



Data Article

Emotional drivers of the vaccination hesitancy and refusal: A dataset from Slovakia



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ABSTRACT

The dataset comprises responses provided by 500 individuals (250 women) recruited by an external agency to be representative of the Slovak population concerning age and gender. Participants gave written consent to participate in the study by confirming that they are over 18 and have read all the information about the study before agreeing to participate in an online survey hosted on Qualtrics. Along with socio-demographic characteristics and vaccination hesitancy and refusal, the dataset contains variables that could explain variation in dependant variables: horizontal-vertical individualism-collectivism, consideration of future consequences, prosocial motivations, helplessness, and the sense of threat caused by vaccination but also the COVID-19 pandemic and the climate change. In the original paper, the authors performed correlational analysis and hierarchical regressions investigating antecedents of vaccination hesitancy and refusal. The data inform interventions aimed at boosting vaccination rates, particularly amongst highly sceptical societies such as Slovakia. Apart from investigating the relations between various forms of prosocial behaviour such as vaccination intentions and attitudes, helping behaviour during the pandemic, and pro-environmental behaviour, the dataset offers an opportunity to delve deeper into the drivers of var-

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ious forms of socially beneficial behaviour. Ultimately, the data could help corroborate the existence of two new constructs of outward orientation (comprising future orientation, collectivism and prosocial motivations) and self-centred orientation (immediate orientation and individualism) that could be useful in explaining individual differences in prosocial intentions and behaviour.

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Specifications Table

Subject	Psychology
Specific subject area	Health psychology, social psychology
Type of data	Tables
How the data were acquired	<i>The data were collected through an online survey from a representative Slovak research panel. The translation of the original survey and instructions as well as the data are available at: https://osf.io/9q5ez/.</i>
Data format	Raw, Filtered
Description of data collection	<i>The final sample consisted of 500 participants (250 women) aged 18 – 86 years ($M = 44.32$, $SD = 15.66$). The data were collected between 24 May 2021 and 2 June 2021. It took participants about 30 min to finish ($Mtime = 46$ min, $MDN = 22$ min). The data were collected as a part of a larger research on prosocial behaviour in socially controversial domains (COVID-19, vaccination, climatic changes).</i>
Data source location	<i>The data were collected in Slovakia by an external agency to be representative of the Slovak population concerning age and gender.</i>
Data accessibility	<i>Data is deposited on the Open Science Framework. Repository name: Open Science Framework Direct URL to data: https://osf.io/9q5ez/</i>
Related research article	<i>Adamus, M., Čavojová, V., & Ballová Mikušková, E. Fear trumps the common good: Psychological antecedents of vaccination attitudes and behaviour, Acta Psychol. 227 (2022) 103606, 10.1016/j.actpsy.2022.103606</i>

Value of the Data

- The dataset value lies in providing information about antecedents of vaccination hesitancy and refusal in the highly sceptical Slovak society.
- The dataset could help the researchers to delve deeper into the main drivers of vaccination hesitancy and refusal amongst Slovaks including fear of the vaccines and their side effects as well as the helplessness in evaluating the safety of the vaccines.
- The data could serve practitioners and policy-makers to develop research-driven interventions and educational programmes aimed at increasing awareness about vaccine safety and, ultimately, boosting vaccination rates.
- The data could be further used to evaluate how various forms of prosocial behaviour—vaccination intentions and behaviour, helping behaviour during the COVID-19 pandemic and pro-environmental behaviour—are intertwined and whether they share common antecedents.
- The data could be used by researchers interested in exploring the existence of two novel constructs—outward orientation and self-centred orientation—that could potentially explain individual differences in prosocial intentions and behaviour.

1. Objective

The data collection was inspired by the observation that despite the circumstances, some individuals behave prosocially either by actively helping others or by self-imposing limits on their behaviour. The main objective and the rationale behind the data collection was to delve deeper into antecedents of other regarding and prosocial behaviour. The present study presents the reference article [1] in the broader context of outward orientation and self-centred orientation. Finally, the dataset allows for comparing various forms of prosocial behaviours and investigating how those behaviours are intertwined.

2. Data Description

The dataset in the SAV format together with the syntax is available at OSF (<https://osf.io/9q5ez/>). The dataset includes variables analysed in the reference study [1] as well as all additional variables reported in Čavojová et al. [2] and Adamus et al. [3] and unreported variables published in supplementary materials for this paper. Apart from the raw data, supplementary materials include all instructions and a full questionnaire employed in the survey. Table 1 shows descriptive demographic statistics and Table 2 presents descriptive statistics, mean values, and psychometric properties of all measures used during the data collection. The focal point of the entire dataset is prosocial behaviour in three various areas (vaccination, helping behaviour during the COVID-19 pandemic, and pro-environmental behaviour) and its antecedents. The list of antecedents focuses on individual differences in the tendency to behave prosocially and two novel constructs postulated in a follow-up study [3]—outward orientation and self-centred orientation.

3. Experimental Design, Materials and Methods

3.1. Participants and Procedure

In total, 715 respondents started the survey, but 215 withdrew before completing the questionnaire or failed to pass any of the four attention-check questions present in the form. The

Table 1

Descriptive data for the sample.

	<i>M</i>	<i>MDN</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
age	44.32	42	15.66	18	86
conservatism - liberalism	3.88	4	1.22	1	7
religion	3.95	4	2.14	1	7
people in household	2.98	3	1.33	1	9
education level	%				
primary school	2.40%				
high school without graduation	11%				
high school	46.20%				
university (Bc.)	5.60%				
university (Mgr.; Ing.)	31.80%				
university (Ph.D.)	2.40%				
marital status					
married	49.60%				
divorced	10.80%				
widow/widower	3.40%				
single	36.20%				

Note: *N* = 500, *N* women = 250, *N* men = 250. Conservatism-liberalism was coded: 1 = very conservative, 7 = very liberal.

Table 2

Descriptive statistics, mean values, and psychometric properties of all measures.

Construct	measure (label in SPSS)	M	SD	Minimum	Maximum	Skewness (SE = 0.11)	Kurtosis (SE = 0.22)	Cronbach's α
Personality traits	BFI_extra	3.24	0.72	1.17	5	−0.02	−0.34	.74
	BFI_agree	3.69	0.66	1.33	5	−0.27	−0.17	.72
	BFI_consc	3.77	0.68	1.5	5	−0.30	−0.13	.76
	BFI_negem	2.80	0.77	1	5	0.24	0.01	.76
	BFI_open	3.48	0.65	1.83	5	0.08	−0.47	.67
Collectivism/Individualism	HVIC_HC_avg	3.58	0.73	1	5	−0.36	0.30	.72
	HVIC_VC_avg	3.39	0.70	1	5	−0.59	0.62	.59
	HVIC_VI_avg	2.92	0.88	1	5	−0.27	−0.21	.74
	HVIC_HI_avg	3.51	0.79	1	5	−0.11	−0.28	.63
	prosoc_ALL_avg	3.41	0.45	1.76	4.67	−0.20	0.42	.88
Consideration of Future Consequences	CFC_F_avg	4.77	1.02	1	7	−0.19	0.53	.85
Immediate Outcomes	CFC_I_avg	3.72	1.08	1	7	0.06	−0.01	.82
Feelings of helplessness related to the climate crisis	helpless_CLIM_avg	4.15	1.56	1	7	−0.31	−0.53	.91
Feelings of helplessness related to the COVID-19 pandemic	helpless_COV_avg	3.59	1.60	1	7	0.20	−0.78	.90
Feelings of helplessness related to the vaccination	helpless_VAC_avg	3.28	1.70	1	7	0.38	−0.84	.85
Feelings of threat by COVID-19 pandemic	threat_COV_avg	4.62	1.44	1	7	−0.38	−0.34	.84
Feelings of threat by vaccination against COVID-19 disease	threat_VAC_avg	3.80	1.97	1	7	0.05	−1.24	.95
Feelings of threat by the climate crisis	threat_CLIM_avg	4.46	1.55	1	7	−0.34	−0.32	.93
Helping behaviour during the COVID-19 pandemic	proccovid_avg	2.01	0.36	1	3	−0.34	0.56	.49
Pro-environmental behaviour	proenviro_avg	2.01	0.30	1.09	2.91	−0.10	0.25	.70
Vaccination behaviour	provacc_avg	1.75	0.50	1	3	0.37	−0.61	.67
Vaccination hesitancy	antivacc_avg	2.78	1.01	1	5	0.25	−0.79	.91

Note: M – mean, SD – standard deviation, SE – standard error.

final sample comprised 500 participants (250 men, 250 women), aged between 18 – 86 years ($M = 44.32$, $SD = 15.66$). Participants were recruited by an external agency, Data Collect [4], from a representative nationwide panel of respondents. Demographic details of the sample are presented in Table 1. Post-hoc sensitivity analysis carried out in GPower [5] for a follow-up study [3] showed that the sample size provided sufficient statistical power (0.80) to detect even relatively small effect sizes with correlations of $r > 0.125$ and single regression coefficients of $f^2 > 0.012$ in regression with 11 predictors with 5% error probability.

The data collection was performed using a computer-assisted web interview method and the questionnaire was hosted on Qualtrics. After we prepared the questionnaire, we sent the links to the agency which then contacted potential participants from their panel. Potential participants were selected randomly according to the agreed representativeness criteria (age and gender). The participants received emails with the link redirecting them to the survey. Before starting, participants read extensive online information about the research, its objectives, and the confidentiality and anonymity of the data (see Informed consent in supplementary materials). The participants were not deceived at any point. They were informed that the data will remain confidential and that they can leave the survey at any time without completing the survey. Those who had wished to continue pressed the “agree” button and were allowed to start the main part of the study. It took about 30 min to finish the full survey ($M_{time} = 46min$, $MDN = 22min$). The participants were remunerated by the agency according to an internal scoring system by credit points or vouchers. The final dataset was complete and there are no missing data, as all the items in the survey were compulsory. However, participants who did not want to respond to any of the questions or did not want to continue could withdraw at any time without completing the questionnaire.

The data were saved on our Qualtrics server. Each participant was identified by a unique alphanumeric code assigned by the agency. This allows the software to save all answers related to one code as a single entry. To protect the rights of the participants, we employed a safety procedure precluding any of the parties to have full and unrestricted access to the dataset. As the authors of the study, we had access only to the unique codes that do not allow us to identify the participants by name or any other sensitive data. On the other hand, the agency had no access to our servers or the complete dataset, and, thus, could not match individuals with their answers. After completing the data collection, we sent only a list of identification codes to settle the payments.

The data were collected between 24 May 2021 and 2 June 2021, when vaccines against the COVID-19 disease were available in Slovakia but were still strictly controlled by the governmental institutions and distributed amongst the most vulnerable groups—in terms of age and/or comorbidity—as a priority. The dataset is part of a larger research on antecedents of prosocial intentions and behaviour such as vaccination, helping behaviour during the COVID-19 pandemic and pro-environmental behaviour. The full dataset was intended to support separate studies on prosocial behaviour.

3.2. Materials and Measures

First, participants answered basic socio-demographic questions such as age, gender, education and questions about political orientation and the importance of religion. Then, followed the blocks of questions related to (1) individual characteristics (big five personality factors, collectivism/individualism, consideration for future consequences, prosocial motivations), (2) feelings of threat and helplessness related to vaccination, COVID-19 pandemic, and climate change, and finally (3) prosocial behaviour in three domains: vaccination, helping behaviour during the pandemic and pro-environmental behaviour. All materials were distributed in the Slovak language. The questionnaire in Slovak and English is available at: <https://osf.io/9q5ez/>.

3.2.1. Individual Differences

Big Five personality traits were measured using a short form of the Slovak version [6] of the Big Five Inventory 2 [7]. The measure comprises 30 items arranged into five factors: **Extraversion**,

Agreeableness, **Conscientiousness**, **Negative Emotionality**, and **Open-Mindedness**. Participants express their agreement or disagreement with each of the items using a 5-point Likert scale ranging from *disagree strongly* to *agree strongly*.

To capture *Collectivism/Individualism* we employed the **Horizontal-Vertical Individualism-Collectivism (HVIC)** scale [8], which comprises 14 items forming four subscales. First, **horizontal individualism** approximates the sense of being a self-reliant individual who does not compete with others and does not seek high social status. The subscale contains three items (e.g., “I often *do my own thing*”). The **vertical individualism subscale** reflects an individual's tendency to establish their social status through competing with others (e.g., “Without competition it is impossible to have a good society”). **Horizontal collectivism** is understood as a tendency to acknowledge the interdependence of individuals from various groups and value social relations between them and shared goals. The authors speculated that it is best represented by Chinese society. The subscale contains 4 items (e.g., “I feel good when I cooperate with others”). Finally, **vertical collectivism**, best resembled by the caste system in India, captures a tendency to seek hierarchy between groups through competition. The subscale contains four items (e.g., “I usually sacrifice my self-interest for the benefit of my group”). All items were rated on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*) and the mean scores were calculated.

To measure whether participants prefer immediate rewards or focus on future and distant outcomes, we used the *Consideration of Future Consequences (CFC)* scale [9]. For the current study, we used a Slovak translation [10]. The scale has 14 items assigned to two factors: CFC-Future (e.g., “Often I engage in a particular behaviour to achieve outcomes that may not result for many years.”) and CFC-Immediate (e.g., “I generally ignore warnings about possible future problems because I think the problems will be resolved before they reach a crisis level.”). Participants responded on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*) and the mean scores were calculated.

General *Prosocial tendencies* were rated using the 23-item Prosocial Tendencies Measure (PTM) [11,12]. Exemplary items are: “I can help others best when people are watching me” or “I prefer to donate money anonymously”. Participants gave responses on a scale ranging from 1 (*not at all like me*) to 5 (*absolutely like me*).

3.2.2. Emotional Response to Threats

We measured *feelings of helplessness* related to the vaccination, the COVID-19 pandemic, and climate change by four items each. The questions asked how a participant felt about vaccination, the COVID-19 pandemic and climate change [e.g. “I am worried that I have no control over whether I will be vaccinated and with which vaccines”]. Participants responded on a 7-point scale (1 = *completely disagree*, 7 = *completely agree*) and separate mean scores were used to indicate helplessness in each of the three domains.

Feelings of threat related to vaccination against the COVID-19 disease, the disease itself, and climate change were assessed using three questions in each domain. We asked about the threats participants felt concerning their health, quality of life, and economic and social consequences [e.g., “To what extent you feel threatened by vaccination when you think about its influence on the quality of life of you and your close ones”]. Participants answered on a 7-point scale (1 = not threatened at all, 7 = extremely threatened). The mean score was calculated separately for each of the three domains.

3.2.3. Prosocial Intentions and Behaviour

Vaccination hesitancy was assessed by 10 items reflecting negative attitudes towards vaccination. Six items were adapted from Wallace et al. [13] and the additional four items were constructed by the authors themselves. Participants expressed whether they agree with each of the statements on a 5-point scale (1 = strongly disagree, 5 = strongly agree) [e.g., “Currently, vaccination against many diseases is completely unnecessary”]. Higher scores indicated stronger anti-vaccination attitudes.

To capture participants' *vaccination behaviour* we asked four questions [1]. Participants indicated whether they are vaccinated against flu, against COVID-19, actively persuade others to

get vaccinated, and their general behaviour towards vaccines (e.g. whether they refused to get their children vaccinated/took voluntary vaccines). Participants chose their answers from three options, and we assigned 1 point for answers indicating “no” (e.g. “I have never been vaccinated against flu”), 2 points for answers showing some action/willingness (e.g. “I get vaccinated against flu only under specific circumstances”) and 3 points for answers indicating action (e.g. “I regularly get vaccinated against flu”).

Helping behaviour during the COVID-19 pandemic was measured using five items related to the behaviour of participants during the pandemic [2]. Participants stated whether they looked out for people in need, provided emotional support, made selfish buying choices (reverse scored), restricted their social life, and adhered to regulations and hygienic recommendations. Participants chose their answers from three predefined options. They were assigned 1 point for answers indicating the most selfish answers (e.g. “I was not interested in talking to others about their feelings during the pandemic”), 2 points for answers indicating some action/willingness (e.g. “When I noticed that someone close to me was depressed or anxious, I tried to help them”) and 3 points for answers indicating action (e.g. “I regularly contacted loved ones and friends to make sure they were okay”).

Pro-environmental behaviour was measured by eleven self-reported items related to the behaviour of participants regarding recycling and waste avoidance (4 items), purchasing behaviour (4 items), and energy conservation (3 items) [3]. Again, participants could respond by choosing from three available options. We gave 1 point for answers indicating the most environmentally harmful answers [e.g., “I regularly use plastic bags while shopping/I don’t think too much about it”], 2 points for answers indicating some pro-environmental action/willingness [e.g., “I avoid using plastic bags, I use my bags and use plastic bags only when I forgot to bring one of mine”] and 3 points for answers indicating deliberate effort put in pro-environmental behaviour [e.g., “I do not use any plastic bags”].

Willingness to play for charity. After completing the main part of the survey, the participants were asked whether they would like to devote some time to earn money for one or two charities from a list (*Doctors without borders* and/or *The Wolf* – Slovak forest protection organisation). Those who had agreed proceeded to a real-effort task–slider task. The aim was to correctly set the slider on the scale to the specified value. There were 50 tasks and the participants could earn a maximum of one euro if successful in all tasks. Participants were informed that they could withdraw from the task at any time. The money the participants earned was transferred to charities from the research grant of one of the authors.

Ethics Statements

All methods were carried out following the standards of the American Psychological Association and were approved as a part of the MSCA-IF grant (MSCA fellow3@MUNI; CZ.02.2.69/0.0/0.0/19_074/0,012,727).

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data Availability

[Emotional drivers_dataset_eng \(Original data\)](#) (Open Science Framework).

CRedit Author Statement

Magdalena Adamus: Conceptualization, Methodology, Resources, Investigation, Writing – original draft; **Vladimíra Čavojová:** Conceptualization, Methodology, Data curation, Investigation, Writing – original draft; **Eva Ballová Mikušková:** Conceptualization, Methodology, Data curation, Investigation, Writing – original draft.

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The data were collected with the support of the external agency—Data Collect s.r.o.—under the ICC/ESOMAR code of conduct. The agency credentials can be viewed at <https://www.datacollect.cz/>.

References

- [1] M. Adamus, V. Čavojová, E.B. Mikušková, Fear trumps the common good: psychological antecedents of vaccination attitudes and behaviour, *Acta Psychol.* 227 (2022) 103606, doi:[10.1016/j.actpsy.2022.103606](https://doi.org/10.1016/j.actpsy.2022.103606).
- [2] V. Čavojová, M. Adamus, E. Ballová Mikušková, You before me: how vertical collectivism and feelings of threat predicted more socially desirable behaviour during COVID-19 pandemic, *Curr. Psychol.* (2022) 1–12 Mar 19, doi:[10.1007/s12144-022-03003-3](https://doi.org/10.1007/s12144-022-03003-3).
- [3] M. Adamus, J. Šrol, V. Čavojová, E. Ballová Mikušková, Seeing past the tip of your own nose? How outward and self-centred orientations could contribute to closing the green gap despite helplessness, Preprint. Sep 23 (2022) 1–18. doi:[10.21203/rs.3.rs-2068066/v1](https://doi.org/10.21203/rs.3.rs-2068066/v1).
- [4] DataCollect, About the company. <https://www.datacollect.cz/en/market-research-phone-and-online-surveys/>, 2022 (accessed 23 December 2022).
- [5] F. Faul, E. Erdfelder, A.G. Lang, A. Buchner, G* Power 3: a flexible statistical power analysis program for the social, behavioral, and biomedical sciences, *Behav. Res. Methods, Instrum. Comput.* 39 (2007) 175–191, doi:[10.3758/bf03193146](https://doi.org/10.3758/bf03193146).
- [6] P. Halama, M. Kohút, C.J. Soto, O.P. John, Slovak adaptation of the Big Five Inventory (BFI-2): psychometric properties and initial validation, *Stud. Psychol.* 62 (2020) 74–87, doi:[10.31577/sp.2020.01.792](https://doi.org/10.31577/sp.2020.01.792).
- [7] C.J. Soto, O.P. John, The next big five inventory (BFI-2): developing and assessing a hierarchical model with 15 facets to enhance bandwidth, fidelity, and predictive power, *J. Pers. Soc. Psychol.* 113 (2017) 117–143, doi:[10.1037/pspp0000096](https://doi.org/10.1037/pspp0000096).
- [8] E. Sivadas, N.T. Bruvold, M.R. Nelson, A reduced version of the horizontal and vertical individualism and collectivism scale: a four-country assessment, *J. Bus. Res.* 61 (2008) 201–210, doi:[10.1016/j.jbusres.2007.06.016](https://doi.org/10.1016/j.jbusres.2007.06.016).
- [9] J. Joireman, M.J. Shaffer, D. Balliet, A. Strathman, Promotion orientation explains why future-oriented people exercise and eat healthy: evidence from the two-factor consideration of future consequences-14 scale, *Personal. Soc. Psychol. Bull.* 38 (2012) 1272–1287, doi:[10.1177/0146167212449362](https://doi.org/10.1177/0146167212449362).
- [10] V. Čavojová, M. Jurkovič, Comparison of experienced vs novice teachers in cognitive reflection and rationality, *Stud. Psychol.* 59 (2017) 100–112, doi:[10.21909/sp.2017.02.733](https://doi.org/10.21909/sp.2017.02.733).
- [11] G. Carlo, B.A. Randall, The development of a measure of prosocial behaviors for late adolescents, *J. Youth Adolesc.* 31 (2002) 31–44, doi:[10.1023/A:1014033032440](https://doi.org/10.1023/A:1014033032440).
- [12] P. Babinčák, Prosocial Tendencies Measure-Revised (PTM- R) - prvá skúsenosť s krátkou metodikou na meranie prosociálneho správania, in: K. Bartošová, M. Černák, P. Humpolíček, M. Kukaňová, A. Slezáčková (Eds.), *Sociální Procesy a Osobnost, Člověk Na Cestě Žívotem Křížovatkou a Mosty*, MDS, Brno, 2011, pp. 7–12.
- [13] A.S. Wallace, K. Wannemuehler, G. Bonsu, M. Wardle, M. Nyaku, K. Amponsah-Achiano, J.F. Dadzie, F.O. Sarpong, W.A. Orenstein, E.S. Rosenberg, S.B. Omer, Development of a valid and reliable scale to assess parents' beliefs and attitudes about childhood vaccines and their association with vaccination uptake and delay in Ghana, *Vaccine* 37 (2019) 848–856, doi:[10.1016/j.vaccine.2018.12.055](https://doi.org/10.1016/j.vaccine.2018.12.055).