ipsatization and RIRS response style indicators (ANCOVA adjusted means)
- Ipsatizations based on total questionnaire obviously confounds content and style
  - too few and too highly correlated constructs
  - valid only with clear theoretical basis (e.g., Schwartz) and/or low overall correlations of constructs?
- Rank order of original means **not** strongly affected by controlling for culture-specific response styles (RIRS approach)
- Cross-cultural differences attenuated (from $R^2 \approx .22$ to $R^2 \approx .12$)
- RIRS ipsatization useful approach for controlling response bias?

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Thank you for your attention!

Culture-level Correlations of Georgas' Family Values with External Indicators

n = 25	Hofstede PDI	Hofstede IND	WVS TradSec	WVS SurvSelf
Family Values: Hierarchy	.62**	-.71**	-.55**	-.78**
Family Values: Relationships	.59**	-.46*	-.84**	-.55**
Family Values (Mean of above)	.65**	-.67**	-.68**	-.75**

* $p < .05$ ** $p < .01$.