**Online Appendix**

Below, for each study, we report (a) descriptive statistics, (b) psychometric qualities of each construct used, and (c) the measurement models with reliabilities. Unless specified otherwise, all figures and tables are our own. We assessed the psychometric qualities of the scales by utilizing a graded response model from the item response theory (IRT) framework. This assessment method is an extension of the two-parameter logistic model to ordinal responses [Baker 2017]. In other words, we treat every response option (ranging from strongly disagree to strongly agree) as ordered categories. Here, we report information on the individual items as well as the scale itself. While item information curves (ICC) and category characteristic curves (CCC) provide evidence about the items, test information & standard error (I & SE) and test characteristic curve (TCC) provide evidence about the scale itself.

In a nutshell, IRT is particularly beneficial for a rigorous examination of the internal consistency in the measurement instrument. IRT is also useful for constructing parsimonious measurement instruments. We simply use IRT to eliminate the bad items in the measurement models. Brief explanation and elaboration about the IRT estimation are discussed in the relevant section for the first construct. After the first construct, the same heuristics on the IRT results and interpretation are relevant for all the other constructs.

Following the psychometric assessment, we construct the measurement models with confirmatory factor analysis (CFA), utilizing robust maximum likelihood estimation. Since the sample size may not be sufficient for the larger structural equation models, we compute the factor scores from the CFAs and use them in further analyses. Here, since we treat the response options as ordered categories, we use the Empirical Bayes Modal approach to compute the factor scores. We acknowledge the limitation of factor scores’ uncertainty [Devlieger and Rosseel 2017; Devlieger, Mayer and Rosseel 2016; Estabrook and Neale 2013; Grice, 2001]. The main problem stems from the infinite number of solutions that satisfy the equations used to estimate factor scores. Although we do not have the most elegant solution to this limitation, one buffer strategy we adopt is normalizing the factor scores, so they range between 0-1. We applied this strategy to all the constructs we used.[[1]](#endnote-1) (The free and open-ware package we use, lavaan [Rosseel 2012], tends to overestimate the correlations across latent constructs in the CFAs. Although this might influence our subsequent analyses, we have a few safety nets we can list. 1) Almost all the scales we utilize here have been validated in earlier studies so we know how they are supposed to behave with the factor correlations. 2) We either construct the latent trait models as higher order construct CFAs (i.e. general collective narcissism influencing national and catholic collective narcissisms) or use a single factor model (i.e. modern homo negativity scale). So we buffer the bias of overestimated correlations across latent constructs.)

**Study 1**

**Collective Narcissism**

Table i Descriptive statistics for collective narcissism (national)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| *Item wording in English* | *Item wording in Polish* | *Variable abbreviation* | *Mean* | *SD* | *Skew* | *Kurtosis* |
| My group deserves special treatment. | Gdyby naród polski miał więcej do powiedzenia w świecie, świat byłby o wiele lepszym miejscem. | cnn1 | 3.94 | 1.63 | -0.05 | -0.58 |
| Not many people seem to fully understand the importance of my group. | Naród polski zasługuje na specjalne traktowanie. | cnn2 | 3.53 | 1.58 | 0.17 | -0.48 |
| It really makes me angry when others criticize my group. | Naprawdę złości mnie, gdy inni krytykują naród polski. | cnn3 | 4.6 | 1.54 | -0.28 | -0.58 |
| If my group had a major say in the world, the world would be a much better place. | Niewielu ludzi rozumie jak ważny jest naród polski. | cnn4 | 4.27 | 1.51 | -0.18 | -0.39 |
| I will never be satisfied until my group gets the recognition it deserves. | Nie spocznę dopóki Polacy nie spotkają się z uznaniem, na jakie zasługują. | cnn5 | 3.73 | 1.54 | -0.03 | -0.36 |

Source: Adapted from Golec de Zavala, Cichocka, Eidelson and Jayawickreme 2019

Figure i Histograms of collective narcissism (national) items

Table 2 below displays the coefficients from the graded response model estimation. The alpha (α) can be interpreted as a proxy of the item’s ability to discriminate individuals with different levels on the latent continuum. Higher values of α would indicate that the item’s capacity to differentiate individuals on this latent construct is higher. Beta (β) values are referred to as the *category thresholds*; they indicate the differences in cumulative probabilities of choosing a particular response category compared to the probability of choosing another category. Coefficients ranging from the negative to the positive indicate that the item is capable of capturing negative as well as the positive poles of the latent continuum. In other words, we see the accuracy range of the measurement instrument and its capacity to capture the trait at each level of the latent construct.

These values are displayed on the individual plots in Figure 2. Looking at the IIC, a visual heuristic would indicate that the first item (cnn1) provides the most information to measure the latent trait. While the x-axis is the latent trait continuum, y-axis displays the information (related to the concept of reliability) of the survey-item; that is how accurate it would be to estimate the latent trait from this item. The higher, more peaked and narrower curves are more informative. That means they provide more information about the latent trait and have more ability to discriminate individuals on the latent trait.

On the CCC plot, the y-axis of the plot is the probability of endorsing one of the response categories. The orderly fashion of the curves indicates that the more collective narcissistic an individual is, the more probable that this individual will endorse a higher category.

Table 2 Collective narcissism (national), item coefficients from item response theory (IRT), graded response model (GRM)

|  |  |  |
| --- | --- | --- |
| **Variable abbreviation** | **Discrimination** | **Category thresholds** |
|  | **α** | **β1** | **β2** | **β3** | **β4** | **β5** | **β6** |
| cnn1 | 3.682 | -1.432 | -0.958 | -0.365 | 0.458 | 0.982 | 1.661 |
| cnn2 | 3.452 | -1.273 | -0.662 | -0.127 | 0.829 | 1.284 | 1.911 |
| cnn3 | 2.598 | -2.366 | -1.416 | -0.841 | -0.131 | 0.638 | 1.408 |
| cnn4 | 2.872 | -1.979 | -1.267 | -0.727 | 0.25 | 0.859 | 1.738 |
| cnn5 | 3.071 | -1.388 | -0.845 | -0.389 | 0.732 | 1.279 | 1.975 |

Figure 2 Item response theory (IRT) graded response model (GRM) results

The test information and standard error plot indicate that measurement error for the overall scale approaches the minimum within the -4 to 4 range complementing the information coming from the individual items (all items can capture negative as well as the positive side of the trait). An s shape curve is desirable for the test characteristic curve, which is the sum of item characteristic curves representing the expected score on the instrument. Here, the overall scale is not perfect but acceptable.

After here, all the heuristics mentioned below apply to all the other IRT results below.

Table 3 Descriptive statistics for collective narcissism (Catholic)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| *Item Wording in English* | *Item wording in Polish* | *Variable abbreviation* | *Mean* | *SD* | *Skew* | *Kurtosis* |
| My group deserves special treatment. | Gdyby Kościół Katolicki miał więcej do powiedzenia w świecie, świat byłby o wiele lepszym miejscem. | cnc1 | 3.94 | 1.63 | -0.05 | -0.58 |
| Not many people seem to fully understand the importance of my group. | Kościół Katolicki zasługuje na specjalne traktowanie. | cnc2 | 3.53 | 1.58 | 0.17 | -0.48 |
| It really makes me angry when others criticize my group. | Naprawdę złości mnie, gdy inni krytykują Kościół Katolicki. | cnc3 | 4.6 | 1.54 | -0.28 | -0.58 |
| If my group had a major say in the world, the world would be a much better place. | Niewielu ludzi rozumie jak ważny jest Kościół Katolicki. | cnc4 | 4.27 | 1.51 | -0.18 | -0.39 |
| I will never be satisfied until my group gets the recognition it deserves. | Nie spocznę dopóki Kościół Katolicki nie spotka się z uznaniem, na jakie zasługuje. | cnc5 | 3.73 | 1.54 | -0.03 | -0.36 |

Source: Adapted from Golec de Zavala, Cichocka, Eidelson and Jayawickreme 2019

Figure 3 Histograms pf collective narcissism (Catholic) items

Table 4 Collective nationalism (Catholic), item coefficients from IRT GRM

|  |  |  |
| --- | --- | --- |
| **Variable abbreviation** | **Discrimination** | **Category thresholds** |
|  | **α** | **β1** | **β2** | **β3** | **β4** | **β5** | **β6** |
| cnc1 | 4.386 | -0.423 | -0.066 | 0.248 | 0.967 | 1.398 | 1.799 |
| cnc2 | 5.389 | -0.308 | 0.095 | 0.466 | 1.125 | 1.573 | 2.149 |
| cnc3 | 3.766 | -0.754 | -0.186 | 0.187 | 0.832 | 1.207 | 1.802 |
| cnc4 | 3.29 | -0.895 | -0.477 | -0.139 | 0.829 | 1.327 | 1.979 |
| cnc5 | 4.288 | -0.392 | 0.063 | 0.4 | 1.201 | 1.712 | 2.267 |

Figure 4 IRT GRM results. ICC = item characteristic curves; CCC = category characteristic curves; I & SE = test information & standard error; TCC = test characteristic curve

Figure 5 Collective narcissism measurement model

Table 5 Goodness of fit statistics for the higher-order collective narcissism measurement model. gCN = general collective narcissism; CNn = collective narcissism (national); CNr = collective narcissism (Catholic).

|  |  |
| --- | --- |
| **Robust χ2 (df)**: | 102.738\*\*\*(33) |
| **Scaling correction factor for the Yuan-Bentler correction** | 1.333 |
| **Robust** **CFI**: | 0.980 |
| **Robust TLI:** | 0.973 |
| **Robust RMSEA (P-value) 90 % CI**: | 0.072 (0.041) 0.057 0.088 |
| **SRMR**: | 0.025 |
| **McDonald’s omega (ω) total** | 0.96 |
| **ω collective narcissism national**  | 0.92 |
| **ω collective narcissism Catholic** | 0.94 |
| **Reliability values at level 1:** 0.76; **Reliability values at level 2:** 0.79; **Partial reliability value at level 1:** 0.95 |
| All paths are significant at p < 0.001 level.**χ2 (df)** = chi-square & degrees of freedom (good fit indicated by p>0.05); **CFI** = Comparative Fit Index (closer to 1 is better, good fit indicated by >.95); **TLI** = Tucker-Lewis Index (closer to 1 is better, good fit indicated by >.95); **RMSEA** = Root Mean Square Error of Approximation (good fit indicated by RMSEA < 0.06 & P-value > 0.05); **SRMR** = Standardized Root Mean Square Residual (good fit indicated by SRMR < 0.05) (Kline, 2016; Hu and Bentler, 1999). McDonald’s (1999) omega (ω) is known to be a better indicator for the reliability of multi-dimensional CFAs with *N*>1000 (Crutzen and Peters, 2015; Rodriguez et al., 2016; Revelle and Zinbarg, 2009). While higher ω correspond to higher reliability, ωtotal gives the reliability estimate of the overall variance in the data that is due to a general factor as well as the specific factors (Revelle and Condon, 2018). See McNeish (2018) for a review of drawbacks of Cronbach’s alpha (α) and its alternatives including the ω. |

**Modern Homonegativity Scale**

Table 6 Descriptive statistics for modern homonegativity scale – gay men

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| *Item wording in English* | *Item wording in Polish* | *Variable abbreviation* | *Mean* | *SD* | *Skew* | *Kurtosis* |
| Many gay men use their sexual orientation so that they can obtain special privileges. | Wiele osób homoseksualnych, wykorzystuje swoją orientację do osiągania dodatkowych przywilejów. | mhs1 | 4.42 | 1.67 | -0.14 | -0.69 |
| Gay men seem to focus on the ways in which they differ from heterosexuals, and ignore the ways in which they are the same. | Osoby homoseksualne sprawiają wrażenie, jakby koncertowały się na tym, co ich odróżnia od osób heteroseksualnych, a nie na tym, co ich łączy. | mhs2 | 4.56 | 1.53 | -0.29 | -0.28 |
| Gay men do not have all the rights they need (R). | Homoseksualistom nie przysługują wszystkie potrzebne im prawa. | mhs3 | 4.28 | 1.7 | -0.03 | -0.67 |
| The notion of universities providing students with undergraduate degrees in Gay and Lesbian Studies is ridiculous. | Fakt, że niektóre uniwersytety oferują studia z „gender studies”, jest niedorzeczny. | mhs4 | 4.44 | 1.75 | -0.21 | -0.74 |
|  | Media poświęcają zbyt wiele uwagi tematyce homoseksualizmu. | mhs5 | 4.55 | 1.65 | -0.29 | -0.52 |
| Celebrations such as “Gay Pride Day” are ridiculous because they assume that an individual’s sexual orientation should constitute a source of pride. | Marsze i imprezy, takie jak „Parada Równości”, są absurdalne, ponieważ zakładają, że orientacja seksualna powinna być powodem dumy. | mhs6 | 4.42 | 1.9 | -0.24 | -0.96 |
| Gay men still need to protest for equal rights (R). | Homoseksualiści wciąż muszą walczyć o swoje prawa. | mhs7 | 3.7 | 1.55 | 0.29 | -0.34 |
| Gay men should stop shoving their lifestyle down other people’s throats. | Homoseksualiści powinny przestać narzucać innym swój styl bycia. | mhs8 | 5.08 | 1.61 | -0.73 | 0.11 |
| If gay men want to be treated like everyone else, then they need to stop making such a fuss about their sexuality/culture. | Jeżeli homoseksualiści oczekują równego traktowania, to powinni przestać absorbować innych swoją orientacją. | mhs9 | 4.93 | 1.61 | -0.49 | -0.38 |
| Gay men who are “out of the closet” should be admired for their courage (R). | Osoby homoseksualne, które „wyszły z szafy”, powinny być chwalone za swoją odwagę. | mhs10 | 4.29 | 1.46 | 0.02 | -0.29 |
| Gay men should stop complaining about the way they are treated in society, and simply get on with their lives. | Homoseksualiści powinni przestać narzekać na sposób, w jaki są traktowani przez społeczeństwo, i zająć się swoim życiem. | mhs11 | 4.67 | 1.66 | -0.38 | -0.61 |
| In today’s tough economic times, Poles’ taxes shouldn’t be used to support gay men’s organizations. | W dzisiejszych, trudnych ekonomicznie czasach podatki Polaków nie powinny być przeznaczane na wsparcie osób i organizacji, które zajmują się codziennym funkcjonowaniem homoseksualistów. | mhs12 | 4.4 | 1.82 | -0.2 | -0.84 |
| Gay men have become far too confrontational in their demand for equal rights. | Homoseksualiści stali się zdecydowanie za bardzo roszczeniowi, jeśli chodzi o respektowanie ich prawa do funkcjonowania na równi z osobami heteroseksualnymi | mhs13 | 4.62 | 1.77 | -0.35 | -0.72 |

Source: Adapted from Morrison and Morrison 2002

Figure 6 Histograms of modern homonegativity scale items used in Study 1

Table 7 Modern homonegativity Scale, item coefficients from IRT GRM

|  |  |  |
| --- | --- | --- |
| **Variable abbreviation** | **Discrimination** | **Category thresholds** |
|  | **α** | **β1** | **β2** | **β3** | **β4** | **β5** | **β6** |
| mhs1 | 2.855 | -1.868 | -1.233 | -0.767 | 0.084 | 0.598 | 1.234 |
| mhs2 | 2.587 | -2.071 | -1.447 | -1.035 | 0.022 | 0.599 | 1.446 |
| mhs3 | 0.367 | -7.25 | -4.771 | -2.482 | 1.375 | 3.043 | 4.948 |
| mhs4 | 2.447 | -1.752 | -1.171 | -0.839 | 0.13 | 0.568 | 1.221 |
| mhs5 | 2.813 | -1.803 | -1.374 | -0.866 | -0.064 | 0.528 | 1.211 |
| mhs6 | 3.221 | -1.408 | -1.031 | -0.685 | -0.009 | 0.394 | 0.937 |
| mhs7 | 2.112 | -1.787 | -1.017 | -0.14 | 0.797 | 1.321 | 2.039 |
| mhs8 | 3.44 | -1.755 | -1.46 | -1.249 | -0.447 | 0.138 | 0.796 |
| mhs9 | 3.743 | -1.965 | -1.387 | -1.014 | -0.329 | 0.276 | 0.829 |
| mhs10 | 1.543 | -2.791 | -1.757 | -1.024 | 0.393 | 1.055 | 2 |
| mhs11 | 3.774 | -1.845 | -1.219 | -0.796 | -0.22 | 0.4 | 1.079 |
| mhs12 | 2.447 | -1.635 | -1.131 | -0.779 | 0.081 | 0.533 | 1.09 |
| mhs13 | 4.597 | -1.571 | -1.087 | -0.758 | -0.12 | 0.373 | 0.896 |

Figure 7 IRT GRM results.

 ICC = item characteristic curves; CCC = category characteristic curves; I & SE = test information & standard error; TCC = test characteristic curve

Figure 8 Alternative measurement models for modern homonegativity scale

Table 8 Goodness of fit statistics for modern homonegativity scale. mhs = modern homonegativity scale

|  |  |  |
| --- | --- | --- |
|  | **Long scale with all items** | **Refined/shortened scale** |
| **Robust χ2 (df)**: | 146.587\*\*\* (65) | 6.250\* (2) |
| **Scaling correction factor for the Yuan-Bentler correction** | 1.414 | 1.325 |
| **Robust** **CFI**: | 0.977 | 0.997 |
| **Robust TLI:** | 0.973 | 0.990 |
| **Robust RMSEA (P-value) 90 % CI**: | 0.057 (0.629) 0.045 0.070 | 0.072 (0.268) 0.010 0.139 |
| **SRMR**: | 0.027 | 0.008 |
| **McDonald’s omega (ω) total** | 0.94 | 0.92 |
| **ω modern homonegativity** | 0.94 | 0.92 |
| All paths are significant at p < 0.001 level, except mhs3 (p < 0.05) in the model with all indicators. |

Table 9 Modern homonegativity scale, chi square difference test for long and short/revised measurement models

|  |
| --- |
| Scaled Chi Square Difference Test |
|  | **Df** | **AIC** | **BIC** | **Chisq** | **Chisq diff** | **Df diff** | **Pr(>Chisq)** |
| Long model | 65 | 15117.2 | 15284.8 | 146.587 |  |  |  |
| Revised/short model | 2 | 4553.9 | 4605.5 | 6.250 | 140.337 | 63 | < .0000 |

Judging by the item information curves (IIC) and the category characteristic curves (CCC), there are quite a few bad items, which can be dropped (i.e. there is literally no information in mhs3). For parsimony and to improve the measurement model, we decided to keep only the best four items in the modern homonegativity scale. These items are mh8, mh9, mh11 and mh13. The dropped items either have low information or their CCCs indicate that the response options are not behaving in the intended ways (i.e. mhs10’s CCCs are much wider than desired; narrow and orderly curves indicate the response categories are functioning well).

We fitted two confirmatory factor analysis models (one with all the indicators and one with the four items) and compared their goodness of fit statistics with a chi-square test. We also pay attention to the overall goodness of fit statistics. Clearly, the revised/shortened model does a better job of measuring the construct parsimoniously. Therefore we decided to keep the revised/shortened measurement model for the modern homonegativity scale.

**Traditional Beliefs about Gender and Gender Identity**

Table 10 Descriptive statistics for Traditional beliefs about Gender & Gender Identity Scale

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| *Item wording in English* | *Item wording in Polish* | *Variable abbreviation* | *Mean* | *SD* | *Skew* | *Kurtosis* |
| It’s important that men appear masculine and that women appear feminine | To ważne by mężczyźni byli męscy, a kobiety kobiece. | genderrole1 | 5.07 | 1.42 | -0.57 | 0.11 |
| It is inappropriate for a man to use clear nail polish on his fingernails | Mężczyźnie nie przystoi malowanie paznokci nawet bezbarwnym lakierem. | genderrole2 | 4.74 | 1.69 | -0.4 | -0.62 |
| If the aims of women’s liberation are met, men will lose more than they will gain | Mężczyźni więcej tracą niż zyskują na emancypacji kobiet. | genderrole3 | 3.63 | 1.41 | -0.04 | -0.21 |
| A woman needs the support of a man to advance professionally | Kobieta potrzebuje wsparcia mężczyzny by osiągnąć zawodowy sukces. | genderrole4 | 3.24 | 1.65 | 0.33 | -0.71 |
| Children raised by single mothers are usually worse off compared to children raised by married couples | Dzieci wychowywane przez samotne matki są w gorszej sytuacji niż dzieci wychowywane przez zamężne pary. | genderrole5 | 4.37 | 1.69 | -0.41 | -0.57 |
| Men who end up gay probably didn’t have strong male role models during their childhood | Mężczyźni, który są gejami prawdopodobnie nie mieli silnych wzorców męskości w dzieciństwie. | genderrole6 | 3.58 | 1.59 | 0.07 | -0.62 |
| A man who is vulnerable is a sissy | Wrażliwi mężczyźni to maminsynki. | genderrole7 | 2.75 | 1.36 | 0.67 | 0.16 |
| Openly expressing my affection to another person of my own sex is difficult for me because I don’t want others to think I’m gay | Otwarte okazywanie uczuć osobom tej samej płci co moja jest dla mnie trudne, ponieważ nie chcę by inni myśleli, że jestem orientacji homoseksualnej. | genderrole8 | 3.96 | 1.54 | -0.05 | -0.5 |
| I would feel comfortable attending social functions where the majority of people are homosexuals of my own sex (R) | Czułbym/łabym się komfortowo bawiąc się wśród osób homoseksualnych tej samej płci, co moja. | genderrole9 | 4.31 | 1.57 | 0.04 | -0.43 |
| I would feel comfortable knowing that members of my sex found me Attractive (R) | Czułbym/łabym się komfortowo wiedząc, że ludzie tej samej płci, co moja uważają mnie za osobę atrakcyjną. | genderrole10 | 3.91 | 1.49 | 0.23 | -0.22 |
| If a member of my sex made a sexual advance toward me I wouldfeel angry | Gdyby zalecał się do mnie ktoś tej samej płci co moja byłbym/łabym zły/a. | genderrole11 | 4.89 | 1.64 | -0.43 | -0.48 |
| I would be comfortable if I found myself attracted to a member of my sex (R) | Czułbym/łabym się w porządku, gdybym dowiedział(a) się, że jestem atrakcyjny/a dla osoby tej samej płci, co moja. | genderrole12 | 4.29 | 1.66 | 0.1 | -0.76 |
| I would feel nervous being in a group of homosexuals of my own sex | Byłbym/abym zdenerwowany/a przebywając w grupie osób homoseksualnych tej samej płci, co moja. | genderrole13 | 3.67 | 1.64 | 0.16 | -0.72 |
| I would feel at ease conversing alone with a homosexual person of my own sex (R) | Z łatwością rozmawiał(a)bym sam na sam z osobą homoseksualną tej samej płci, co moja. | genderrole14 | 3.03 | 1.47 | 0.71 | 0.37 |
| I would feel comfortable with being labeled as homosexual (R) | Czułbym/abym się w porządku gdyby ktoś nazwał mnie gejem/lesbijką. | genderrole15 | 2.41 | 1.41 | 0.75 | -0.16 |

Source: Adapted from Dasgupta and Rivera 2006

Figure 9 Histograms of traditional beliefs about gender roles & gender identity scale items used in Study 1

Table 11 Traditional Beliefs about Gender, item coefficients from IRT GRM

|  |  |  |
| --- | --- | --- |
| **Variable abbreviation** | **Discrimination** | **Category thresholds** |
|  | **α** | **β1** | **β2** | **β3** | **β4** | **β5** | **β6** |
| genderrole1 | 1.374 | -3.497 | -2.588 | -1.936 | -0.631 | 0.428 | 1.465 |
| genderrole2 | 1.636 | -2.48 | -1.773 | -1.102 | -0.139 | 0.444 | 1.262 |
| genderrole3 | 1.002 | -2.627 | -1.478 | -0.509 | 1.577 | 2.524 | 4.213 |
| genderrole4 | 1.247 | -1.458 | -0.523 | 0.234 | 1.294 | 2.12 | 3.221 |
| genderrole5 | 0.727 | -3.539 | -2.425 | -1.54 | -0.082 | 1.563 | 3.311 |
| genderrole6 | 1.982 | -1.519 | -0.729 | -0.234 | 0.857 | 1.592 | 2.321 |
| genderrole7 | 1.018 | -1.682 | -0.083 | 1.031 | 2.528 | 3.744 | 4.601 |
| genderrole8 | 1.179 | -2.645 | -1.557 | -0.686 | 0.693 | 1.639 | 2.932 |

Table 12 Gender identity, item coefficients from IRT GRM

|  |  |  |
| --- | --- | --- |
| **Variable abbreviation** | **Discrimination** | **Category thresholds** |
|  | **α** | **β1** | **β2** | **β3** | **β4** | **β5** | **β6** |
| genderrole9 | 3.117 | -1.941 | -1.298 | -0.693 | 0.322 | 0.77 | 1.274 |
| genderrole10 | 1.754 | -2.313 | -1.266 | -0.525 | 0.796  | 1.351 | 2.066 |
| genderrole11 | 2.107 | -2.319 | -1.712 | -1.156 | -0.297 | 0.361 | 0.939 |
| genderrole12 | 2.655 | -2.101 | -1.247 | -0.53 | 0.293 | 0.752 | 1.219 |
| genderrole13 | 2.067 | -1.636 | -0.823 | -0.165 | 0.583 | 1.301 | 2.139 |
| genderrole14 | 1.808 | -1.38 | -0.428 | 0.528 | 1.48 | 2.013 | 2.526 |
| genderrole15 | -1.463 | 0.495 | -0.288 | -0.944 | -2.42 | -2.944 | -4.039 |

Figure 10 IRT GRM results.

ICC = item characteristic curves; CCC = category characteristic curves; I & SE = test information & standard error; TCC = test characteristic curve

Figure 11 IRT GRM results.

*ICC = item characteristic curves; CCC = category characteristic curves; I & SE = test information & standard error; TCC = test characteristic curve*

Figure 12 Alternative measurement models for Traditional beliefs about gender roles and gender identity

Table 13 Goodness of fit statistics for Traditional beliefs about gender and gender identity.Gbe = traditional belief about gender; Gid = gender identity

|  |  |  |
| --- | --- | --- |
|  | **Long scale with all items** | **Refined/shortened scale** |
| **Robust χ2 (df)**: | 471.366\*\*\* (89) | 103.108\*\*\* (19) |
| **Scaling correction factor for the Yuan-Bentler correction** | 1.304 | 1.348 |
| **Robust** **CFI**: | 0.835 | 0.928 |
| **Robust TLI:** | 0.805 | 0.895 |
| **Robust RMSEA (P-value) 90 % CI**: | 0.102 (0) 0.093 0.111 | 0.105 (0) 0.085 0.125 |
| **SRMR**: | 0.065 | 0.045 |
| **McDonald’s omega (ω) total** | 0.86 | 0.87 |
| **ω traditional belief about gender** | 0.74 | 0.70 |
| **ω gender identity** | 0.79 | 0.84 |
| All paths are significant at p < 0.001 level. |

Table 14 Traditional beliefs about gender and gender identity, chi square difference test for long and short/revised measurement models

|  |
| --- |
| Scaled Chi Square Difference Test |
|  | **Df** | **AIC** | **BIC** | **Chisq** | **Chisq diff** | **Df diff** | **Pr(>Chisq)** |
| Long model | 89 | 20648 | 20845 | 471.366 |  |  |  |
| Revised/short model | 19 | 10885 | 10993 | 103.108 | 368.258 | 70 | < .0000 |

Judging by the item information curves (IIC) and the category characteristic curves (CCC), there are quite a few bad items, which can be dropped on both factors (i.e. genderrole5, genderrole15). For parsimony and to improve the measurement model, we decided to keep only the best four items in the modern homonegativity scale. These items are items 1, 2, 6, 7, 9,11, 12, 13.

We fitted two confirmatory factor analysis models (one with all the indicators and one with the four items) and compared their goodness of fit statistics (GoFs) with a chi-square test. Long model’s GoFs are all below the recommended cut-off criteria. Revised/short models GoFs are improved; CFI and SRMR indicate acceptable fit. Judging by these and the revised version having a significantly better fit, we decided to keep the revised/shortened measurement model for traditional beliefs about gender and gender identity.

Developing the new scales of the gay threat, religious gender roles, and national gender roles

Here, we have16 previously not utilised items (see Table 15 below) that were designed to measure three constructs: (1) national gay threat (nGR), (2) religious gender roles (rGR), and (3) national gender roles (nGR). We applied the same protocol and the same techniques we mentioned above (IRT for item reduction and CFA for testing the validity of the measurement model), however, here, we have a few supplementary pre-analyses. In the previous first step, we ran a parallel analysis (PA [Horn 1965], see Figure 14), followed by a very simple structure (VSS [Revelle and Condon 2018]) to check the dimensionality. In a follow-up step, before the IRT, we fitted an exploratory structural equation model (ESEM) to examine the loadings. Factor loadings from the ESEM and the path diagram are displayed below (see Table 15 and Figure 15).

Table 15 Items Explored for the Gay Threat, Religious Gender Roles, and National Gender Roles Scales

|  |  |  |  |
| --- | --- | --- | --- |
| Item Abbreviation | Construct | Item wording in the original language | English translation |
| gaythreat1 | nGR | W obrębie rodziny to na kobiecie ciąży obowiązek nauczania dzieci kultury i tradycji narodu. | Within the family, it is the woman’s responsibility to teach the children the nation’s culture and traditions.  |
| gaythreat2 | rGR | To religia określa najlepiej rolę kobiety i mężczyzny. | It is the religion that determines best the role of a woman and a man. |
| gaythreat3 | rGR | To religia określa jakie zachowania przystoją mężczyznom a jakie kobietom. | It is the religion that determines which behaviors are appropriate for men and women. |
| gaythreat4 | rGR | Kobieta powinna znać miejsce jakie określa dla niej Kościół. | A woman should know where the Church places her. |
| gaythreat5 | nGR | Kobiety wychodzące za mąż za obcokrajowców zagrażają dalszemu istnieniu swojego narodu. | Women marrying outside their ethnic group threaten the continued existence of the nation. |
| gaythreat6 | nGR | Kobiety, które nie mają dzieci, zagrażają dalszemu istnieniu swojego narodu. | Women who do not have children threaten the continued existence of the nation. |
| gaythreat7 | nGR | Kobiety powinny ‘szanować się’ dla dobra narodu. | Women should adhere to strict standards of respectability for the good of the nation. |
| gaythreat8 | nGR | Mężczyźni mogą kontrolować zachowanie kobiet dla dobra narodu. | It is acceptable for men to control the behaviour of women for the good of the nation. |
| gaythreat9 | nGR | Obowiązkiem każdego człowieka jest militarna obrona narodu. | It is a man’s responsibility to defend the nation militarily. |
| gaythreat10 | nGT | Nie mając dzieci, geje i lesbijki zagrażają dalszemu istnieniu swojego narodu. | By not having children, gays and lesbians threaten the continued existence of the nation. |
| gaythreat11 | nGT | Geje nie posiadają cech potrzebnych do militarnej obrony narodu. | Gay men do not possess the qualities needed to defend the nation militarily. |
| gaythreat12 | nGT | Homoseksualizm to zachodni import. | Homosexuality is a Western import. |
| gaythreat13 | rGR | Prawdziwy Polak to katolik. | The true Pole is catholic. |
| gaythreat14 | nGT | Homoseksualizm jest zagrożeniem dla polskości. | Homosexuality is dangerous for Poland. |
| gaythreat15 | nGR | Gender jest zagrożeniem dla polskości. | The Gender ideology is dangerous for the Polishness. |
| gaythreat16 | nGR | Równouprawnienie kobiet jest zagrożeniem dla polskości. | Gender equality is dangerous for the Polishness. |
| nGR = national gender roles; rGR = religious gender roles; nGT = national gay threat. |

Table 16 Descriptive statistics for National + religious gender roles and national gay threat

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Item wording* | *Variable abbreviation* | *Mean* | *SD* | *Skew* | *Kurtosis* |
| W obrębie rodziny to na kobiecie ciąży obowiązek nauczania dzieci kultury i tradycji narodu. | gaythreat1 | 2.79 | 1.54 | 0.51 | -0.59 |
| To religia określa najlepiej rolę kobiety i mężczyzny. | gaythreat2 | 2.69 | 1.7 | 0.7 | -0.55 |
| To religia określa jakie zachowania przystoją mężczyznom a jakie kobietom. | gaythreat3 | 2.75 | 1.72 | 0.6 | -0.72 |
| Kobieta powinna znać miejsce jakie określa dla niej Kościół. | gaythreat4 | 2.5 | 1.59 | 0.75 | -0.43 |
| Kobiety wychodzące za mąż za obcokrajowców zagrażają dalszemu istnieniu swojego narodu. | gaythreat5 | 2.66 | 1.54 | 0.71 | -0.28 |
| Kobiety, które nie mają dzieci, zagrażają dalszemu istnieniu swojego narodu. | gaythreat6 | 2.37 | 1.51 | 0.9 | -0.11 |
| Kobiety powinny ‘szanować się’ dla dobra narodu. | gaythreat7 | 4.06 | 1.75 | -0.35 | -0.71 |
| Mężczyźni mogą kontrolować zachowanie kobiet dla dobra narodu. | gaythreat8 | 2.14 | 1.35 | 0.98 | 0.1 |
| Obowiązkiem każdego człowieka jest militarna obrona narodu. | gaythreat9 | 4.55 | 1.69 | -0.53 | -0.35 |
| Nie mając dzieci, geje i lesbijki zagrażają dalszemu istnieniu swojego narodu. | gaythreat10 | 3.09 | 1.83 | 0.52 | -0.77 |
| Geje nie posiadają cech potrzebnych do militarnej obrony narodu. | gaythreat11 | 3.06 | 1.72 | 0.49 | -0.63 |
| Homoseksualizm to zachodni import. | gaythreat12 | 3.14 | 1.84 | 0.49 | -0.8 |
| Prawdziwy Polak to Katolik. | gaythreat13 | 2.75 | 1.72 | 0.66 | -0.56 |
| Homoseksualizm jest zagrożeniem dla Polskości. | gaythreat14 | 3.2 | 1.93 | 0.48 | -0.87 |
| Gender jest zagrożeniem dla Polskości. | gaythreat15 | 3.5 | 1.94 | 0.29 | -1.01 |
| Równouprawnienie kobiet jest zagrożeniem dla Polskości. | gaythreat16 | 1.94 | 1.2 | 1.19 | 0.59 |

Figure 13 Histograms of gay threat and national & religious gender roles items used in study 1

Figure 14 Parallel analysis: National and religious gender roles and gay threat items

Parallel analysis suggests four factors; very simple structure analysis[[2]](#footnote-1) suggests uni-dimensional or bi-dimensional factor structures. The Velicer MAP suggests 2 factors. Given the variety of suggestions based on multiple techniques to estimate the number of factors, ESEM is a suitable way to proceed for an optimal solution. We fit an ESEM with three factors and goemin rotation.

Figure 15 ESEM: National and religious gender roles & gay threat items in Study 1

Table 17 National + religious roles and national gay threat items, factor loadings for ESEM

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Latent Factor | Indicator | B | SE | Z | Beta | sig |
| f1 | gaythreat1 | 0.673 | 0.094 | 7.138 | 0.438 | \*\*\* |
| f1 | gaythreat2 | 1.514 | 0.088 | 17.201 | 0.890 | \*\*\* |
| f1 | gaythreat3 | 1.529 | 0.093 | 16.461 | 0.891 | \*\*\* |
| f1 | gaythreat4 | 1.389 | 0.064 | 21.839 | 0.877 | \*\*\* |
| f1 | gaythreat5 | -0.004 | 0.005 | -0.827 | -0.003 |  |
| f1 | gaythreat6 | 0.084 | 0.108 | 0.777 | 0.055 |  |
| f1 | gaythreat7 | 0.353 | 0.103 | 3.437 | 0.202 | \*\*\* |
| f1 | gaythreat8 | 0.683 | 0.094 | 7.266 | 0.506 | \*\*\* |
| f1 | gaythreat9 | 0.096 | 0.113 | 0.854 | 0.057 |  |
| f1 | gaythreat10 | -0.097 | 0.101 | -0.959 | -0.053 |  |
| f1 | gaythreat11 | 0.103 | 0.099 | 1.040 | 0.060 |  |
| f1 | gaythreat12 | 0.055 | 0.113 | 0.488 | 0.030 |  |
| f1 | gaythreat13 | 0.997 | 0.088 | 11.326 | 0.580 | \*\*\* |
| f1 | gaythreat14 | -0.118 | 0.110 | -1.074 | -0.062 |  |
| f1 | gaythreat15 | 0.003 | 0.019 | 0.175 | 0.002 |  |
| f1 | gaythreat16 | 0.423 | 0.085 | 4.969 | 0.352 | \*\*\* |
| f2 | gaythreat1 | 0.289 | 0.081 | 3.573 | 0.188 | \*\*\* |
| f2 | gaythreat2 | -0.030 | 0.092 | -0.327 | -0.018 |  |
| f2 | gaythreat3 | -0.018 | 0.090 | -0.197 | -0.010 |  |
| f2 | gaythreat4 | 0.065 | 0.081 | 0.798 | 0.041 |  |
| f2 | gaythreat5 | 0.710 | 0.081 | 8.716 | 0.460 | \*\*\* |
| f2 | gaythreat6 | 0.744 | 0.090 | 8.255 | 0.494 | \*\*\* |
| f2 | gaythreat7 | 0.091 | 0.095 | 0.954 | 0.052 |  |
| f2 | gaythreat8 | 0.632 | 0.080 | 7.925 | 0.469 | \*\*\* |
| f2 | gaythreat9 | 0.073 | 0.103 | 0.707 | 0.043 |  |
| f2 | gaythreat10 | 0.391 | 0.085 | 4.590 | 0.214 | \*\*\* |
| f2 | gaythreat11 | 0.191 | 0.083 | 2.308 | 0.111 | \* |
| f2 | gaythreat12 | -0.148 | 0.081 | -1.836 | -0.081 |  |
| f2 | gaythreat13 | 0.005 | 0.017 | 0.306 | 0.003 |  |
| f2 | gaythreat14 | -0.018 | 0.042 | -0.420 | -0.009 |  |
| f2 | gaythreat15 | -0.083 | 0.088 | -0.943 | -0.043 |  |
| f2 | gaythreat16 | 0.490 | 0.075 | 6.574 | 0.408 | \*\*\* |
| f3 | gaythreat1 | 0.190 | 0.092 | 2.076 | 0.124 | \* |
| f3 | gaythreat2 | 0.015 | 0.068 | 0.220 | 0.009 |  |
| f3 | gaythreat3 | -0.098 | 0.085 | -1.154 | -0.057 |  |
| f3 | gaythreat4 | 0.003 | 0.017 | 0.169 | 0.002 |  |
| f3 | gaythreat5 | 0.763 | 0.105 | 7.248 | 0.495 | \*\*\* |
| f3 | gaythreat6 | 0.510 | 0.111 | 4.601 | 0.339 | \*\*\* |
| f3 | gaythreat7 | 0.813 | 0.104 | 7.837 | 0.465 | \*\*\* |
| f3 | gaythreat8 | -0.005 | 0.003 | -1.864 | -0.004 |  |
| f3 | gaythreat9 | 0.582 | 0.113 | 5.145 | 0.346 | \*\*\* |
| f3 | gaythreat10 | 1.395 | 0.111 | 12.541 | 0.762 | \*\*\* |
| f3 | gaythreat11 | 1.103 | 0.099 | 11.092 | 0.643 | \*\*\* |
| f3 | gaythreat12 | 1.554 | 0.110 | 14.067 | 0.847 | \*\*\* |
| f3 | gaythreat13 | 0.410 | 0.085 | 4.795 | 0.238 | \*\*\* |
| f3 | gaythreat14 | 1.873 | 0.104 | 18.070 | 0.974 | \*\*\* |
| f3 | gaythreat15 | 1.670 | 0.081 | 20.493 | 0.859 | \*\*\* |
| f3 | gaythreat16 | 0.105 | 0.076 | 1.381 | 0.088 |  |

Taking the cue from the significant factor loadings, we select item 2, 3, 4, 13 influenced by religious gender roles; items 1, 5, 6, 7, 8 influenced by national gender roles; and items 10, 11, 12, 14,15 influenced by national gender threat.

Table 18 Religious gender roles, item coefficients from item response theory (IRT),

graded response model (GRM)

|  |  |  |
| --- | --- | --- |
| **Variable abbreviation** | **Discrimination** | **Category thresholds** |
|  | **α** | **β1** | **β2** | **β3** | **β4** | **β5** | **β6** |
| gaythreat2 | 4.556 | -0.356 | 0.189 | 0.467 | 1.110 | 1.489 | 2.024 |
| gaythreat3 | 3.541 | 3.541 | 3.541 | 3.541 | 3.541 | 3.541 | 3.541 |
| gaythreat4 | 4.657 | 4.657 | 4.657 | 4.657 | 4.657 | 4.657 | 4.657 |
| gaythreat13 | 2.571 | 2.571 | 2.571 | 2.571 | 2.571 | 1.748 | 1.748 |

Table 19 National gender roles, item coefficients from item response theory (IRT),

graded response model (GRM)

|  |  |  |
| --- | --- | --- |
| **Variable abbreviation** | **Discrimination** | **Category thresholds** |
|  | **α** | **β1** | **β2** | **β3** | **β4** | **β5** | **β6** |
| gaythreat1 | 1.632 | -0.848 | 0.023 | 0.658 | 1.553 | 2.489 | 3.233 |
| gaythreat5 | 2.678 | -0.583 | 0.166 | 0.695 | 1.418 | 1.888 | 2.537 |
| gaythreat6 | 2.449 | -0.219 | 0.392 | 0.887 | 1.536 | 2.125 | 2.832 |
| gaythreat7 | 1.401 | -1.649 | -1.199 | -0.779 | 0.369 | 1.31 | 2.33 |
| gaythreat8 | 2.663 | -0.041 | 0.511 | 0.992 | 1.8665 | 2.448 | 3.14 |

Table 20 National gay threat, item coefficients from item response theory (IRT), graded response model (GRM)

|  |  |  |
| --- | --- | --- |
| **Variable abbreviation** | **Discrimination** | **Category thresholds** |
|  | **α** | **β1** | **β2** | **β3** | **β4** | **β5** | **β6** |
| gaythreat10 | 2.954 | -0.699 | -0.091 | 0.281 | 0.853 | 1.294 | 1.748 |
| gaythreat11 | 2.322 | -0.837 | -0.161 | 0.303 | 1.106 | 1.496 | 2.097 |
| gaythreat12 | 3.452 | -0.7 | -0.08 | 0.245 | 0.87 | 1.188 | 1.686 |
| gaythreat14 | 6.519 | -0.555 | -0.085 | 0.222 | 0.756 | 1.038 | 1.367 |
| gaythreat15 | 3.419 | -0.841 | -0.282 | 0.032 | 0.684 | 0.963 | 1.368 |

We kept all the items in the religious gender roles; in national gender roles, we kept 5, 6 & 8. The items in national gay threat do not perform very well; based on empirical evidence and on theoretical grounds, we keep items 12, 14.

Figure 16 Religious gender roles

Figure 17 National gender roles

Figure 18 Gay threat

Figure 19 Religious and national gender roles & national gay threat measurement model

Figure 20 *CFA: Refined gender roles and gay threat with higher-order gender roles*

Table 21 Goodness of fit statistics for National + religious gender roles and national gender threat. RGR(rGR) = religious gender roles; NGR (nGR) = national gender roles; GyT(nGT) = national gay threat; HO\_ = higher-order gender roles

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Long scale with all items** | **Refined/shortened scale** | **Model with the higher-order construct** |
| **Robust χ2 (df)**: | 256.358\*\*\* (74) | 90.902\*\*\* (24) |  | same as the refined scale |
| **Scaling correction factor for the Yuan-Bentler correction** | 1.439 | 1.461 |  | same as the refined scale |
| **Robust** **CFI**: | 0.951 | 0.970 |  | same as the refined scale |
| **Robust TLI:** | 0.939 | 0.955 |  | same as the refined scale |
| **Robust RMSEA (P-value) 90 % CI**: | 0.081 (0) 0.070 0.092 | 0.087 (0.003) 0.068 0.106 |  | same as the refined scale |
| **SRMR**: | 0.045 | 0.038 |  | same as the refined scale |
| **McDonald’s omega (ω) total** | 0.94 | 0.94 | **Reliability values at level 1** | 0.79 |
| **ω religious gender roles** | 0.91 | 0.91 | **Reliability values at level 2** | 0.88 |
| **ω national gender roles** | 0.82 | 0.79 | **Partial reliability value at level 1** | 0.91 |
| **ω gay threat** | 0.92 | 0.88 |  |  |
| All paths are significant at p < 0.001 level. |

Table 22 National + religious roles and national gender threat, chi square difference test for long and short/revised measurement models

|  |
| --- |
| Scaled Chi Square Difference Test |
|  | **Df** | **AIC** | **BIC** | **Chisq** | **Chisq diff** | **Df diff** | **Pr(>Chisq)** |
| Long model | 74 | 16549 | 16742 | 256.358 |  |  |  |
| Revised/short model | 24 | 10756 | 10885 | 132.79 | 90.92 | 24 | < .0000 |

Chi square test in Table 22 show that the revised/shortened version is significantly better than the longer version. Following up on this measurement model, we construct religious and national gender roles with a higher-order construct on theoretical grounds. The reliability values (Table 21) suggest that the second-order general gender roles (denoted as HO\_ in the path model) influencing religious and national roles is congruous.

Table 23 Full list of retained items for each scale used in both studies

|  |  |  |
| --- | --- | --- |
| *Variable abbreviation*  | *Item wording in English* | *Item wording in Polish* |
| ***Collective Narcissism (national)*** |
| cnn1 | My group deserves special treatment | Gdyby nar�d polski mial wiecej do powiedzenia w swiecie, swiat bylby o wiele lep |
| cnn2 | Not many people seem to fully understand the importance of my group | Nar�d polski zasluguje na specjalne traktowanie. |
| cnn3 | It really makes me angry when others criticize my group | Naprawde zlosci mnie, gdy inni krytykuja nar�d polski. |
| cnn4 | .If my group had a major say in the world, the world would be a much better place | Niewielu ludzi rozumie jak wazny jest nar�d polski. |
| cnn5 | I will never be satisfied until my group gets the recognition it deserves | Nie spoczne dop�ki Polacy nie spotkaja sie z uznaniem, na jakie zasluguja. |
| ***Collective Narcissism (Catholic)*** |
| cnc1 | My group deserves special treatment | Gdyby Kościół Katolicki miał więcej do powiedzenia w świecie, świat byłby o wiele lepszym miejscem. |
| cnc2 | Not many people seem to fully understand the importance of my group | Kościół Katolicki zasługuje na specjalne traktowanie. |
| cnc3 | It really makes me angry when others criticize my group | Naprawdę złości mnie, gdy inni krytykują Kościół Katolicki. |
| cnc4 | If my group had a major say in the world, the world would be a much better place | Niewielu ludzi rozumie jak ważny jest Kościół Katolicki. |
| cnc5 | I will never be satisfied until my group gets the recognition it deserves | Nie spocznę dopóki Kościół Katolicki nie spotka się z uznaniem, na jakie zasługuje. |
| New Scale: *Religious Gender Roles* |
| gaythreat2 | It is the religion that determines best the role of a woman and a man. | To religia określa najlepiej rolę kobiety i mężczyzny. |
| gaythreat3 | It is the religion that determines which behaviors are appropriate for men and women. | To religia określa jakie zachowania przystoją mężczyznom a jakie kobietom. |
| gaythreat4 | A woman should know where the Church places her. | Kobieta powinna znać miejsce jakie określa dla niej Kościół. |
| gaythreat13 | The true Pole is catholic. | Prawdziwy Polak to katolik |
| **New Scale: *National Gender Roles*** |
| gaythreat5 | Women marrying outside their ethnic group threaten the continued existence of the nation. | Kobiety wychodzące za mąż za obcokrajowców zagrażają dalszemu istnieniu swojego narodu. |
| gaythreat6 | Women who do not have children threaten the continued existence of the nation. | Kobiety, które nie mają dzieci, zagrażają dalszemu istnieniu swojego narodu. |
| gaythreat8 | It is acceptable for men to control the behaviour of women for the good of the nation | Mężczyźni mogą kontrolować zachowanie kobiet dla dobra narodu |
| **New Scale: *National Gay Threat*** |
| gaythreat12 | Homosexuality is a Western import | Homoseksualizm to zachodni import |
| gaythreat14 | Homosexuality is dangerous for Poland. | Homoseksualizm jest zagrożeniem dla polskości. |
| *Traditional Beliefs about Gender Roles* |
| genderrole1 | It’s important that men appear masculine and that women appear feminine | To ważne by mężczyźni byli męscy, a kobiety kobiece |
| genderrole2 | It is inappropriate for a man to use clear nail polish on his fingernails | Mężczyźnie nie przystoi malowanie paznokci nawet bezbarwnym lakierem |
| genderrole6 | Men who end up gay probably didn’t have strong male role models during their childhood | Mężczyźni, który są gejami prawdopodobnie nie mieli silnych wzorców męskości w dzieciństwie. |
| genderrole7 | A man who is vulnerable is a sissy | Wrażliwi mężczyźni to maminsynki. |
| ***Modern Homonegativity scale*** |
| mhs8 | Gay men should stop shoving their lifestyle down other people’s throats | Homoseksualiści powinny przestać narzucać innym swój styl bycia |
| mhs9 | If gay men want to be treated like everyone else, then they need to stop making such a fuss about their sexuality/culture | Jeżeli homoseksualiści oczekują równego traktowania, to powinni przestać absorbować innych swoją orientacją |
| mhs11 | Gay men should stop complaining about the way they are treated in society, and simply get on with their lives | Homoseksualiści powinni przestać narzekać na sposób, w jaki są traktowani przez społeczeństwo, i zająć się swoim życiem. |
| mhs13 | Gay men have become far too confrontational in their demand for equal rights | Homoseksualiści stali się zdecydowanie za bardzo roszczeniowi, jeśli chodzi o respektowanie ich prawa do funkcjonowania na równi z osobami heteroseksualnymi |

**Study 2 Replication**

We replicate the measurement models from Study 1 in a second independent sample. Below are the descriptive statistics and confirmatory factor analyses results.

**General Collective Narcissism**

Table 24 Descriptive statistics for Collective Narcissism (national & Catholic)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Item wording* | *Variable abbreviation* | *Mean* | *SD* | *Skew* | *Kurtosis* |
| *National* |
|  | cnn1 | 3.84 | 1.63 | -0.02 | -0.56 |
|  | cnn2 | 3.39 | 1.59 | 0.26 | -0.44 |
|  | cnn3 | 4.49 | 1.65 | -0.44 | -0.53 |
|  | cnn4 | 4.24 | 1.52 | -0.32 | -0.17 |
|  | cnn5 | 3.67 | 1.58 | -0.05 | -0.53 |
| *Catholic* |
|  | cnc1 | 3.04 | 1.91 | 0.49 | -0.95 |
|  | cnc2 | 2.74 | 1.71 | 0.66 | -0.48 |
|  | cnc3 | 3.19 | 1.85 | 0.35 | -0.95 |
|  | cnc4 | 3.64 | 1.84 | -0.01 | -0.97 |
|  | cnc5 | 2.75 | 1.66 | 0.53 | -0.7 |

Figure 21 *Histograms of Collective Narcissism (religious) items used in study 2 replication*

Figure 22 *Histograms of Collective Narcissism (religious) items used in study 2 replication*

Figure 23 *CFA: general (HO) Collective narcissism Study 2*

Table 25 Goodness of fit statistics for the higher-order collective narcissism measurement model. gCN = general collective narcissism; CNn = collective narcissism (national); CNr = collective narcissism (Catholic)

|  |  |
| --- | --- |
| **Robust χ2 (df)**: | 144.707\*\*\* (33) |
| **Scaling correction factor for the Yuan-Bentler correction** | 1.387 |
| **Robust** **CFI**: | 0.980 |
| **Robust TLI:** | 0.973 |
| **Robust RMSEA (P-value) 90 % CI**: | 0.073 (0.012) 0.061 0.085 |
| **SRMR**: | 0.019 |
| **McDonald’s omega (ω) total** | 0.96 |
| **ω national** | 0.91 |
| **ω Catholic** | 0.95 |
| **Reliability values at level 1:** 0.81; **Reliability values at level 2:** 0.85; **Partial reliability value at level 1:**0.95 |
| All paths are significant at p < 0.001 level. |

**Modern Homonegativity Scale**

Table 26 Descriptive statistics for Modern Homonegativity Scale – Gay Men

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Item wording* | *Variable abbreviation* | *Mean* | *SD* | *Skew* | *Kurtosis* |
|  | mhs8 | 5.06 | 1.66 | -0.67 | -0.09 |
|  | mhs9 | 4.97 | 1.65 | -0.65 | -0.19 |
|  | mhs11 | 4.59 | 1.78 | -0.36 | -0.78 |
|  | mhs13 | 4.6 | 1.8 | -0.31 | -0.82 |

Figure 24 *Histograms of modern homosexuality scale items used in study 2*

Figure 25 Modern homonegativity measurement model

Table 27 Goodness of fit statistics for Modern Homonegativity scale. mhs = modern homonegativity scale

|  |  |
| --- | --- |
| **Robust χ2 (df)**: | 7.613\* (2) |
| **Scaling correction factor for the Yuan-Bentler correction** | 2.186 |
| **Robust** **CFI**: | 0.996 |
| **Robust TLI:** | 0.987 |
| **Robust RMSEA (P-value) 90 % CI**: | 0.084 (0.308) 0.027 0.150 |
| **SRMR**: | 0.009 |
| **McDonald’s omega (ω) total** | 0.93 |
| **ω modern homonegativity** | 0.93 |
| All paths are significant at p < 0.001 level. |

**Traditional Beliefs about Gender Roles**

Table 28 Descriptive statistics for traditional beliefs about gender roles

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Item wording* | *Variable abbreviation* | *Mean* | *SD* | *Skew* | *Kurtosis* |
| Przed Toba 7 pytan. Przypominamy i bardzo prosimy, bys odpowiadal a} szczerze i w zgodzie ze swoimi przekonaniami. - To wazne by mezczyzni byli mescy, a kobiety kobiece. | genderrole1 | 5.05 | 1.47 | -0.78 | 0.45 |
| Przed Toba 7 pytan. Przypominamy i bardzo prosimy, bys odpowiadal a} szczerze i w zgodzie ze swoimi przekonaniami. - Mezczyznie nie przystoi malowanie paznokci nawet bezbarwnym lakierem. | genderrole2 | 4.84 | 1.76 | -0.51 | -0.63 |
| Przed Toba 7 pytan. Przypominamy i bardzo prosimy, bys odpowiada /a} szczerze i w zgodzie ze swoimi przekonaniami. - Mezczyzni, którzy sa gejami prawdopodobnie nie mieli silnych wzorc�w meskosci w dziecinstwie. | genderrole6 | 3.49 | 1.67 | 0.24 | -0.67 |
| Przed Toba 7 pytan. Przypominamy i bardzo prosimy, bys odpowiadal a} szczerze i w zgodzie ze swoimi przekonaniami. - Wrazliwi mezczyzni to maminsynki. | genderrole7 | 2.74 | 1.35 | 0.64 | 0.18 |

Figure 26 Histograms of traditional belief about gender roles items used in study 2 replication

Figure 27 Traditional beliefs about gender roles measurement model

Table 29 Goodness of fit statistics for modern homonegativity scale. mhs = modern homonegativity scale

|  |  |
| --- | --- |
| **Robust χ2 (df)**: | 33.953\*\*\* (2) |
| **Scaling correction factor for the Yuan-Bentler correction** | 1.133 |
| **Robust** **CFI**: | 0.961 |
| **Robust TLI:** | 0.884 |
| **Robust RMSEA (P-value) 90 % CI**: | 0.144 (0) 0.104 0.188 |
| **SRMR**: | 0.032 |
| **McDonald’s omega (ω) total** | 0.77 |
| **ω modern homonegativity** | 0.77 |
| All paths are significant at p < 0.001 level. |

**Religious + National Gender Roles and National Gay Threat**

Table 30 Descriptive statistics for religious + national gender roles and national gay threat

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Item wording* | *Variable abbreviation* | *Mean* | *SD* | *Skew* | *Kurtosis* |
| Przed Toba 8 pytan. Przypominamy i bardzo prosimy, bys odpowiadala} szczerze i w zgodzie ze swoimi przekonaniami. - To religia okresla najlepiej role kobiety i mezczyzny. | Relgen1 | 2.56 | 1.72 | 0.84 | -0.37 |
| Przed Toba 8 pytan. Przypominamy i bardzo prosimy, bys odpowiadala} szczerze i w zgodzie ze swoimi przekonaniami. - To religia okresla jakie zachowania przystoja mezczyznom a jakie kobietom. | Relgen2 | 2.66 | 1.73 | 0.72 | -0.55 |
| Przed Toba 8 pytan. Przypominamy i bardzo prosimy, bys odpowiadala} szczerze i w zgodzie ze swoimi przekonaniami. - Kobieta powinna znac miejsce jakie okresla dla niej Kosci�l. | Relgen3 | 2.4 | 1.63 | 0.93 | -0.11 |
| Przed Toba 8 pytan. Przypominamy i bardzo prosimy, bys odpowiadala} szczerze i w zgodzie ze swoimi przekonaniami. - Prawdziwy Polak to katolik. | Relgen4 | 2.6 | 1.75 | 0.8 | -0.48 |
| Przed Toba 8 pytan. Przypominamy i bardzo prosimy, bys odpowiadala} szczerze i w zgodzie ze swoimi przekonaniami. - Kobiety, które nie maja dzieci, zagrazaja dalszemu istnieniu swojego narodu. | Natgen1 | 2.42 | 1.61 | 1.01 | 0.13 |
| Przed Toba 8 pytan. Przypominamy i bardzo prosimy, bys odpowiadala} szczerze i w zgodzie ze swoimi przekonaniami. - Mezczyzni moga kontrolowac zachowanie kobiet dla dobra narodu. | Natgen3 | 2.19 | 1.43 | 1.19 | 0.87 |
| Przed Toba 8 pytan. Przypominamy i bardzo prosimy, bys odpowiadala} szczerze i w zgodzie ze swoimi przekonaniami. - R�wnouprawnienie kobiet jest zagrozeniem dla polskosci. | Natgen4 | 2.1 | 1.35 | 1.28 | 1.37 |
| Przed Toba kolejne 4 pytania. Przypominamy i bardzo prosimy, bys odpowiadala} szczerze i w zgodzie ze swoimi przekonaniami. - Geje nie posiadaja cech potrzebnych do militarnej obrony narodu. | gaythreat11 | 3.34 | 1.85 | 0.37 | -0.88 |
| Przed Toba kolejne 4 pytania. Przypominamy i bardzo prosimy, bys odpowiadala} szczerze i w zgodzie ze swoimi przekonaniami. - Homoseksualizm to zachodni import. | gaythreat12 | 2.97 | 1.76 | 0.64 | -0.5 |
| Przed Toba kolejne 4 pytania. Przypominamy i bardzo prosimy, bys odpowiadala} szczerze i w zgodzie ze swoimi przekonaniami. - Homoseksualizm jest zagrozeniem dla polskosci. | gaythreat14 | 3.1 | 1.88 | 0.58 | -0.72 |

Figure 28 Histograms of religious + national gender roles and gay threat items used in study 2

Figure 29 Religious + national gender roles & national gay threat measurement model

Table 31 Goodness of fit statistics for National + religious gender roles and national gender threat. rGR = religious gender roles; nGR = national gender roles; nGT = national gay threat; HO\_ = higher-order gender roles

|  |  |
| --- | --- |
| **Robust χ2 (df)**: | 47.897\*\*\* (17) |
| **Scaling correction factor for the Yuan-Bentler correction** | 1.646 |
| **Robust** **CFI**: | 0.989 |
| **Robust TLI:** | 0.982 |
| **Robust RMSEA (P-value) 90 % CI**: | 0.058 (0.718) 0.039 0.078 |
| **SRMR**: | 0.021 |
| **McDonald’s omega (ω) total** | 0.94 |
| **ω religious gender roles** | 0.91 |
| **ω national gender roles** | 0.81 |
| **ω gay threat** | 0.87 |
| **Reliability values at level 1:** 0.84; **Reliability values at level 2:** 0.92; **Partial reliability value at level 1:**0.91 |
| All paths are significant at p < 0.001 level. |

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1. The free and open-ware package we use, lavaan [Rosseel 2012], tends to overestimate the correlations across latent constructs in the CFAs. Although this might influence our subsequent analyses, we have a few safety nets we can list. 1) Almost all the scales we utilize here have been validated in earlier studies so we know how they are supposed to behave with the factor correlations. 2) We either construct the latent trait models as higher order construct CFAs (i.e. general collective narcissism influencing national and catholic collective narcissisms) or use a single factor model (i.e. modern homo negativity scale). So we buffer the bias of overestimated correlations across latent constructs. [↑](#endnote-ref-1)
2. Compared to the other techniques in psychometrics, very simple structure (VSS) is the less conventional and less frequently used approach to decide on the number of factors to retain. The estimation relies on checking whether the original correlation matrix can be reproduced with simplified pattern matrixes, in which only the highest loadings are retained, and the rest are set to zero. The assessment is based on a criterion to assess the fit of a simple factor structure versus a multi-factor structure by estimating the explanatory gain achieved by the increased number of factors. In an ideal world, the results of PA, MAP and the VSS (as well as some other assessments like the Empirical Kaiser Criterion) agree on the number of factors to retain. With real data, the agreement is seldom. [↑](#footnote-ref-1)