

The sources and consequences of non-equivalence across subnational groups: The case of immigration attitudes in Switzerland

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Measurement invariance: Methods, problems and further directions
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Attitudes toward immigration in Switzerland Measurement equivalence

- STUDY 1 (Sarrasin, Green, Berchtold, & Davidov, in preparation)
 - German- vs. French-speaking regions
 - ESS, ISSP & WVS: Conception of nationhood
- STUDY 2
 - Examines two types of diversity (language, background)
 - WVS (inclusion of the Italian-speaking region)
 - Conception of nationhood: Naturalization criteria
- STUDY 3 (Berchtold, Sarrasin, & Green, in preparation)
 - Examines the application of propensity scores in the context of measurement equivalence testing

Conception of nationhood: Naturalization criteria in Switzerland

Naturalization in Switzerland (Helbling, 2008)

- Decided at the local level (municipality)
- Different decision-making procedures
- High rejection rate, differences between origin country

Great variety of criteria are applied by local politicians: how to categorise them in distinct dimensions?

- **Ethnic** (or ascribed): e.g., being born in Switzerland
- **Civic** (or acquired): e.g., being able to speak the local language

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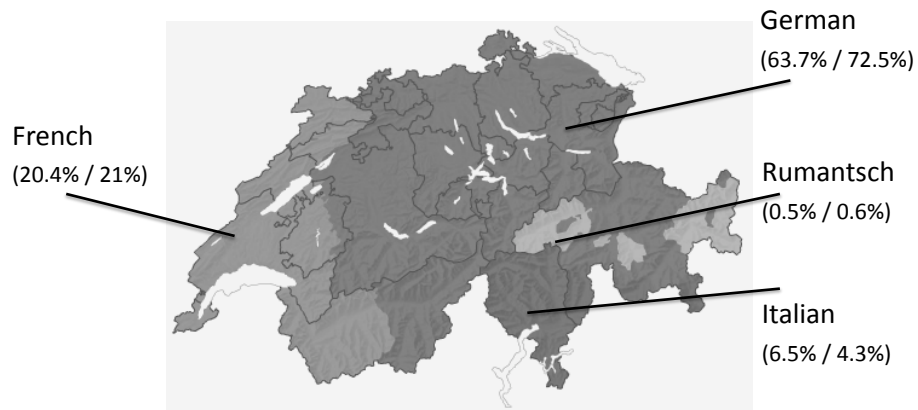
World Values Survey 2007

How important should the following be as requirements for somebody seeking citizenship of your country? (1=*not important*; 2=*not really important*; 3=*rather important*; 4=*very important*)

- having Swiss **ancestors**
 - being **born** in Switzerland
 - adapting Swiss **way of living**
 - observing the **law**
 - acquiring **language** of residence
 - attending **school** in Switzerland → **close to born?**
 - knowing Swiss **history** → **can be acquired?**
 - being member of an **association** → **integration?**
 - abandon **old citizenship** → **integration?**
- } **Ethnic**
- } **Civic**

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Cultural diversity in Switzerland I



first language of Swiss residents / citizens in 2000
 Swiss Statistical Federal Office

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Cultural diversity I: Equivalence?

- Different languages (e.g., Davidov & De Beuckelaer, 2010)
 - Translations might be inaccurate (Study 1)
 - Exact translations are difficult to find
- Some criteria might be more important or hold different meanings across the regions:
 - Swiss history: main events in the German-speaking region – different representations?
 - Language: e.g., Swiss German vs. standard German



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Cultural diversity in Switzerland II

Permanent resident population aged 15 or over, by migration status, in 2008

	in 1000's	in %
Total	6417	100.0
Population without an immigration background	4362	68.0
Swiss citizens	4360	67.9
of whom naturalised	15	0.2
Persons with foreign citizenship (3rd generation)	2	0.0
Population with an immigration background	1965	30.6
Swiss citizens	651	10.1
of whom naturalised	583	9.1
Persons with foreign citizenship (1st and 2nd generation)	1315	20.5
Persons for whom some relevant data are unavailable	89	1.4

source: Swiss Federal Statistical Office

Cultural diversity II: Equivalence?

- Respondents with an immigration background: Better knowledge of the criteria?
 - Naturalized, in the naturalization process
 - Relatives who are naturalized, etc.

Question: how to categorise “respondents with an immigration background?”

- To our knowledge, this has never been tested as a potential cause of non-equivalence
- How to define “immigration background”?
- Heterogeneous group?

World Values Survey 2007

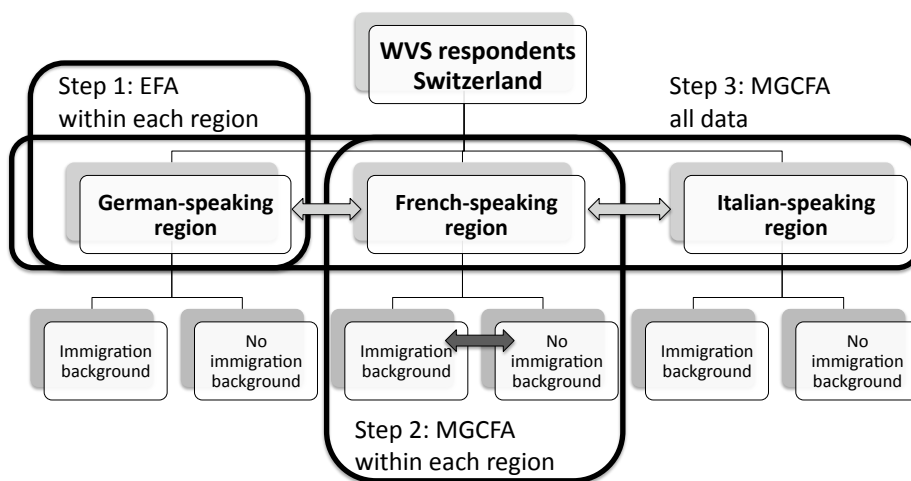
Sample Switzerland: N = 1223

Oversampling of national minorities (Silver & Dowley, 2000)

Region:	German (N = 623)	French (N = 404)	Italian (N = 196)
No immigration background	473 (75.9%)	247 (61.1%)	112 (57.1%)
Immigration background	150 (24.1%)	157 (38.9%)	84 (42.9%)
- not Swiss citizen	40	68	27
- not born in CH	86	108	47
- parent(s) not born in CH	75	79	48

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Analyses: Steps



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Analyses (for ordinal data, Mplus)

1. EFA: within each linguistic region
 - Oblimin rotation
 - Items are retained for further steps only in case of similar factor structure
2. MGCFA: within each linguistic region
 - Immigration background vs. no immigration background
3. MGCFA: all data
 - German vs. French vs. Italian

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1. EFA within each linguistic region

	German		French			Italian	
	Ethnic	Civic	Ethnic	Civic	Cult.	Ethnic	Civic
ancestors	.90	-.13	.64	-.12	.21	.86	-.05
born	.83	.00	.98	.03	-.09	.76	-.03
school	.66	.26	.56	.02	.34	.54	.37
laws	-.17	.72	-.02	.95	-.01	-.23	.79
language	.06	.71	.00	.28	.48	.04	.60
customs	.34	.48	.16	.51	.19	.23	.56
history	.36	.39	.04	.07	.73	.22	.64
association	.38	.09	-.06	-.17	.53	.44	-.02
old citizenship	.41	.21	.13	.09	.36	.35	.21

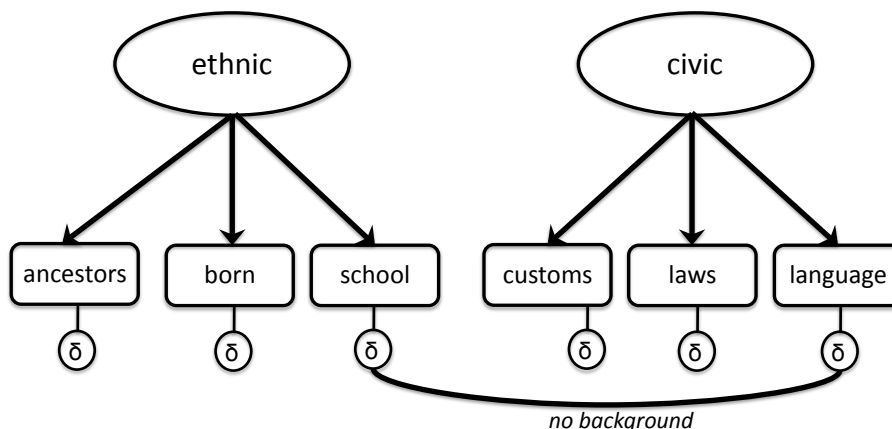
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2. MGCFA within each linguistic region

- Performed on the six remaining items
- Within each linguistic group
 - Immigration background vs. no immigration background
- MGCFA for ordinal data (e.g., Lubke & Muthén, 2004)
 - Testing for scalar equivalence
 - χ^2 and df cannot be used for χ^2 difference tests
 - Fit indices: CFI ($> .95$) & RMSEA ($< .08$)
 - If non-adequate fit indices \rightarrow modification indices
 - Theta parametrization: residual variances (Muthén & Asparouhov, 2002)

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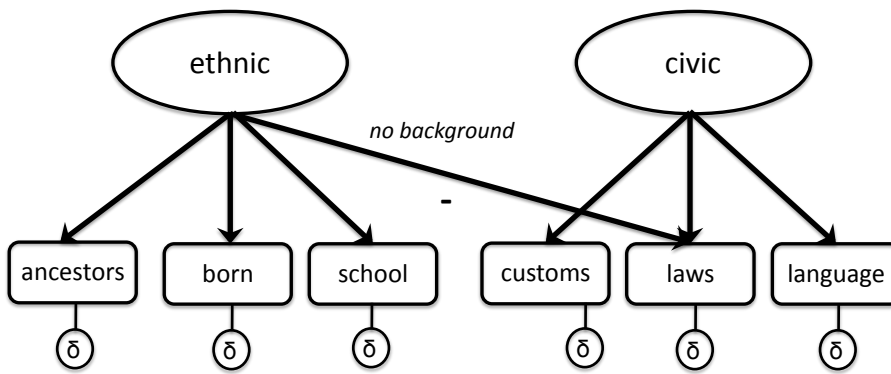
2. MGCFA: Results in German



Scalar equivalence: $\chi^2 (18) = 56.453, p < .001; CFI = .973, RMSEA = .083$
 Two errors are correlated: $\chi^2 (17) = 36.436, p < .01; CFI = .986, RMSEA = .061$

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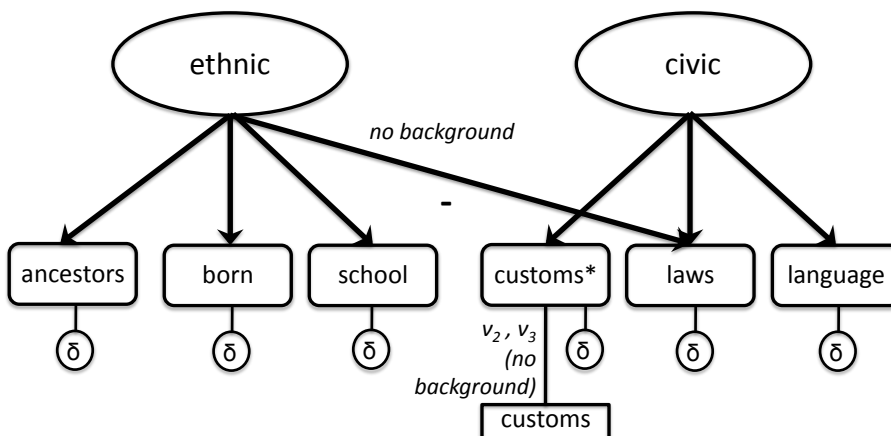
2. MGCFA: Results in French



Scalar equivalence: $\chi^2(21) = 63.616, p < .001; CFI = .947, RMSEA = .100$
 Negative cross-loading: $\chi^2(21) = 52.591, p < .001; CFI = .961, RMSEA = .086$

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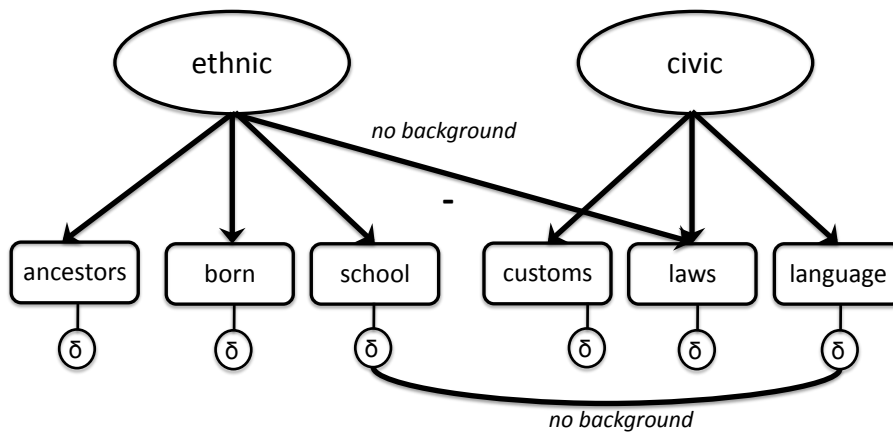
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 Negative cross-loading: $\chi^2(21) = 52.591, p < .001; CFI = .961, RMSEA = .086$
 + thresholds relaxed: $\chi^2(19) = 33.592, p < .05; CFI = .982, RMSEA = .062$

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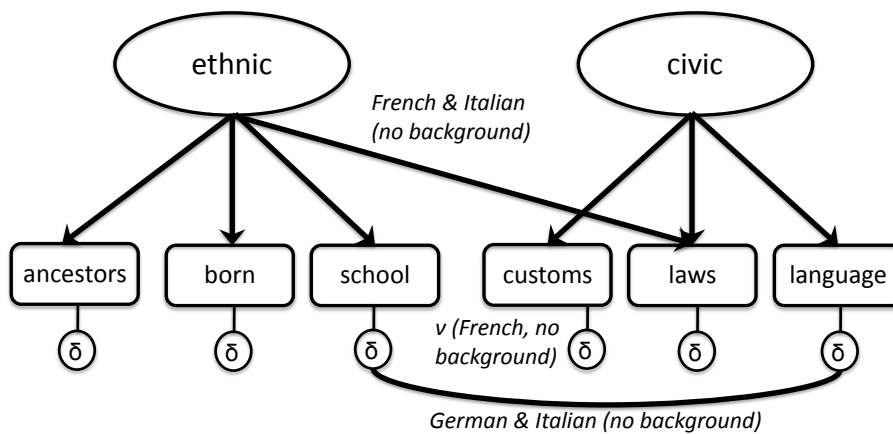
2. MGCFA: Results in Italian



Scalar equivalence: $\chi^2(23) = 174.892, p < .001; CFI = .935, RMSEA = .104$
 Negative cross-loading: $\chi^2(22) = 139.954, p < .001; CFI = .949, RMSEA = .094$
 + correlated errors: $\chi^2(22) = 109.100, p < .001; CFI = .963, RMSEA = .081$

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2. MGCFA: Summary of results



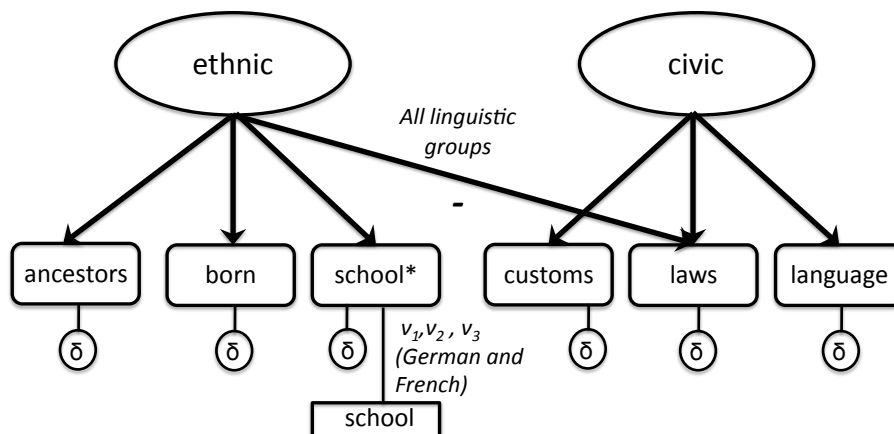
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2. MGCFA: Intermediary conclusion

- In each linguistic region: reasonable measurement equivalence between respondents with an immigration background and respondents without an immigration background
 - Differences between the two groups: similarities across regions
- Negative **cross-loading** between “laws” and the ethnic dimension = essential for equivalence in French and Italian (no background)
 - Similar cross-loading (ISSP data; Reeskens & Hooghe, 2010)
- **Errors** of “school” and “language” correlated in German and Italian
- The **next step** is possible
 - Same model, all data
 - Test for measurement equivalence across the three linguistic regions

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3. MGCFA: German vs. French vs. Italian



Scalar equivalence: $\chi^2(38) = 249.177, p < .001; CFI = .911, RMSEA = .117$
 Negative cross-loading: $\chi^2(38) = 196.496, p < .001; CFI = .933, RMSEA = .101$
 + thresholds relaxed: $\chi^2(33) = 90.639, p < .001; CFI = .976, RMSEA = .066$

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Conclusion

- With a reduced number of items (6/9), partial scalar equivalence across the three linguistic regions is reached
→ **Possible to compare latent means**
- Prior to MGCFA, three items had to be discarded. If included, results would have been biased
→ **Importance of preliminary single-group analyses**
- Only a few differences between respondents with an immigration background and respondents without an immigration background
→ **No major measurement equivalence issue**

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Discussion I: The school item.. a troublemaker?

- If the school items is discarded (5-item solution)...
 - ... the born item no longer loads significantly on the ethnic dimension
 - Why?
- How can we know why this item is problematic?
 - Differences in support across municipalities: (ICC = .177)
 - Multilevel approach?

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Discussion II: Discarded items

- Three items were discarded in Step 1: history, association and old citizenship
- Not present in surveys using similar ethnic vs. civic scales
 - International Social Survey Programme (2003)
 - European Social Survey (2002)
- More than two dimensions? (e.g., Shulman, 2002)

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Discussion III: Sample

- In this study: measurement of naturalization criteria can be considered as reasonably equivalent between respondents with an immigration background and without an immigration background (within each linguistic region)
- Next step: if one is interested in comparing adhesion to naturalization criteria across the linguistic regions, does the inclusion of respondents with an immigration background affect the conclusions? For instance if
 - Respondents with background: lower support
 - More respondents with immigrants background in the Italian- and French-speaking regions

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thank you for your attention!

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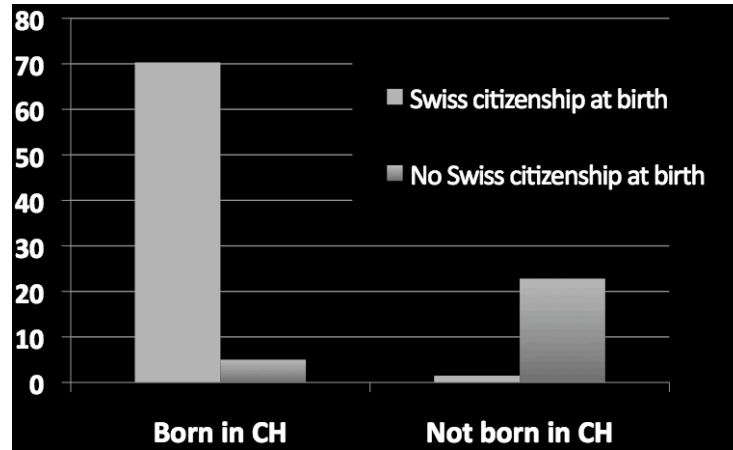
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Additional slide #1:
Cultural Diversity in Switzerland II



source: Swiss Federal Statistical Office
population aged > 15 in 2003 27

Additional slide #2
EFA in French (6 items only)

	French	
	Ethnic	Civic
ancestors	.78	-.08
soil	.88	-.03
school	.74	.12
laws	-.05	.97
language	.26	.40
customs	.25	.53

Additional slide #3

Items in German

- Schweizer Vorfahren haben
- In der Schweiz geboren sein
- Die schweizerische Lebensweise annehmen
- Die Schweizer Gesetze beachten
- Die Sprache am Wohnort beherrschen
- Die Schule in der Schweiz besucht haben
- Die Schweizer Geschichte kennen
- Mitglied in einem Verein sein
- Die alte Staatsbürgerschaft aufgeben

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Additional slide #4

Items in French

- Avoir des ancêtres suisses
- Etre né en Suisse
- Adopter le style de vie suisse
- Respecter les lois suisses
- Maîtriser la langue du domicile
- Avoir fait ses écoles en Suisse
- Connaître l'histoire suisse
- Etre membre d'une association
- Renoncer à l'ancienne nationalité

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Additional slide #5

Items in Italian

- Avere antenati svizzeri
- Essere nato in Svizzera
- Adottare gli usi ed i costumi svizzeri
- Obbedire alle leggi svizzere
- Parlare la lingua locale
- Aver frequentato le scuole in Svizzera
- Conoscere la storia svizzera
- Essere membro di una associazione
- Rinunciare alla cittadinanza d'origine

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Additional slide #6

Exact sample composition

	Born in CH				Not born in CH			
	CH		No CH		CH		No CH	
	Parents = no imm.	Parent(s) = imm	Parents = no imm.	Parent(s) = imm	Parents = no imm.	Parent(s) = imm	Parents = no imm.	Parent(s) = imm
GER	537 (86.20%)				86 (13.80%)			
	534 (85.71%)		3 (0.48%)		49 (7.86%)		37 (5.94%)	
	473 (75.92%)	61 (9.79%)	1 (0.16%)	2 (0.32%)	42 (6.74%)	7 (1.12%)	32 (5.14%)	5 (0.80%)
FR	296 (73.27%)				108 (26.73%)			
	289 (71.53%)		7 (1.73%)		47 (11.63%)		61 (15.10%)	
	247 (61.14%)	42 (10.40%)	1 (0.25%)	6 (1.49%)	34 (8.42%)	13 (3.22%)	43 (10.64%)	18 (4.46%)
IT	149 (76.02%)				47 (23.98%)			
	146 (74.49%)		3 (1.53%)		23 (11.73%)		24 (12.24%)	
	112 (57.14%)	34 (17.35%)	0 (0.00%)	3 (1.53%)	18 (9.18%)	5 (2.55%)	18 (9.18%)	6 (3.06%)

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Additional slide #7a
MGCFA (GER vs. FR vs. IT)
6 items, scalar equivalence

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
Group GERMAN				
ETHNIC BY				
R_CITI_A	1.000	0.000	999.000	999.000
R_CITI_B = born	1.290	0.187	6.914	0.000
R_CITI_F	0.808	0.069	11.722	0.000
CIVIC BY				
R_CITI_E	1.000	0.000	999.000	999.000
R_CITI_C	2.668	0.717	3.720	0.000
RC_CIT_D	1.085	0.175	6.206	0.000
CIVIC WITH				
ETHNIC	0.480	0.083	5.805	0.000
Means				
ETHNIC	0.000	0.000	999.000	999.000
CIVIC	0.000	0.000	999.000	999.000

a= ancestors; b=born; f=school; e=language; c=customs; d=laws

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Additional slide #7b
MGCFA (GER vs. FR vs. IT)
6 items, partial scalar equivalence (thresholds are relaxed) +
negative cross-loading

Group GERMAN				
ETHNIC BY				
R_CITI_A	1.000	0.000	999.000	999.000
R_CITI_B	1.097	0.046	23.712	0.000
R_CITI_F	0.928	0.035	26.430	0.000
RC_CIT_D	-0.867	0.138	-6.300	0.000
CIVIC BY				
R_CITI_E	1.000	0.000	999.000	999.000
R_CITI_C	1.422	0.126	11.268	0.000
RC_CIT_D	2.204	0.260	8.470	0.000
CIVIC WITH				
ETHNIC	0.280	0.030	9.270	0.000
Means				
ETHNIC	0.000	0.000	999.000	999.000
CIVIC	0.000	0.000	999.000	999.000

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Additional slide #7c

MGCFA (GER vs. FR vs. IT)

Five items (no school item), scalar equivalence

MODEL RESULTS				
	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
Group GERMAN				
ETHNIC BY				
R_CITI_A	1.000	0.000	999.000	999.000
R_CITI_B	6.364	16.198	0.393	0.694
CIVIC BY				
R_CITI_E	1.000	0.000	999.000	999.000
R_CITI_C	3.712	1.397	2.657	0.008
RC_CIT_D	1.349	0.213	6.343	0.000
CIVIC WITH				
ETHNIC	0.264	0.062	4.246	0.000
Means				
ETHNIC	0.000	0.000	999.000	999.000
CIVIC	0.000	0.000	999.000	999.000

 $\chi^2 (26) = 98.807, p < .001; CFI = .951, RMSEA = .083$

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