

Exploring Risk Perception in the Romanian Covid-19 Pandemic

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Abstract. Knowing how a crisis is perceived by a population can lead to more optimal and effective measures to combat negative effects of disasters in this context, attitudes, the degree of involvement, the speed of accepting imposed measures, play an important role for a preventive, pro-active behaviour of both *individual*- and *community-level*. In this paper, based on the data provided by a quantitative questionnaire applied in two non-sequential waves (177 responses in Wave 1 and 368 responses in Wave 5), some aspects of the five constructs expressing the types of perception towards authorities, support, risk of illness, duration of the COVID-19 pandemic, media and some of the factors that may influence perception (personality, cognitive-attitudinal, emotional, behavioural, demographic aspects) are analysed.

Keywords: psychometric research, Covid-19 perception, behaviour, transversal method

1. INTRODUCTION

2021 was the most complicated year in the Romanian medical history and the most relevant event regarding the impact of pandemic in a society, on various socio-economic and psychological aspects (IRES 2021 Opinion Survey). COVID-19 pandemic caused 67,310 deaths, 3,301,662 confirmed cases of illness, 3,224,477 patients were cured, with a mortality of 2.26% (www.worldometers.info, 12.12.2022). On the other hand, a nation-wide opinion survey showed that the psycho-emotional impact of the COVID-19 pandemic led to increased levels of anxiety (10%) and stress (7%), 14% of interviewed subjects declaring they are constantly worried. 50% of the survey participants reported that their everyday life has negatively changed due to restrictions and movement limitations (26%), limitations imposed on their social interaction (12%), job loss (20%), negatively affecting income (8%), health problems (5%), limiting access to medical services (4%), inadequate online education (5%) (IRES, 2021).

2. CONCEPTUAL BACKGROUND

A literature review reveals that psycho-social mechanisms are related to individual perceptions

(e.g., Armas and Avram, 2009; Lanciano et al., 2020; Walker and McCane, 2020; Lin et al., 2020; Vancea and Apostol, 2021; Passavanti et al., 2021; Shokrkon and Nicoladis, 2021; Ert et al., 2022; Hagger and Hamilton, 2022). An analysis of psycho-social dimensions of risk perception and behaviour is necessary to determine how perceived risk is related to engagement in protective, pro-active behaviours. Individual perception is built on psychosocial voluntary or involuntary mechanisms, as coping reactions and defence. Perception needs time to develop, is the result of past experiences, is selective, is both subjective and objective, it changes, evolves over time, and is influenced by personal motivations and interests. Perceptions can lead to an action as response or not. In figure 1 there are captured some of the relationships between different types of perceptions and personalities, and the factors that influence perception. Personality can contribute to mental health deterioration, in literature being analysed different coping mechanisms: agreeableness, openness, neuroticism, extraversion, conscientiousness (Lovibond, 1995; Mertens et al, 2020; Walker, 2020; Wissmath, 2021; Hagger, 2022).

Both perception and behavior and/or response evolve over time, the dynamics of this relationships being of interest (Figure 2).

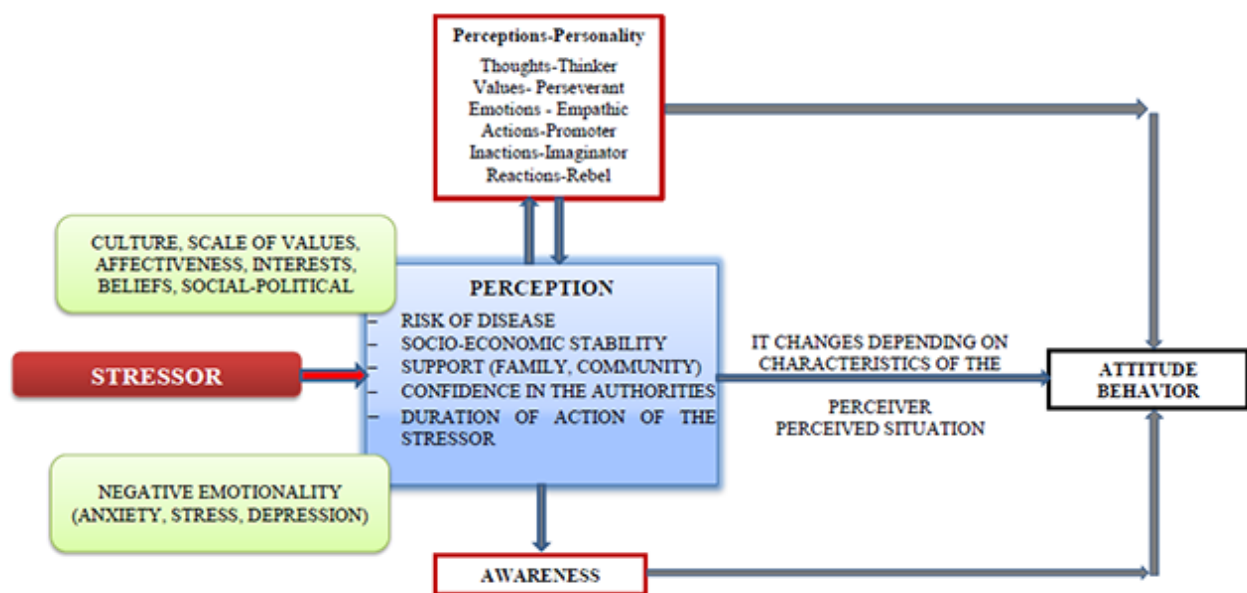


Figure 1. Conceptual scheme Stressor-Perception-Behavior (personal compilation)

In the COVID-19 pandemic context, it is a difficult task to understand if people plan to adopt certain coping behaviours or not. It is important that people understand the existence of benefits gained by acting, and for scientists to identify the barriers that block preventive behavior, and the nature of surrounding influences. This study is based on the

theory of planned behavior (Ajzen, 1991; Hagger, 2022). According to this theory, if benefits are not lacking and barriers are minor, people will change their behaviours or at least there will be an intention to change. But there is a gap between intention and action, and this should be a possible outcome of the interplay between habits, conditionings and influences.

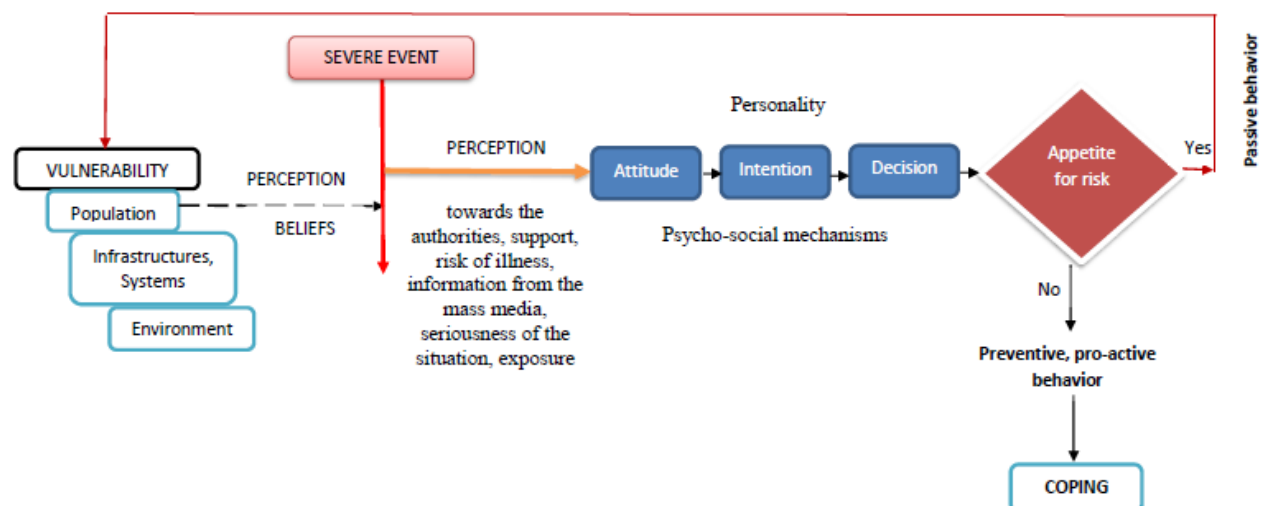


Figure 2. The role of perception and its post-event evolution

3. METHODS AND DATA

In this study we used the transversal survey method that allowed us to identify psycho-social mechanisms activated at a certain moment. The on-probability

snowballs sampling technique was applied (Heckathorn, 2015).

Date were collected starting with the first wave between March and May 2020 (177 responses). In the 5th wave (2022), we had a sample of 368

subjects. It would have been interesting to have a second opinion from the same subjects after a period, but the lack of data led to a single comparative analysis between two cross-sectional statistical analyses.

The data collection instrument consisted of a 6-part questionnaire, most of the answers being given using a 4- or 5-step Likert-type scale. The structure of the questionnaire is the following: Part I – Perception towards the authorities, support, risk of

illness, mass-media, severity of the pandemic threat, exposure, duration of the COVID-19 pandemic, locus of control; Part II – Personality Traits (Neuroticism and Conscientiousness, Iliescu et al. 2015); Part III – DASS Scale (Lovibond, 1995); Part IV – Fear Scale (Mertens et al, 2020); Part V – Behavior (Ajzen, 1991) and Part VI – relevant socio-demographic data.

Sample statistics are given in Table 1 and Table 2 and Figure 3.

Table 1. Pandemic wave 1, demographic data (percentages)

Sex	Age		Higher education	Occupation employees	Location in urban areas	Property type homeowners	Block of flats	Income > average	Religious
women	20-29	>50							
64	44	15	66	61	74	84	60	44	72

Table 2. Pandemic wave 5, demographic data (percentages)

Sex	Age		Higher education	Occupation employees	Location in urban areas	Property type homeowners	Block of flats	Income > average	Religious
women	20-29	>50							
62	34	21	66	64	76	88	58	43	74

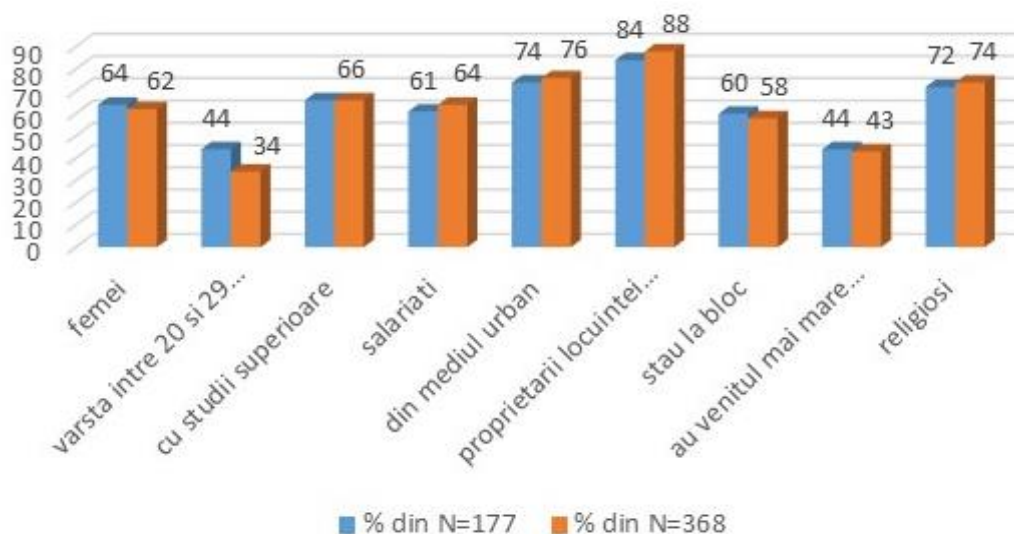


Figure 3. Comparison of socio-demographic characteristics (%)

Different methods (correlations, covariance, path and modelling of structural equations) were performed in order to examine the relationships between the level of perception, socio-demographic characteristics, sources of information, education, experience, emotional states (fear, anxiety, stress), personality, gender and behavior. After designing the conceptual schemes, these schemes were tested, verifying the fulfilment of the criteria for matching

the model to the data (Kenny, 2014, 2020; Suhr, 2022; Byrne, 2012).

4a. RESULTS. DESCRIPTIVE STATISTICS

Selected comparative results on perception and thrust, compliance with directives, and different behaviours are shown in tables 3 to 6.

Table 3a – Perception (wave 1): To what extent do you trust the information regarding COVID-19 provided by...

	Mean (SD)	(%)				
		1- to a very small extent	2- small/reduced extent	3- moderate extent	4- large extent	5- to a very large extent
TV	2.33 (1.19)	31.07	27.12	25.99	9.60	6.21
Newspapers (paper or online)	2.33 (1.15)	28.81	31.07	23.16	12.43	4.52
The strategic information group	3.03 (1.31)	14.12	24.29	22.60	22.03	16.95
Internet news	2.14 (1.10)	36.16	29.38	22.60	8.47	3.39
Facebook and other social networking sites	1.79 (1.08)	55.37	22.60	12.99	5.65	3.39
People around you	2.76 (1.21)	19.21	23.16	27.12	23.16	7.34

Table 4a – Perception (wave 1): How much do you trust the following institutions that they are managing the COVID-19 crisis well?

	Mean (SD)	(%)				
		1- to a very small extent	2- small/reduced extent	3- moderate extent	4- large extent	5- to a very large extent
The president	2.35 (1.18)	32.77	20.34	31.07	10.73	5.08
Government	2.01 (1.07)	42.94	23.73	26.55	3.39	3.39
Health system	2.92 (1.23)	14.69	23.73	28.81	20.34	12.43
Ministry of Interior	2.44 (1.25)	28.81	25.99	26.55	9.60	9.04
Army	2.88 (1.36)	22.60	16.95	25.99	19.21	15.25
DSU/ISU	2.98 (1.38)	19.77	20.34	18.64	24.29	16.95
Police	2.57 (1.29)	28.81	18.08	29.38	14.69	9.04

Table 5a – Behavior (wave 1): To what extent do you consider that you comply with the directives of the authorities to stay at home during the state of emergency?

	Mean (SD)	(%)				
		1- to a very small extent	2- small/reduced extent	3- moderate extent	4-large extent	5- to a very large extent
Individual	4.19 (0.87)	1.69	1.69	14.69	40.11	41.81

Table 6a – Behavior (wave 1): How often do you leave the household?

	Mean (SD)	(%)					
		daily	Once every 2-3 days	Once a week	Once every 2 weeks	Once every 3 weeks	Less often
individual behavior	1.58(1.02)	64.61	23.16	7.34	2.26	0.56	2.26

The same variables in Wave 5 are presented below (table 3b to table 6b) and a comparison

between the acceptance of pandemic measures imposed by the authorities is drawn in figure 4.

Table 3b – Perception (wave 5): To what extent do you trust the information regarding COVID-19 provided by...

	Mean (SD)	(%)				
		1- to a very small extent	2- small/reduced extent	3- moderate extent	4- large extent	5- to a very large extent
TV	2.38 (1.15)	28.5	25.3	30.4	10.9	4.9
Newspapers (paper or online)	2.38 (1.12)	25.8	31	26.6	12.2	4.3
The strategic information group	3.04 (1.30)	14.7	20.9	26.9	20.4	17.1
Internet news	2.21 (1.09)	32.3	30.4	24.7	9.2	3.3
Facebook and other social networking sites	1.88 (1.05)	48.4	25.8	17.7	5.4	2.7
People around you	2.77 (1.20)	18.5	22.8	30.2	20.7	7.9

Table 4b – Perception (wave 5): How much do you trust the following institutions that they are managing the COVID-19 crisis well?

	Mean (SD)	(%)				
		1- to a very small extent	2- small/reduced extent	3- moderate extent	4- large extent	5- to a very large extent
The president	2.12 (1.17)	42.9	19.6	23.9	10.1	3.5
Government	1.91 (1.03)	47.8	22	23.1	5.4	1.6
Health system	3.09 (1.22)	11.1	21.7	28.8	23.6	14.7
Ministry of Interior	2.34 (1.24)	33.2	24.2	25.3	10.1	7.3
Army	2.69 (1.34)	27.2	18.2	24.2	19.6	10.9
DSU/ISU	2.97 (1.38)	20.9	16.8	22.8	23.1	16.3
Police	2.40 (1.26)	33.4	19.3	27.7	12.8	6.8

Table 5b – Behavior (wave 5): To what extent do you consider that you comply with the directives of the authorities to stay at home during the state of emergency?

	Mean (SD)	(%)				
		1- to a very small extent	2- small/reduced extent	3- moderate extent	4- large extent	5- to a very large extent
Individual	4.21 (0.87)	0.8	2.4	16.8	34.2	45.7

Table 6b- Wave 5: How often do you leave the household?

	Mean (SD)	(%)					
		daily	Once every 2-3 days	Once a week	Once every 2 weeks	Once every 3 weeks	Less often
individual behavior	1.5(1.0)	64.1	24.5	7.1	1.6	0.3	2.4

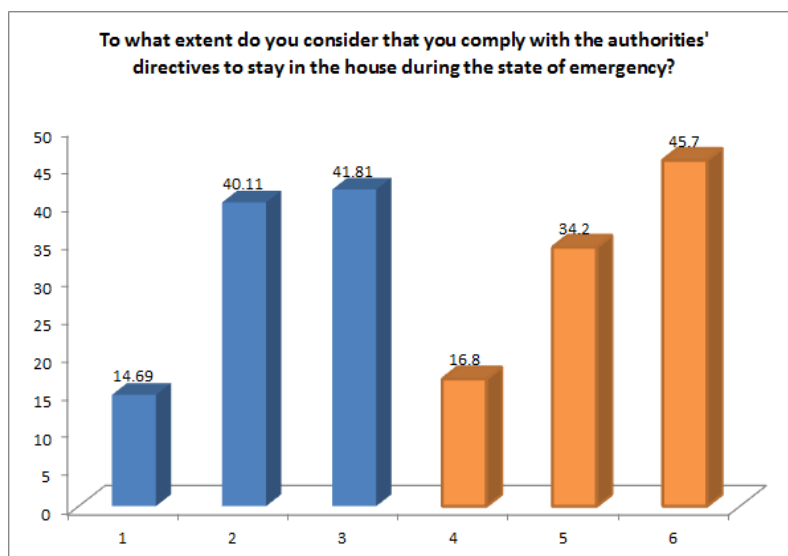


Figure 4. Comparison between acceptance of pandemic authority measures (wave 1 in blue vs. wave 5 in orange)

4b. RESULTS. INFERENTIAL STATISTICS

Our working hypothesis was that the level of perception plays a role in the attitude and behaviour of selected subjects during the COVID-19 lockdown restrictions. Path and structural analysis tested relationships between measured and latent variables, using a measured and a structural model (Kenny, 2014, 2020; Suhr, 2022; Grace, 2022; Beran and Violato, 2010).

Methodological steps are: (1) definition of independent and dependent variables, (2) model identification, (3) parameter estimation, (4) model-fitting, (5) model redefinition and (6) interpretation of results. The fit of the model to the measured data is obtained using some parameters such as the chi-square test, the comparative fit index (CFI), the mean square error of approximation (RMSEA) related to the residual in the model.

Some exemplification of modelling “reasonably consistent to the data” are described below and, although not all modelling is presented, some of the results will be emphasised in figures 5 to 10:

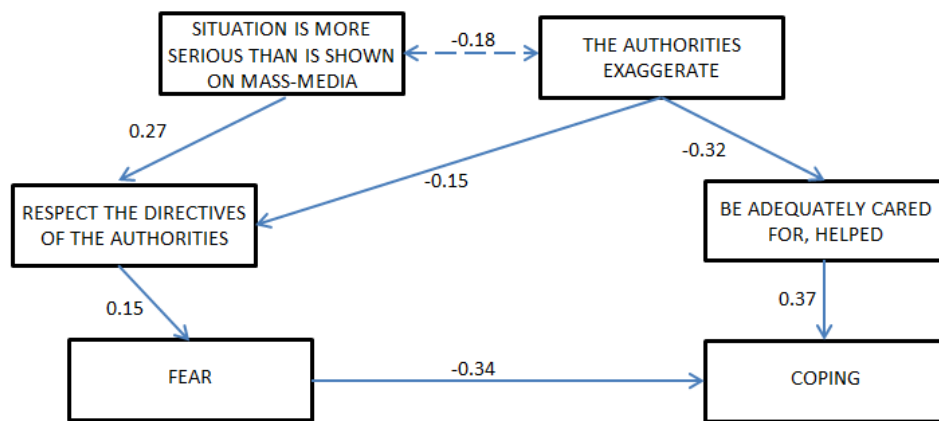
- mass media is a better predictor for how directives from the public authority are respected and adopted, reducing fear and increasing coping activities. On the other hand, the situation presented by the authorities negatively influences the confidence in receiving adequate

care and overcoming illness, leading to coping through other mechanisms, Figure 5;

- the situation presented by officials negatively influences how directives from the public authority are respected and the confidence in receiving adequate care is affected. Coping is based on the believe that in the event of an illness one will get support from friends and family. Coping does not significantly relate from compliance with imposed measures, and negative emotions do not influence it;
- fear of COVID-19 is a good predictor of the psychological states, neuroticism and stress (with direct and indirect effects); fear does not strongly influence the perception of exposure to illness, which in turn correlates negatively with stress. Thus, stress is saturated by another variable, not by the perceived exposure;
- Information given by public authorities does not influence neuroticism and anxiety; psychological states influence each other significantly, depression being a good predictor for anxiety and anxiety a predictor for stress; psychological effects do not correlate with perceptions of information given by officials, Figure 6;
- psychological effects are a very good predictor, in a directly proportional relationship, for the perception of illness, and the received messages from the authorities. What is worth mentioning in this model is that the perception of exposure

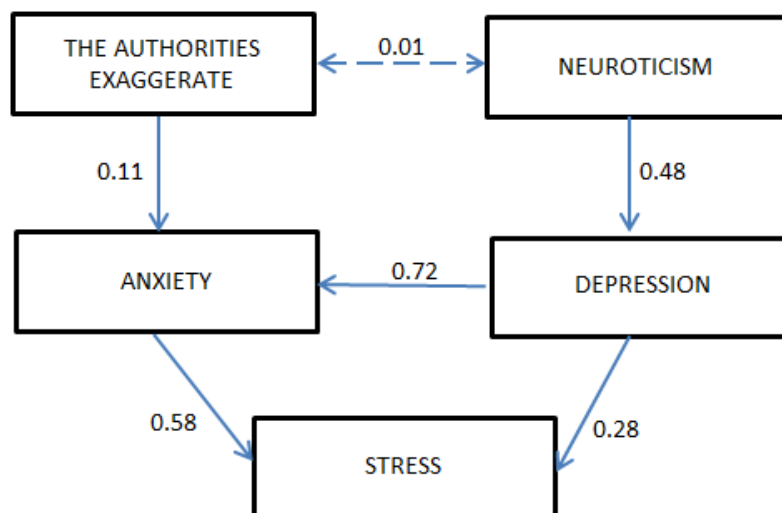
to the risk of disease is not a significant predictor of fear and the neuroticism personality type, but of the perception of the exaggerations made by authorities and the lack of support. The lack of

support is associated with the lack of medical care, leading to the conclusion that there is no trust in the administrative and health system, Figure 7.



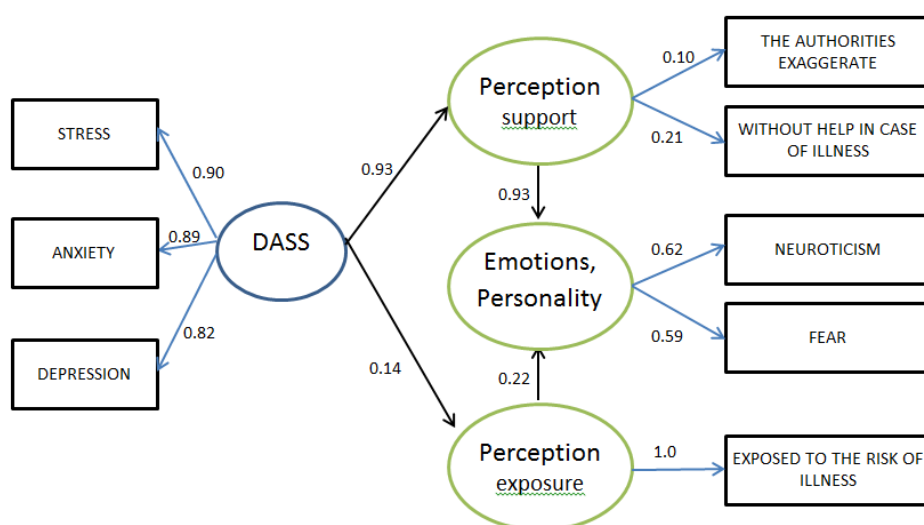
$RMSEA = 0.028$, $SRMR = 0.042$; $CFI = 0.988$, $TLI = 0.978$, $GFI = 0.999$

Figure 5. The extent of relationships considered between the observed variables: mass-media, directives and measures from the public authority, trust, coping



$RMSEA = 0.218$, $SRMR = 0.071$; $CFI = 0.913$, $TLI = 0.805$, $GFI = 0.948$

Figure 6. The extent of the relationships considered between the observed variables: perception and psychological states (fear, stress, anxiety)



$RMSEA = 0.120$; $SRMR = 0.062$; $CFI = 0.914$, $TLI = 0.859$

Figure 7. The relationships between the observed and latent variables: psychological effects, perception, directives from the public authority, emotions, personality, support

5. CONCLUSIONS

It is widely accepted that understanding risk perceptions can lead to more effective coping measures to mitigate negative effects of disasters. Our study results highlighted, for instance, that mass-media has a more important role in informing the population than the authorities. With this awareness, involving mass media in tailored communication strategies plays a central role for governments seeking to efficiently inform, and communicate in crises and disasters for triggering behavioural changes. On the other hand, the perception of pandemic COVID-19 risks correlates with emotional and personality features and less with cognitive and demographic characteristics such as education, gender, age. The applied inferential statistical analysis cannot establish causalities (these only resulting from longitudinal studies, or experiments). We emphasise that the aim of the presented analyses was not to find models with full

statistical significance, but only to fit the models to be reasonably consistent with the data.

Regarding the modeling of the structural equations, inversely proportional relationships are observed between psychological effects (fear, stress, anxiety) and the degree of education, information, and coping. Interesting is the fact that, on the other hand, coping does not have as consistent predictors education and directives and measures from the public authority, etc. A significant negative correlation is recorded between the perception of the expected support in case of illness and the extent to which professional care will be received. At the same time, negative emotions are a better predictor for coping than the support given by the health system.

In case of disasters we have developed mitigation plans, but we still lack psychological coping strategies for the affected human dimensions. After a pandemic, we don't have only to rebuild and improve infrastructures, we also have to build and maintain our well-being.

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