

## Electronic Supplementary Material 1 for

Bogatyreva, N. (2024). Enemies inside and out: How Russians believe conspiracy theories. *Zeitschrift für Psychologie*, 232(1). <https://doi.org/10.1027/2151-2604/a000543>

**Supplement 1**

Long form prostate conspiracy theory belief scale translated into English and original items in Russian with indication of two domains

#	Items translated in English	Original items in Russian
OT — outside threat		
1	Foreign military associations, such as NATO, hide real motives for their actions	Зарубежные военные объединения, такие как НАТО, скрывают истинные мотивы своих действий
2	America and Western Europe secretly try to impose foreign values on Russia	Америка и западная Европа в тайне пытаются навязать России чуждые ей ценности
3	America and Western Europe want to change the political system in Russia using hidden methods of influence	Америка и западная Европа хотят изменить в России политический строй, используя скрытые методы влияния
4	Russia has a unique way of development path, but America and Western Europe try to interfere with it	У России уникальный путь развития, а Америка и западная Европа пытаются ему помешать
5	America and Western Europe are afraid of Russia's strength, so they purposely try to suppress it under made up pretexts	Америка и западная Европа боятся силы России, поэтому специально пытаются подавить ее потенциал под различными предлогами
6	America and Western Europe secretly use weaker states to achieve their military and political goals	Америка и западная Европа в тайне используют более слабые государства для достижения своих военных и политических целей
7	America and Western Europe want to deprive Russia of independence, but try to hide it	Америка и западная Европа хотят лишиться Россию независимости, но пытаются это скрыть
8	America and Western Europe specifically threaten the unity and territorial integrity of Russia, but do not want to admit it	Америка и западная Европа специально угрожают единству и территориальной целостности России, но не хотят это признавать
9	America and Western Europe are secretly planning to acquire Russia's valuable resources (such as oil and gas) through illegal means	Америка и западная Европа в тайне планируют заполучить ценные ресурсы России (например, нефть и газ) незаконными путями
10	America and Western Europe would like to control Russia from the outside, but they hide this plan	Америка и западная Европа хотели бы управлять Россией извне, но скрывают этот план
11	America and Western Europe do not accept the culture of Russia, so they are trying to destroy it	Америка и западная Европа не приемлет культуру России, поэтому пытаются уничтожить ее
12	America and Western Europe are trying to rewrite world history to belittle Russia's achievements	Америка и западная Европа пытаются переписать мировую историю, чтобы принизить достижения России

IT — inside threat

13	Political opposition in Russia is secretly sponsored by America and Western Europe	Политическую оппозицию в России тайно спонсируют Америка и западная Европа
14	The true goal of the political opposition is to divide the population of Russia, although it does not admit it	Истинная цель политической оппозиции — разобщить население России, хотя она в этом не признается
15	NPOs and other charitable organizations hide the real motives of their activities	НКО и другие благотворительные организации скрывают настоящие мотивы своей деятельности
16	Independent media are actually controlled by those who want to destroy Russia from within	Независимые СМИ на самом деле управляются теми, кто желает развалить Россию изнутри
17	Some public people in Russia are directly influenced by America and Western Europe, but they try to hide it	Некоторые публичные люди в России находятся под прямым влиянием Америки и западной Европы, но пытаются это скрыть

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## Supplement 2

### Mathematical problems (open numeric question)

A postcard and a pen together cost 150 rubles. A postcard costs 100 rubles more than a pen. How much does a pen cost?

If it takes 3 nurses 3 minutes to measure the blood pressure of 3 patients, how long will it take 300 nurses to measure the blood pressure of 300 patients?

Masha makes tea. The strength of the tea doubles every hour. If it takes 8 hours to make tea, how long does it take for the tea to reach half the required strength?

### Supplement 3

#### Structural validity analysis for the specific prostate conspiracy belief scale

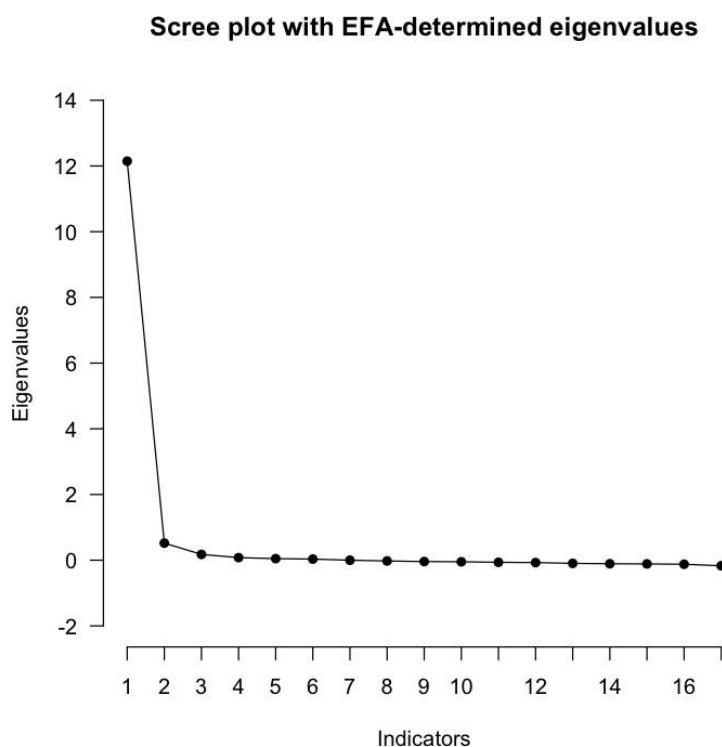
First, bivariate correlations between items of the prostate conspiracy theory beliefs were calculated. To shorten the scale and ensure that each item brings enough unique variance, items were removed based on inter-item correlations higher than  $r = .80$ . Overall three items were removed on this basis (#2,8,10).

**Table E1.** Bivariate correlations between items

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1																			
2	.73*																		
3	.70*	<b>.81*</b>																	
4	.59*	.77*	.72*																
5	.63*	.75*	.73*	.78*															
6	.66*	.70*	.76*	.67*	.74*														
7	.65*	.79*	.76*	.77*	.79*	.73*													
8	.67*	<b>.80*</b>	.78*	.77*	.79*	.76*	<b>.86*</b>												
9	.63*	.76*	.74*	.69*	.70*	.70*	.75*	.79*											
10	.66*	.77*	.75*	.74*	.76*	.75*	<b>.83*</b>	<b>.82*</b>	<b>.80*</b>										
11	.55*	.73*	.66*	.74*	.68*	.61*	.72*	.74*	.71*	.71*									
12	.62*	.75*	.75*	.73*	.73*	.76*	.77*	.79*	.77*	.78*	.74*								
13	.54*	.64*	.65*	.64*	.63*	.61*	.65*	.68*	.65*	.64*	.65*	.66*							
14	.56*	.71*	.68*	.70*	.68*	.62*	.71*	.73*	.68*	.68*	.73*	.68*	.75*						
15	.54*	.61*	.58*	.60*	.58*	.54*	.64*	.65*	.63*	.65*	.67*	.61*	.68*	.73*					
16	.51*	.63*	.60*	.64*	.62*	.56*	.67*	.68*	.65*	.65*	.69*	.64*	.71*	.74*	.75*				
17	.56*	.66*	.63*	.62*	.63*	.65*	.67*	.67*	.67*	.68*	.61*	.66*	.65*	.67*	.64*	.69*			
18	.59*	.68*	.65*	.66*	.66*	.64*	.66*	.70*	.66*	.69*	.66*	.66*	.67*	.69*	.66*	.73*	.70*		
19	.55*	.64*	.63*	.63*	.62*	.60*	.65*	.66*	.64*	.62*	.64*	.66*	.71*	.67*	.64*	.70*	.67*	.67*	
20	.56*	.69*	.66*	.69*	.69*	.60*	.71*	.70*	.69*	.68*	.72*	.68*	.70*	.76*	.71*	.77*	.69*	.73*	.72*

*Note.* All correlations were significant at level  $p < .001$ , in bold correlation higher than .8.

Next, the data was randomly split into two halves — a train ( $n = 409$ ) and a test ( $n = 410$ ) subsets. The *R* package *EFAtools* was used in this stage of analysis (Steiner & Grieder, 2020). To determine how many factors should be retained, various factor retention criteria were performed simultaneously (on the “train” dataset). Most of them, as well as a scree plot (Figure E1), suggested a single-factor solution.

**Figure E1.** Scree plot with EFA-determined eigenvalues

For the exploratory factor analysis the maximum likelihood method of extraction was chosen with no rotation and a unifactorial solution. All items showed reasonable factor loadings ranging from .77 to .9. The single factor explained 71% of the variance.

After that a confirmatory factor analysis was conducted on the “test” dataset, using the *lavaan* package (Rosseel, 2012). All 17 items were loading the same factor. Model showed somewhat satisfactory fit,  $\chi^2 = 738.953$ ,  $df = 119$ ,  $\chi^2/df = 6.21$ ,  $CFI = .911$ ,  $RMSEA = .113$ , 90% CI [.105, .121],  $SRMR = .042$ , judging by cutoff values of  $CFI > .90$ ,  $RMSEA < .08$ , and  $SRMR < .09$  (MacCallum et al., 1996). Still, the scale had redundant items, so it was decided to create a shorter version that would also provide a more satisfactory fit.

For this, an Ant Colony Optimization (ACO) item-sampling procedure was used with the *stuart* package (Schultze, 2017). This optimization strives to find an optimal set of items as a solution. Here again, the data was equally split in training and a validation subsample for cross-validation. A solution of 12 items with a single factor was asked. ACO was run 10 times with 120 iterations (colonies) and 80 ants per run. ACO estimated on average 13048 models, ranging from 9680 (seed = 7) and 15200 (seed = 4). The same solution was achieved in all runs and was replicated on average 46 times per run, ranging from 10 (seed = 7) to 74 (seed = 9). This solution included items #1,4,7,11,13,14,15,16,17,18,19,20. It yielded a better fit to the data ( $CFI = .966$ ,  $RMSEA = .084$ ,  $SRMR = .025$ ) than the previously tested 17-item scale.

Finally, this solution was cross-validated (function *crossvalidate* from the same package). Results confirmed the factorial structure was similar across both samples, in terms of metric invariance (“weak,”  $\Delta \chi^2 = 6.41$ ,  $\Delta df = 11$ ,  $p = .14$ ), scalar invariance (“strong,”  $\Delta \chi^2 = 9.53$ ,  $\Delta df = 11$ ,  $p = .57$ ), and residual invariance (“strict,”  $\Delta \chi^2 = 16.55$ ,  $\Delta df = 12$ ,  $p = .17$ ). Estimates of the final model on the full sample can be seen in Table E2.

**Table E2.** Results of the CFA testing the structure of the scale

	Estimate	SE	z	p	Standardized estimate
Item #1	1.00				0.71
Item #3	1.24	0.05	23.86	<.001	0.83
Item #4	1.42	0.06	24.70	<.001	0.86
Item #5	1.37	0.06	24.42	<.001	0.85
Item #6	1.11	0.05	23.15	<.001	0.81
Item #7	1.44	0.06	25.45	<.001	0.89
Item #9	1.37	0.06	24.44	<.001	0.85
Item #11	1.43	0.06	23.91	<.001	0.83
Item #12	1.45	0.06	24.99	<.001	0.87
Item #13	1.32	0.06	23.10	<.001	0.81
Item #14	1.43	0.06	24.63	<.001	0.86
Item #15	1.18	0.05	22.61	<.001	0.79
Item #16	1.32	0.06	23.89	<.001	0.83
Item #17	1.25	0.05	23.34	<.001	0.82
Item #18	1.32	0.06	23.80	<.001	0.83
Item #19	1.31	0.06	22.85	<.001	0.80
Item #20	1.48	0.06	24.60	<.001	0.86

## References

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