Exploring the Factorial Structure and Criterion Validity of Institutional Trust in Slovakia*

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Abstract: The present study aims to examine the dimensionality and criterion validity of the institutional trust construct in Slovakia using a comprehensive list of thirty-three public institutions. A representative sample of 600 Slovaks first reported their level of trust in institutions and then reported on their social trust, propensity to trust, dispositional trust, and trust radius measures. A holdout cross-validation method was used to evaluate the dimensionality of the institutional trust construct. Exploratory factor analysis yielded a six-factor solution, and the confirmatory factor analysis showed a good overall fit for the five-factor solution that included the following dimensions: political institutions, foreign institutions, social services institutions, order institutions, and media institutions. All five dimensions showed weak-to-moderate relationships with interpersonal trust measures. The present study highlights that delving into the dimensionality of institutional trust may contribute to the understanding of the phenomenon within specific geographical, political, societal, and historical, characteristics of the countries.

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Introduction

As an important part of social capital, institutional trust is considered an essential factor for the social, economic, and political progress of societies [Lee and Schachter 2019; Neblo et al. 2010]. In addition to being associated with the subjective well-being of citizens [Hudson 2006], trust in institutions fosters cooperation, solidarity, and problem-solving [Lee and Teo 2005], and supports organisational transactions, market participation, as well as organisational effectiveness and development [Bromiley and Cummings 1995; Bülbül 2013; Ratnasingam 2005]. The lack of institutional trust, on the other hand, contributes to public discontent, extreme political views, protests, and violent conflicts [Salgiriev et al. 2016; van Prooijen and Krouwel 2019].

Given the importance of institutional trust, it may be surprising that the literature on institutional trust still suffers from a lack of a generally accepted definition and conceptualisation. The vast majority of studies measure trust in multiple institutions, such as parliament, political parties, police, or media, at once. The list of included institutions, however, is often very limited and varies markedly across studies. Consequently, the literature lacks consistency in the dimensionality of the institutional trust construct [e.g. Mishler and Rose 2005; Newton and Norris 2000; Rothstein and Stolle 2008].

Reflecting on these conceptual issues, the primary goal of the present study is to explore the dimensionality of the institutional trust construct in Slovak society. To bring a deeper view, the present study measures trust in thirty-three public institutions across a variety of societal areas. By including a comprehensive list of institutions, we aim to examine the dimensionality of the institutional trust construct and explore the composition of individual dimensions. Apart from capturing the dimensionality of institutional trust, the present study also contributes to the trust theory by examining the relationships between the identified dimensions and interpersonal trust constructs, such as propensity to trust, dispositional trust, social trust, and radius of trust. By delving deeper into these associations, we aim to investigate the criterion validity of the identified dimensions of institutional trust.

The definition and dimensionality of the institutional trust construct

As an interdisciplinary construct, institutional trust has been understood differently across research areas. Some authors define it as people's expectations of how institutions and the social systems should treat citizens [Kramer 1999] or as an attitude towards institutions [Moy et al. 2009]. Others, in turn, refer to institutional trust mainly as political trust [Kim 2014; Medve-Bálint and Boda 2014]. There are also some studies that have conceptualised trust as confidence in different institutions [Bean 2003; Cook and Gronke 2001], as a part of other concepts such as a voluntary state of vulnerability [Hoffman 2002], or as a component of a broader concept such as perceived legitimacy [Tankebe 2012]. These variations in definitions impact the understanding of trust and the way trust in institutions is measured, contributing to inconsistent or even contradictory findings.

Unidimensional approach

Given the inconsistency in the definition and measuring of institutional trust, it is not surprising that there is no consensus on the dimensionality of the institutional trust construct either [e.g. Cook and Gronke 2001; Thomas et al. 2015; Mishler and Rose 2005; Newton and Norris 2000; Rothstein and Stolle 2008]. In particular, some studies favour a unidimensional structure of institutional trust [e.g. Listhaug 1984; Mishler and Rose 1997; 2005; Newton and Zmerli 2011; Zmerli and Newton 2017]. This notion relies on the assumption that trust in a range of institutions is just an expression of a single underlying attitude, i.e. institutions are closely linked regardless of their object, because of shared predictors or other factors, such as general propensity to trust or extrapolation [Harteveld et al. 2013]. As a result, the authors use simple sum-score measurements of institutional trust without testing the assumption of unidimensionality [Thomas et al. 2015]. According to van der Meer and Ouattara [2019], the unidimensional approach is problematic because it may suggest that individuals do not substantially distinguish between institutions. Such an approach contradicts the fundamental understanding of institutional trust as a relational concept based on three distinctive aspects: person A trusts object B to perform X. In this sense, van der Meer and Ouattara [2019] argue that if the trust in specific institutions would be an expression of a single underlying attitude, the evaluation of trust would be reduced only to its subject (A trusts), while the object and performance would remain overlooked.

Multidimensional approach

In contrast to the unidimensional approach, some studies are theoretically based on the assumption of multidimensionality and use factor models to identify the dimensions of institutional trust. Using this approach, some studies propose that institutions can be divided according to their formal characteristics. For instance, Cook and Gronke [2001] showed that trust in national and local institutions form separate dimensions. Concurrently, Newton and Norris [2000] proposed a twodimensional solution dividing institutions into public and private. In their typology, public institutions are associated with the core functions of the state and include parliament, the civil service, the legal system, the police, and the army. The second dimension consists of private and broadly understood non-profit institutions (also those funded or subsidised from a state budget) such as the education system, the church, major companies, trade unions, and the press. Besides dividing institutions according to their formal characteristics, several authors propose distinctions based on their societal purpose. For instance, using exploratory factor analysis, Bean [2003] and Rothstein and Stolle [2008] found a three-factor solution for institutional trust that distinguishes partisan, order, and media institutions. Political institutions with elected offices, such as parliament, governments, political parties, and the civil service, represent partisan institutions. The order institutions, in turn, are impartial and function with less political bias, although they are financed from the central budget. This category includes institutions such as the army, legal institutions, and the police. Finally, the media institutions, including TV and the press, serve as a control institution over partisan institutions. Ultimately, there is evidence that even those institutions that seem to represent one dimension, like political institutions, may be further divided into separate distinct subdimensions, such as representative and implementing political institutions [Breustedt 2018].

Reasons for the inconsistent findings in studies using a multidimensional approach

To sum up, although the majority of studies corroborate the multidimensionality assumption, the findings do not provide a clear view of the number and composition of institutional trust dimensions. Besides that, the list of included institutions varies across studies markedly and therefore the results are not comparable.

Considering the nature of the institutional trust construct, we believe that the findings about the dimensionality across countries might not be consistent even if the list of institutions would be similar. The reason for this is that institutional trust emerges always in a specific social, economic and political context and the institutions themselves are viewed and assessed by members of a given society or community. Collective experiences – both past and present – and how people respond to them may influence how institutions or groups of institutions are perceived. Finally, local political conditions may also affect how institutions are grouped into larger units in the citizens' perception. Consequently, understanding of institutional trust in one country may not be the same as in other countries.

In other words, the assumption that institutional trust is cross-nationally equivalent may be conceptually incorrect [van der Meer and Ouattara 2019]. There are several important contextual factors affecting institutional trust, such as culture [Kaasa and Andriani 2022], different levels of corruption [Anderson and Tverdova 2003], and political regime [Schneider 2017], which differ markedly across countries. These aspects may affect not just the levels of trust in particular institutions, but also, potentially, the dimensionality of the institutional trust construct. In this sense, we understand institutional trust as a formative theoretical construct that helps to capture the complexity of the interrelated dimensions that compose the construct. We understand the dimensions as causal variables, not the effect variables of the institutional trust construct [see Saris and Gallhofer

2007]. Consequently, we believe that there exists no universal dimensionality of institutional trust, but rather the construct may take different forms depending on the context in which the study is conducted.

The present study, thus, aims to investigate the dimensionality of institutional trust in Slovakia. Although we expect that some dimensions identified in previous studies, like political, media, and order institutions [Bean 2003; Rothstein and Stolle 2008], will be present in our study as well, including a comprehensive list of public institutions may lead to the identification of dimensions that were not identified before. For these reasons, we formulated the following research question: What is the dimensionality of the institutional trust construct in the Slovak context?

Methods

Participants and procedure

A representative sample of 600 Slovaks (300 men, 300 women) aged 18 to 78 years (M = 45.20, SD = 14.82) were hired by a public research agency to participate in an online self-report survey hosted on Qualtrics. We used a non-probability quota sampling method to achieve a gender-balanced adult population from every region of Slovakia. The education and marital status distributions are shown in Table 1. A computer-assisted web interview method was used to collect the data. Before signing an informed consent form, the participants were provided with general information about the aim of the study and their rights to remain anonymous and to withdraw from the participation at any time. As a part of larger data collection, participants first answered socio-demographic questions and completed interpersonal trust scales. They then reported how much they trust each of the thirty-three specific public institutions. The institutions were administered in a fixed order, but the order involved randomisation so that conceptually similar institutions (e.g. political institutions) were not administered close to each other. The survey included three attention check items. Individuals who failed to select the correct answers were excluded. In order to perform both exploratory and confirmatory factor analyses, the sample of 600 participants was randomly split into two separate data sets, which are available at the Open Science Framework repository (https://osf.io/zvsyk/?view_only=e8e9af11e6d2466e93d9cc5ccf073d25).

Measures

Institutional trust

To measure institutional trust, we adapted a method that is widely used in crossnational surveys (e.g. ESS Round 9, European Social Survey 2018). Specifically,

			Educe	ation		
Distribution	Primary	Secondary without the school-leaving exam	Secondary with the school-leaving exam	Bachelor's degree	Master's degree	Doctoral degree
Frequency	23	132	247	28	157	13
Percent	3.8	22	41.2	7.7	26.2	2.3
			Resident	ial area		
Distribution	Farm or countryside house	Village	Small town	Suburb or periphery of a large city	Large city	
Frequency	174	33	178	214	1	
Percent	29	5.5	29.7	35.7	.2	
			Marital	status		
Distribution	Single	Married	Divorced	Widowed		
Frequency	209	307	66	18		
Percent	34.8	51.2	11	3		

Table 1. Study sample – education and marital status distribution

we asked participants to indicate how much they trusted each of the thirty-three following institutions: political parties, Office of the President of the Slovak Republic, National Council of the Slovak Republic, Government of the Slovak Republic, police, courts, army, prosecutor's office, European Parliament, European Commission, European Council, Court of Justice of the European Union, World Bank, United Nations, North Atlantic Treaty Organisation (NATO), International Criminal Police Organisation (Interpol), International Monetary Fund (IMF), World Health Organisation (WHO), commercial banks, insurance companies, educational institutions, research institutions, health institutions, religious institutions, fire services, environmental institutions, social services institutions (e.g. services for older adults, day centres, care services), television media, internet media, print newspapers and magazines, internet social media, non-governmental institutions, and trade unions. Participants answered on a five-point scale (1 = distrust completely, 5 = trust completely).

Interpersonal trust

Several interpersonal trust measures were administered to assess the criterion validity of the dimensions of institutional trust recognised in factor analysis. Based on numerous previous studies on the relationship between generalised interpersonal trust constructs and institutional trust [for a review of these studies see Newton and Zmerli 2011; Suh et al. 2012; Allum et al. 2010], we hypothesise that the identified institutional trust dimensions show positive weak-to-moderate relationships with these interpersonal trust measures.

Trust propensity. A four-item Propensity to Trust Scale [Frazier et al. 2013] was used to measure trust propensity. It is a unidimensional scale that captures the general willingness to trust others, regardless of social and relationship-specific information. The items are constructed to ask individuals to assess their own stable general tendencies to trust (e.g. *My tendency to trust others is high*). The participants answered on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree).

Dispositional trust. Two subscales of the Disposition to Trust Scale [Mc-Knight et al. 2002] were used to measure dispositional trust. The benevolence subscale measures individuals' beliefs about whether people generally care and act in others' interests (e.g. *The typical person is sincerely concerned about the problems of others*). The integrity subscale measures individuals' beliefs about whether people generally keep their commitments and do not lie (e.g. *Most people are honest in their dealings with others*). Importantly, compared to the Propensity to Trust Scale [Frazier et al. 2013], items in this scale are constructed in a way that they ask about individuals' beliefs about others' trustworthiness. Both subscales consist of three items and were answered on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree).

Social trust. Three questions from the European Social Survey [European Social Survey 2016] were used to measure social trust. The questions ask about

individuals' beliefs about whether other people can be trusted or whether they are benevolent and helpful (e.g. *Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?*) were answered on an 11-point scale (e.g. 0 = you can't be too careful, 10 = most people can be trusted).

Trust radius. The radius of social trust was measured using a method proposed by Lim et al. [2021]. The method is based on seven questions asking how much individuals trust the following groups: family, friends, relatives, neighbours, people in the same region, foreigners/immigrant workers, and strangers. These questions were answered on a five-point scale (1 = distrust completely, 5 = trust completely). Trust radius is represented as a slope of the change in the trust level from in-groups (family) to out-groups (strangers), with a flatter slope indicating a wider radius and a steeper, negative slope a narrower radius. These slopes were estimated using multilevel regression of trust level in each group on the distance between the respondent and each group (see Lim et al. [2021] for further information).

Statistical analyses

The descriptive statistics and Pearson's correlations were assessed to see the average levels and associations between the observed variables. Then, a holdout cross-validation method was used for evaluating the dimensionality of the institutional trust construct [see Knafl and Grey 2007]. In particular, the data set consisting of 600 responses was randomly split into two disjoint subsets of 300 participants.

The first subset was used for exploratory factor analysis (EFA) to obtain an appropriate factor model for the institutional trust construct. A Mahalanobis' distance measure was conducted to test for the multivariate normality, which was used to determine an extraction method [see Fabrigar et al. 1999]. A Kaiser's eigenvalue criterion, Scree plot, parallel analysis [Horn 1965], and Velicer's minimum average partial criteria test (MAP) were used to determine the number of components that should be kept. Since we assumed that the identified institutional trust components might correlate, a direct oblimin rotation method was used in EFA. EFA was performed using JAMOVI 1.6.23 software [The Jamovi Project 2021].

The second subset was used for confirmatory factor analysis (CFA) purposes to cross-validate the result obtained from EFA. We performed both first-order and second-order CFA using IBM AMOS 21 software. Following Hooper et al.'s [2008] recommendations, we evaluated the overall fit of the models using a Chi-square test, root mean square approximation error (RMSEA), a standardised root mean square residual (SRMR), a comparative fit index (CFI), a normed-fit index (NFI), and a Tucker-Lewis index (TLI).

Results

Descriptive statistics

The descriptive statistics along with the correlation heatmap for the levels of trust in 33 public institutions are reported in Table 2. The highest level of trust was reported for the fire services institutions (M = 4.11; SD = .87). Except for fire services, there were only five more institutions (educational, research, health, environmental, and social services institutions) that were perceived as trustworthy (i.e. had an average score above the scale midpoint). The other institutions had average scores below the scale midpoint, which means that, on average, individuals perceived them as rather untrustworthy. Regarding correlations, a curious pattern was found for the Office of the President of the Slovak Republic which showed stronger correlations with foreign institutions than with national institutions. The correlational heatmap also indicates that foreign institutions strongly correlated with each other. Moreover, non-governmental institutions also showed strong correlations with foreign institutions. This pattern may suggest that along with the Office of the President of the Slovak Republic, foreign and non-governmental institutions could represent a joint component. Finally, we found strong correlations between media institutions, but also between national political institutions, suggesting that these two types of institutions may also represent latent constructs.

The dimensionality of the institutional trust construct

Exploratory factor analysis

To explore the dimensionality of the institutional trust construct, all 33 institutions were entered into a principal axis factoring exploratory factor analysis (PFA-EFA) with oblique direct oblimin rotation. The principal axis factoring extraction method was selected due to the deviation from the multiple normality indicated by Mahalanobis' distance test. Bartlett's test of sphericity (χ^2 (528) = 8902.15; p < .001) and the Kaiser-Meyer-Olkin measure of sampling adequacy (KMO = .94) indicated that our data were suited for factor analysis. To determine the number of components, Kaiser's criterion of eigenvalues greater than 1 suggested a sixfactor solution as the best fit for the data. The examination of the scree plot, however, showed an inflection point located at the fifth factor, suggesting a four-factor solution. The Parallel analysis showed that six of the calculated eigenvalues were greater than the randomly generated eigenvalues. Finally, a Velicer's minimum average partial criteria (MAP) test suggested a six-factor solution. Therefore, we have decided to conduct a final analysis for a six-factor solution. Table 3 shows the factor loadings for the six-factor solution after rotation. As recommended by Stevens [2002] a cut-off point with an absolute value greater than .4 was used to interpret the factor loadings. No items' cross-loadings were detected. Following

Variable	М	SD	1	2	3	4	5	6	7	8	9	10	11
1 Political parties	1.72	.86											
2 President SR	2.59	1.32	.38	—									
3 National Council	1.90	.94	.64	.55	-								
4 Government	1.79	.98	.61	.47	.77	-							
5 Police	2.72	1.02	.29	.39	.44	.39	-						
6 Courts	2.40	1.03	.28	.35	.41	.34	.69	-					
7 Army	2.98	1.05	.27	.45	.42	.40	.61	.54	_				
8 Prosecutor offices	2.44	1.02	.33	.40	.45	.41	.66	.78	.61	-			
9 European Parliament	2.44	1.14	.37	.67	.50	.47	.41	.48	.47	.52	_		
10 European Commission	2.43	1.15	.38	.68	.52	.48	.40	.47	.48	.52	.96	-	
11 European Council	2.44	1.14	.38	.68	.50	.47	.40	.46	.48	.52	.95	.98	-
12 Court of Justice of the EU	2.70	1.16	.31	.66	.45	.41	.41	.45	.50	.48	.81	.82	.83
13 The World Bank	2.53	1.04	.39	.58	.51	.47	.38	.41	.48	.46	.72	.73	.74
14 United Nations	2.65	1.08	.36	.63	.48	.44	.41	.44	.49	.50	.72	.75	.75
15 NATO	2.45	1.15	.38	.65	.48	.48	.42	.45	.49	.49	.72	.74	.74
16 Interpol	2.98	1.04	.32	.52	.40	.38	.52	.46	.57	.51	.55	.56	.56
17 IMF	2.65	1.03	.39	.57	.47	.44	.43	.44	.50	.48	.65	.67	.68
18 WHO	2.89	1.17	.34	.60	.43	.44	.41	.42	.45	.45	.68	.68	.68
19 Commercial banks	2.58	.98	.29	.42	.36	.32	.36	.39	.41	.47	.51	.51	.53
20 Insurance companies	2.54	1.01	.28	.31	.35	.30	.29	.39	.35	.43	.41	.42	.41
21 Educational institutions	3.19	.94	.23	.31	.34	.29	.40	.41	.48	.47	.37	.38	.38
22 Research institutions	3.61	.97	.20	.47	.28	.25	.39	.36	.49	.43	.49	.49	.49
23 Health institutions	3.39	.98	.29	.44	.36	.32	.40	.41	.50	.48	.47	.48	.49
24 Religious institutions	2.43	1.18	.28	.12	.30	.31	.25	.20	.27	.26	.15	.14	.14
25 Fire services	4.11	.87	<.01	.14	.11	.10	.26	.21	.34	.23	.14	.14	.14
26 Environmental institutions	3.15	.98	.24	.46	.33	.32	.29	.31	.41	.33	.49	.49	.49
27 Social services	3.19	.94	.23	.31	.32	.29	.35	.34	.37	.36	.33	.34	.35
28 Television media	2.22	1.01	.38	.53	.45	.43	.31	.34	.37	.37	.49	.51	.50
29 Internet media	2.32	.94	.34	.34	.36	.32	.21	.22	.27	.25	.32	.34	.34
30 Print newspapers and magazines	2.40	.94	.31	.45	.38	.37	.26	.27	.31	.32	.44	.44	.44
31 Internet social media	2.13	.91	.30	.24	.34	.28	.22	.23	.26	.24	.27	.29	.30
32 Non-governmental institutions	2.41	.99	.33	.56	.43	.40	.26	.30	.34	.33	.58	.58	.59
33 Trade unions	2.80	.90	.23	.19	.28	.17	.30	.33	.32	.36	.32	.31	.31

Table 2. Descriptive statistics and correlation heatmap for institutional trust

Note: Values above .13 are statistically significant at the level p < .001, values between .11 and .12 are statistically

12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32

.70	_																			
.74	.75																			
.69	.71	.79	_																	
.62	.57	.66	.63	_																
.63	.79	.74	.70	.67	-															
.63	.64	.68	.67	.59	.68	-														
.46	.60	.55	.50	.48	.58	.51	-													
.36	.44	.39	.39	.36	.39	.39	.68	-												
.36	.39	.46	.38	.47	.44	.45	.53	.52	—											
.52	.47	.54	.48	.56	.50	.59	.46	.40	.61	_	_									
.48	.46	.52	.50	.56	.49	.6	.48	.42	.61	.75	-									
.13	.19	.22	.18	.24	.23	.22	.23	.29	.39	.23	.28	-								
.20	.14	.20	.16	.33	.19	.25	.19	.18	.33	.49	.44	.09	—							
.45	.45	.50	.47	.43	.47	.56	.37	.31	.37	.52	.50	.19	.34	—						
.39	.38	.43	.39	.44	.39	.42	.40	.34	.52	.44	.52	.31	.34	.41	-					
.43	.52	.50	.48	.40	.49	.46	.46	.40	.40	.38	.42	.25	.10	.40	.37	-				
.31	.38	.38	.35	.30	.35	.28	.37	.34	.31	.26	.30	.21	.17	.27	.34	.71	-	_		
.37	.48	.45	.43	.35	.44	.41	.41	.37	.39	.37	.34	.21	.14	.37	.34	.74	.69	-	_	
.26	.34	.34	.31	.26	.30	.22	.30	.33	.26	.13	.22	.24	.10	.24	.32	.51	.69	.58	-	
.54	.54	.54	.57	.44	.53	.56	.42	.32	.32	.42	.40	.16	.12	.53	.33	.55	.47	.53	.42	—
.29	.30	.34	.27	.38	.32	.32	.23	.25	.35	.35	.38	.23	.24	.31	.42	.32	.31	.30	.30	.38

significant at the level p < .01, values between .01 and .10 are statistically significant at the level p < .05.

Table 3. Rotated factor loadings for the six-factor model of institutional trust construct – first part

Items	Foreign institutions	Media institutions	Social services institutions	Political institutions	Order institutions	Financial institutions	h²
European Commission	.90	.06	07	.02	.07	.04	.92
European Parliament	06.	.07	05	01	60.	<.01	89.
European Council	.89	60.	06	<.01	.07	.04	.92
Court of Justice of the EU	.73	04	.12	.05	.16	07	.73
The World Bank	.61	.02	<.01	.11	.02	.28	.74
United Nations	.60	.02	.20	.10	.02	.14	.73
NATO	.58	.08	.13	.12	60.	.04	.68
OHM	.57	02	.37	.12	07	.07	.72
President SR	.54	.05	.17	.25	06	07	.57
IMF	.48	05	.18	.15	.07	.22	.68
Non-governmental institu- tions	.40	.33	.20	.18	15	04	.58
Internet media	.03	.88	.01	.01	06	<.01	.77
Internet social media	06	.81	11	.01	60.	02	.62
Print newspapers and magazines	.18	.67	.07	<.01	03	.08	.68
Television media	.18	.58	.08	.11	04	.13	69.
Trade unions	06	.34	.28	<.01	.27	02	.38
Research institutions	.13	.02	.73	03	<.01	.19	.77
Health institutions	01	.06	.66	.05	.06	.17	.65
Fire services	15	.05	.59	10	.17	-00	.34

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Table 3.

Items	Foreign institutions	Media institutions	Social services institutions	Political institutions	Order institutions	Financial institutions	h^2
Environmental institutions	.30	.05	.53	60.	06	06	.51
Educational institutions	22	.20	.41	<.01	.25	.34	.59
Social services	10	.29	.40	.07	.18	01	.39
Interpol	.24	06	.38	.15	.26	.06	.61
Government	.03	05	01	.89	<.01	01	.76
National Council	01	.05	05	.85	60.	03	.78
Political parties	05	.08	08	.70	03	.12	.52
Religious institutions	23	.16	.16	.27	.16	.16	.27
Courts	.11	.02	04	01	.80	.07	.75
Prosecutor's offices	.12	.04	06	.07	.75	.13	.80
Police	.06	05	.11	.14	.71	09	.67
Army	.15	<.01	.31	.11	.46	08	.58
Commercial banks	.15	<.01	.08	.01	.02	.74	.75
Insurance companies	03	.12	01	.08	.08	.70	.66
Eigenvalues	14.68	1.79	1.50	1.08	.61	.48	I
% of variance	20.20	9.83	10.63	9.41	9.18	6.52	I
Ω	.95	.89	.83	.87	.89	.84	I
Note: The table shows the fac bold. The principal axis facto oblimin rotation, ω – reliabili	tor loadings a ring extractior ty coefficient o	nd cross-loadi n method with of the McDona	ngs for the six a cut-off poin ld's omega tes	identified fact t of .4 was use t.	ors. The factor d in combinati	loadings are sh ion with oblique	own in e direct

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rotation, six factors together accounted for 65.8% of the total variance. McDonald's reliability coefficients ranged from .83 to .95, indicating good to excellent reliability of six factors (see Table 3).

The first factor, accounting for 20.20% of the variance of institutional trust construct, combines mostly foreign institutions. The second factor can be called 'media institutions' since it combines all media institutions included in the present study. The factor accounted for 9.83% of the variance of the institutional trust construct. The third factor combines 'social services'. The factor accounted for 10.63% of the variance of the institutional trust construct. The fourth factor. accounting for 9.41% of the variance, can be called 'political institutions' or, as Rothstein and Stolle [2008] and Bean [2003] suggest, partisan institutions. Table 2 shows that this factor combines the three most untrustworthy institutions. The fifth factor includes institutions that are not political themselves but are strongly affected by politics. In line with Rothstein and Stolle [2008] and Bean [2003], this factor can be called non-partisan institutions or order institutions. The aim of these institutions is to preserve the law and social order, to detect and punish those who break the law and therefore should not be trusted. The factor accounted for 9.18% of the variance of the institutional trust construct. Finally, the sixth factor includes commercial financial institutions. Foreign financial institutions, like the World Bank or International Monetary Fund, did not represent this construct and were included in the foreign institutions instead. The sixth factor accounted for 6.52% of the variance of the institutional trust construct.

There were four items that proved to be problematic in the six-factor solution (trade unions, social services institutions, Interpol, and religion institutions). These institutions did not cross a cut-off point of .4, indicating that they did not meaningfully represent any of the six factors. These items were, therefore, removed from the following confirmatory factor analysis. Finally, all six factors were positively related with weak-to-moderate correlations (Table 4). Given these

Dimension	1	2	3	4	5	6
1 Foreign institutions						
2 Media institutions	.44***	-				
3 Social services institutions	.43***	.34***	-			
4 Political institutions	.62***	.49***	.35***	_		
5 Order institutions	.49***	.29***	.42***	.51***	_	
6 Financial institutions	.48***	.50***	.48***	.40***	.43***	-

Table 4. Correlations between the six dimensions of the institutional trust construct

Note: *** p < .001.

results, the six-factor solution was accepted as the adequate structural representation of the institutional trust construct and was further tested in the following confirmatory factor analysis.

Confirmatory factor analysis

As stated above, we aimed to cross-validate the model obtained by EFA on a second research sample consisting of 300 participants using a CFA. However, the 'financial institutions' factor identified by EFA contained only two items and therefore was locally under-identified. In order to have the whole model locally and globally identified, we decided to remove this factor and perform CFA with only five factors.

First-order CFA. In the first step, we performed a first-order CFA and allowed five factors to be correlated. The results of the CFA showed that the fit of the measurement model was not satisfactory ($\chi^2 = 3.93$; df = 314; p < .001; SRMR = .09; CFI = .87; TLI = .86; NFI = .84; RMSEA = .099; RMSEA 90% CI [.093, .105]; PCLOSE < .001). There were a few reasons for such a poor model fit. First, there was a high covariance in the error terms between the 'internet media' and 'internet social media' items. This covariance seemed justifiable given that these items had very similar wording. Second, the error terms of all the European institutions (European Commission, European Council, European Parliament, and Court of Justice of the EU) showed a high covariance as well. As can be seen from a correlational heatmap (Table 2), these institutions showed very strong correlations, indicating that participants might not properly distinguish between these institutions. Finally, there was a high covariance in the error terms of the 'IMF' and the 'World Bank' as well as the 'United Nations' and 'NATO' institutions. These covariances seemed justifiable as well, given the fact that the IMF and the World Bank are the only two financial institutions and the United Nations and NATO are the only security and military organisations in the factor. Moreover, these pairs of institutions are closely linked in terms of their aims and missions. Since all these covariations seemed justifiable, we have decided to correlate the error terms between the mentioned institutions. The adjusted model showed an acceptable overall fit with the data ($\chi^2 = 2.15$; df = 305; p < .001; SRMR = .06; CFI = .95; TLI = .95; NFI = .91; RMSEA = .062; RMSEA 90% CI [.055, .068]; PCLOSE = .002), confirming the existence and the structure of five factors identified by EFA. The final model is shown in Figure 1.

Second-order CFA. In the last step, we performed a second-order CFA on an adjusted five-factor model. The results of the second-order CFA showed that the fit of the measurement model was acceptable ($\chi^2 = 2.22$; *df* = 310; *p* < .001; *SRMR* = .06; *CFI* = .95; TLI = .94; *NFI* = .91; *RMSEA* = .064; *RMSEA* 90% *CI* [.058, .070]; *PCLOSE* < .001). These findings confirm that the theorised institutional trust construct loads into five underlying dimensions of foreign, media, social, order, and political institutions (see Figure 2).



Figure 1. First-order confirmatory factorial analysis of the institutional trust construct



Figure 2. Second-order confirmatory factorial analysis of the institutional trust construct

Variables	1	7	С	4	ß	9		œ	6
1. Foreign institutions	I								
2. Media institutions	.50***	I							
3. Social services institutions	.50***	.37***	I						
4. Political institutions	.62***	.55***	.34***	I					
5. Order institutions	.50***	.31***	.49***	.50***	I				
6. Trust propensity	.17***	.21***	.24***	.20***	.19***	I			
7. DTT benevolence	.22***	.19***	.22***	.24***	.22***	.44**	I		
8. DTT integrity	.28***	.25***	.27***	.28***	.28***	.44**	.64***	I	
9. Social trust	.23***	.21***	.25***	.29***	.27***	.47***	.60***	.58***	I
10. Trust radius	.32***	.26***	.32***	.35***	.31***	.45***	.51***	.52***	.59***

Table 5. Correlations between the five dimensions of the institutional trust construct and the interpersonal trust measures

Criterion validity of the institutional trust construct factors

In the final step, we assessed the criterion validity of the five identified institutional trust construct dimensions by analysing their relationships with four interpersonal trust measures. Since the existence and the structure of the five dimensions were supported in both the EFA and CFA datasets, we decided to merge the two datasets in this analysis. Using the combined dataset of 600 participants, we again checked the factorial structure of the interpersonal trust construct and saved the factor scores as new variables representing the weighted scores for the five factors. These scores were, then, correlated with the interpersonal trust measures. As can be seen in Table 5, the five institutional trust dimensions showed weak-to-moderate positive significant relationships with four interpersonal trust measures. As could be expected from trust theory, institutional trust factors showed stronger correlations with each other than with the interpersonal trust measures. In general, these results could indicate a validity of the five institutional trust dimensions.

Discussion

The present paper aimed to explore the dimensionality of the institutional trust construct. To delve deeper into the characteristics of the dimensions, we investigated relations between institutional trust and propensity to trust, dispositional trust, social trust, and radius of trust. To the best of our knowledge, this study is the first to conduct such a comprehensive analysis of institutional trust in a Central European country. Additionally, as an extension of previous studies, this paper contributes to the literature by exploring how factorial analysis could shift our understanding of how various institutions are intertwined in terms of the trust Slovaks bestow on them.

The dimensionality of the institutional trust construct

Our results corroborate the multidimensional view of institutional trust. The CFA allowed us to distinguish five dimensions: foreign institutions, media, institutions providing social services, political, and order institutions. Considering the ecological validity of our findings, the dimensions emerging from our study showed expected relations with interpersonal trust constructs such as trust propensity, dispositional trust (benevolence and integrity subscales), social trust, and trust radius. Moreover, the dimensionality emerging from the present study reflects the classic separation of powers [see Waldron 2013]. First, the political institutions dimension corresponds with the *legislature*, i.e., the power responsible for making the law. Then, the *executive* and the *judiciary*, as related to law enforcement and settling legal disputes, are represented in a single dimension – order institutions.

Finally, the fourth power – *media* – forms a separate dimension in our analysis as well. The remaining two dimensions, foreign and social services institutions, were of minor importance at the time the classic model of powers was developed and, unsurprisingly, are considered to be conceptually different.

Importantly, while some of the dimensions are consistent with the dimensions identified in previous studies, others expand the typologies known from the extant literature. Specifically, our results show correspondence with the Rothstein and Stolle [2008] dimensions. Political institutions, selected through elections, are grouped around one dimension. Rothstein and Stolle [2008], labelled it *partisan* as it is to the greatest extent affected by the political programme of the ruling party or coalition. The second dimension – *order* – gathers institutions that are, by definition, apolitical but responsible for overseeing law implementation and enforcement (such as police, army, courts, and the prosecutor office). Concurrently, we also corroborated the existence of the media dimension. This is in line with the literature indicating that media trust may follow a different pattern than other institutions [Cook and Gronke 2001; Thomas et al. 2015].

Besides the similarities, our results also expand the current state of the art by detecting some new, perhaps country-specific patterns concerning the dimensionality of the institutional trust construct. First, foreign institutions include, indiscriminately, political, justice, financial, and health institutions. This may indicate that, when it comes to foreign institutions, participants did not distinguish them according to their object. A more important factor determining the trust level may be the fact that they are foreign. Interestingly, trust in foreign institutions was reported to be stronger than in domestic political institutions. In the literature [Harteveld et al. 2013], it is sometimes explained that trust in distant and less familiar institutions arises from the extrapolation of trust in better-known local institutions: if institutions at the national level are perceived as trustworthy and efficient, people may assume that other institutions function similarly well. However, since in Slovakia trust in national institutions is lower, we cannot speak of such extrapolation.

Instead, we could speculate that the mirroring effect might play a role. The mirroring effect reflects a situation when people rate their ingroup characteristics as opposed to the characteristics of outgroups. Depending on prevalent stereotypes, people tend to rate their ingroup characteristics as opposite to characteristics typical of a referential outgroup. This effect was found to be useful in explaining the differences in people's national stereotypes, showing that Slovaks often display outgroup favouritism towards other countries in the region [Hřebíčková et al. 2014]. Specifically, although Slovaks believed themselves to be psychologically warmer, they also felt less competent and assertive – traits they associated to a much greater extent with Austrians and Germans. A brief look at the specific levels of trust in domestic institutions may suggest that Slovaks tended to perceive the national political and order institutions as more untrustworthy than for-eign institutions. In other words, following a similar psychological mechanism,

they might consider foreign institutions to be more competent and, thus, more trustworthy (less untrustworthy) than domestic ones. The sense of disappointment with local institutions may prompt the impression that, certainly, the grass must be greener elsewhere. To support this explanation, further investigations are required to see whether the difference between the trustworthiness of foreign and domestic institutions is systematic and stable in time. In addition, research that includes countries with either high or low levels of trust in domestic institutions could help to understand under what conditions the outgroup favouritism occurs.

Importantly, the stereotypes that lead to favouritism may flourish in the absence of frequent or deepened experiences and under circumstances in which there is a considerable psychological distance between an individual and the favourably stereotyped foreign institutions. Limited knowledge about those institutions could also explain why the relatively diverse foreign institutions in our study were mentally represented as one joint dimension. The findings corroborate the view that institutional trust is, to a large extent, endogenous to the performance of institutions themselves [Campbell 2004; Mishler and Rose 2001]. Since international institutions have a less direct effect on local life, their performance may be perceived as more efficient or less interfering and consequently the level of trust increases.

The advantages of using factor analysis to understand country-specific characteristics

Our findings indicate that factor analysis could inform the debate on institutional trust in local conditions as well. For instance, a curious pattern was found for the Office of the President of the Slovak Republic, which showed stronger correlations with foreign institutions than with any of the national, particularly political, institutions. This may be the result of a strong narrative that exists in Slovak social discourse. Specifically, some leaders of populist political parties – presenting themselves as national leaders – support a narrative claiming that the current president of the Slovak Republic is financed by foreign non-governmental institutions and serves foreign interests. In other words, along with the individual characteristics of the Slovak president, this narrative may shift people's perception of the position of the presidential office among other institutions. Another explanation could be that the powers of the president of the Slovak Republic considerably differ from those of other political institutions. In particular, the Office of the President may be seen as more independent of the domestic political scene and as acting more as a controller of legislative processes, which is often also the case of the foreign European political institutions included in our study.

Likewise, Slovak non-governmental institutions were included in the dimension of foreign institutions. Like the presidential office, they are often displayed as financed from outside the country and serving certain specific interests, like changing the course of Slovak politics, promoting the LGBTQ+ agenda, or promoting migration politics. Thus, in line with van der Meer and Ouattara [2019], our analysis challenges the assumption of cross-national equivalence and points to the need to acknowledge micro- and macro-level endogenous factors to obtain a finer-grained understanding of institutional trust and the processes that shape it.

Moreover, in line with our expectations and corroborating the findings of international and domestic surveys [Eurobarometer 2021; MNFORCE et al. 2020], we found that trust in institutions in Slovakia is rather low, with most institutions rated as untrustworthy. Slovaks tend to be cautious in their attitudes towards most institutions, with the majority of scores clustering around responses indicative of a lack of trust and a rare few arousing slightly warmer responses from respondents. Specifically, trust in political institutions (including political parties, government, and parliament) showed to be consistently the lowest among all institutions included in the analysis, ranging between 'distrust completely' and the milder 'distrust slightly'. The only group of domestic institutions that inspire trust is a broadly understood category of institutions that provide social services (such as the fire department, educational, research, and health institutions, environmental institutions, and social services), and this could have to do with people's everyday experiences and perception of these institutions as generally promoting citizens' wellbeing. In other words, in line with the efficiency hypothesis [Mishler and Rose 2001; Campbell 2004], immediate favourable experiences could help sustain confidence in these institutions - possibly despite the poor governance of generally obstructive politically-controlled institutions.

Much has been written about low levels of institutional trust in post-communist countries, which has been blamed on corruption, nepotism, and public disappointment [e.g. Lovell 2001]. Nearly thirty years after the transition, it may seem, thus, that Slovakia remains heavily burdened by its post-communist heritage. Our findings contribute to the debate by indicating that, although nonnegligible exogenous and cultural factors may not be decisive in shaping institutional trust in specific countries, the variability of trust across dimensions and particularly the higher trust shown in foreign international institutions indicate that trust in institutions may be driven more by perceptions of their efficiency. Specifically, theories stressing endogenous sources of institutional trust point to economic performance: the institutions that produce favourable economic outcomes for citizens are perceived as more trustworthy [Mishler and Rose 2001; Campbell 2004]. Although this is something to be investigated in the future, it seems reasonable to expect people's sense of economic insecurity to play a key role in fostering scepticism about institutions in Slovakia. Recent studies and survevs found that the scale of financial anxiety in Slovakia is above the EU average, with nearly half of Slovaks expressing concerns about the increasing cost of living and a third struggling to make ends meet [Adamus and Grežo 2021]. Consequently, institutions – particularly local ones – are likely to be blamed for failing to provide financial security.

Limitations and future directions

Although comprehensive, the present study is not without its limits. First of all, it is cross-sectional and thus provides findings relating to a specific temporal and geographic context. However, trust in institutions is very context-dependent. Previous studies showed that trust differs considerably across the countries included in individual surveys [Eurobarometer 2021; European Social Survey 2016; van der Meer and Ouattara 2019], but it also fluctuates with time and can be easily stirred by external shocks such as the COVID-19 pandemic. Specifically, a longitudinal survey in Slovakia showed a systematic decline of trust in numerous institutions, with only a slight re-bound for the healthcare system and science [MNFORCE et al. 2020]. This indicates that even comparing data collected within a single survey, we need to remain very sensitive to local conditions that could affect trust in specific institutions or their groups, influencing the dimensionality of institutional trust in a given country and at a given time and possibly making it discernible from the dimensionality of institutional trust in other countries. Given the formative nature of the institutional trust construct, more research in countries with various institutional systems (e.g. presidential or parliamentary systems) is needed to understand the factorial structure in various contexts and conditions. In other words, although the institutional trust construct is not crossnationally equivalent, searching for some systematic patterns by comparing the findings from different countries may contribute to the debate about the definition, dimensionality, and measurement of institutional trust.

To delve deeper into the dimensionality of institutional trust, future studies could also investigate the variation in the levels of trust within dimensions over time. Specifically, it would be interesting to explore whether a sudden drop in the level of trust in a certain institution may negatively affect the level of trust in other institutions included in a specific dimension. Observing the variability over time in relation to contextual changes – such as crises or sudden exogenous shocks – could significantly contribute to our understanding of antecedents and the dynamics of institutional trust. Second, it is possible that antecedents of institutional trust differ across countries and thus responses to crises could vary as well [Campbell 2004]. The latter hypothesis is substantiated by the COVID-19 pandemic and the varying degree to which it affected institutional trust across the world [Bottasso et al. 2022].

In addition, future studies could also investigate the relationship between institutions' performance – or the perception thereof – and their trust in more detail. Although the present study investigated a broad range of institutions, we asked only about a generalised level of trust in each of them. In line with the theory of particularised trust [Bauer and Freitag 2018], future studies could attempt to embed the measurement in more specific contexts and inquire into particularised types of trust related, for instance, to the institutions' competency and efficiency in fulfilling their statutory functions.

Finally, although the initial exploratory analysis revealed six factors, we were able to confirm only five of them. The financial institutions turned out to be under-defined in our study. This, however, does not necessarily imply that the financial institutions factor should not be perceived as a part of the institutional trust construct. A further investigation using more items is needed to determine whether this factor is an inherent part of the institutional trust construct.

Conclusion

As well as being informative for research on the dimensionality of institutional trust, the present study contributes to theory by opening up new research avenues and posing questions concerning the conditions in which institutional trust can flourish or, conversely, perish. Although our findings on the dimensionality of the institutional trust construct are far from being conclusive, we believe that they convey the important message that trust in institutions is not a homogenous concept and the antecedents of the trust bestowed on various institutions could differ considerably not only within a given society but also perhaps between countries as well. Conceptualising trust in institutions as a single factor that is universal across social and cultural contexts may result in a lack of attention being paid to other processes that shape trust in various institutions across individuals and groups. Our findings suggest that researchers should abandon measuring institutional trust as a single general index that comprises several distinctive institutions. On the contrary, they should carefully consider and explore how institutions are grouped together into specific factors and how these factors relate to each other. In this sense, no universal form of the institutional trust construct exists. Rather, institutional trust should be perceived mostly as a formative construct that helps to describe the complexity of interrelated factors whose occurrence is dependent on contextual factors. Lastly, the factorial approach not only indicates that the criteria applied in evaluating the trustworthiness of institutions may differ, it also shows that there is scope for considering the role of individual differences and both personal and collective experiences in shaping trust in institutions critical to society's well-being.

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