

DETERMINANTS OF ATTITUDINAL COMPLIANCE DURING THE COVID-19 PANDEMIC

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Abstract: *The paper presents the results of a survey administered to 1640 respondents from Romania and the Republic of Moldova in which a number of determinants have been taken into consideration like gender, age, education and COVID-19 exposure, verifying their association with attitudinal compliance. This notion has been conceptualized as agreement to prevention measures and willingness to get the COVID-19 vaccine. The results show a poor association with gender, but a more noticeable one with age and education. Direct exposure to the virus (personal contamination or loss of family member) did not seem to associate with higher levels of attitudinal compliance.*

Key words: *COVID-19, protective behavior, pandemic, compliance.*

1. Introduction

The COVID-19 pandemic, Bavel and colleagues wrote, represents a massive health crisis which requires a major change in behavior. Social science can contribute to that end, in order to align behavior to the recommendations of epidemiologists and of health specialists (Bavel et al., 2020, p. 460). In that sense, at a point in time where no vaccine was available, Betsch appreciated that „the COVID-19 pandemic can only be kept under control through a substantial and rapid change in behavior (Betsch, 2020, p. 438). The need for scientific knowledge persists even after the development of vaccines, because the process of vaccination will take time.

To address that need, the current paper attempts to put to good use data which is part of a larger survey, in order to examine the behavior of some determinants of compliance with the disease prevention measures attempted during this period. The results will be stressed out, after a short review in the first part of the paper, of existing research on the topic. The sample under study for sociological-demographic and COVID-19 experience purposes will also be presented before discussing the results. The results will then be presented in terms of respondents' agreement to disease prevention measures and to being vaccinated. This will be followed by another discussion that will attempt some explanations on the associations between several variables, those describing the lot on one hand, and those describing the attitudinal compliance on the

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other (the agreement with control measures and the willingness to get the vaccine). Short discussions will try to connect the results of our research with other more or less recent ones. The work will be wrapped up with some conclusions and the limitations of it, but also with the practical potential that can be found within these limits.

2. Compliance and Preventive Behavior

Compliance, Paige and Lafreniere consider, may be defined as a change in personal behavior, so that it becomes more congruent with the behavior or expectations of others (Page and Lafreniere, 2005, p. 288). The actual behavioral compliance in our opinion is preceded by an *attitudinal compliance* expressed as agreement facing some expectations or willingness to follow some behavior. In times of pandemics compliance translates into *protective behavior* (Bish and Michie, 2010, p. 798). Accordingly, in this context the attitudinal compliance expresses *being in agreement with the prevention measures and the willingness to adopt a certain behavior like vaccination*.

Of particular scientific interest during the last decade were studies that attempted the identification of different determining factors of protective behavior.

Starting with 2002, Bish and Michie have analyzed a series of publications examining SARS, bird flu, pig flu, H5N1, and H1N1. The research found demographic differences in adopting protective behavior: being older, being female, being more educated, being non-white was more likely associated with a protective behavior (Bish and Michie, 2010, p. 797).

Among SARS-CoV-2 studies we will mention a survey conducted in Cyprus on 1642 subjects (71.6% females and 28.4% males). The findings were that men of younger age were displaying lower compliance levels in general (Solomou and Constantinidou, 2020, p. 1).

After an ample study Raude and colleagues concluded that the French population was displaying a higher level of compliance with public health recommendations, in contradiction with the pessimistic assumption that French, in general, have more difficulty in adapting their social norms to a serious public health threat. At the same time, the authors noted that while the overall compliance seemed high, there were, nevertheless, subgroups with less willingness to comply, like that of young men that did not always agree with the recommendations (Raude et al., 2020, p. 14).

A children and teenage study conducted in India found that compliance with all quarantine requirements (within and outside of family) was encountered only at 7.43% of subjects (Saurabh and Ranjan, 2020, p. 534).

Dryhurst and his colleagues looked at the perception of risk that in other pandemics was positively associated with hand washing, mask wearing and social distancing. The perception of risk associated to COVID-19 was analyzed in conjunction with gender. To be male was uniformly associated with a lower perception of risk in many countries (Dryhurst et al., 2020, p. 1002). The perception of risk was higher, the authors contended, in those who had direct experience with the virus (Dryhurst et al., 2020, p. 1003).

Compliance and its opposite, some research found, is tightly connected to social factors like mobility and interaction, especially for some age categories. The age categories with most intense interaction, Scala and colleagues found, were those of under 19 and over 70 years of age (Scala et al., 2020, p.9).

Other studies undertaken during the pandemic were centered upon the social control on compliance with prevention measures (Sargeant et al., 2021).

3. Research on some Determining Factors for Attitudinal Compliance

3.1. The method and the lot under study

A wider research study was undertaken between November 6th, 2020 and January 26th, 2021 using the questionnaire method. In Romania, this period saw the highest rate of contamination for the year 2020 with more than 10,000 new cases a day. The respondents have been contacted directly, through Facebook and indirectly, through our students and other collaborators from the above-mentioned social network. Partial data from November 6th through December 19th, 2020 have been made public during January 2021 (Pascaru, 2021). The main themes of the inquest were the fear experienced, the level of agreement with disease control measures and willingness to get vaccinated, the quality of life, the level of trust in other people in general, and tolerance. In this paper only agreement with disease control measures and willingness to get vaccinated are being taken under consideration.

As of January 26th, 2021 the lot under examination included 1640 subjects that answered the questionnaire. Hereby we will only present those characteristics that were used as independent variables.

Firstly, we shall mention that there were 639 (39%) male subjects, 994 (60.6%) female subjects and seven (or 0.4%) declining to declare their gender. Age-wise the lot had 625 (38.1%) respondents between 18 and 29, 336 respondents (20.5%) between 30 and 39, 319 (19.5%) between 40 and 49, 195 (11.8%) between 50 and 59, 115 (7%) between 60 and 69 and 45 respondents (2.7%) aged 70 and older. Six respondents, or 0.4%, did not declare their age. As for the level of education 9 respondents (0.5%) graduated only primary school, 95 respondents (5.8%) secondary school, 438 (26.7%) high-school, and 1069 respondents (65.2%) college or University; 29 respondents or 1.8% did not specify their educational level. The failure to state their gender, age or level of education can be attributed to the sensitive matter of the survey. Other lot characteristics had to do with exposure to the virus (personal contamination, close relative contamination and family deaths). Again, we shall only focus on those characteristics connected to this papers' data. Firstly, one should retain that 137 subjects (8.4%) declared having been infected, 1167 (71.2%) not having been infected and 326 (19.9%) not knowing if they had or not been infected; 10 declined to answer (0.6%). A number of 78 respondents or 4.8% declared having family members or close relatives who had died as a result of COVID contamination and 1546 (94.3%) stated that they did not; 16 participants (1%) declined to answer.

The absence of some answers in connection to the COVID-19 experience can be attributed to the delicate nature of it. Notwithstanding this, during the analysis following, all characteristics of the COVID-19 experience will be treated as independent variables. Dependent variables will be the agreement to prevention measures and the willingness to get vaccinated.

3.2. Results

Hand-washing, as a preventive measure, was approved by 1607 or 98% of the respondents, 26 of them (1.6%) disagreeing with it and 7 or 0.4% declaring not knowing/not answering. As to the use of disinfectants, 1444 (88%) were in agreement, 165 (10.1%) in disagreement and 31 (1.9%) not knowing/not answering. Social distancing was approved by 1392 subjects, or (84.9%), disapproved by 216 (13.2%) and indifferent to 32 subjects (2%). Mask wearing was acceptable to 1170 respondents (71.3%), unacceptable to 404 (24.6%) and indifferent to 66 respondents (4%). The limitations on freedom of movement were acceptable to 1018 respondents (62.1%), unacceptable to 562 (34.3%) and indifferent/no answer to 60 (3.7%).

As for the fourteen days isolation at home measure, 1061 respondents (64.7%) were in agreement, 455 (27.7%) in disagreement and 124 (7.6%) not knowing. The institutional quarantining of persons as a preventive measure was acceptable to 1099 respondents (67%), unacceptable to 419 (25.5%) and indifferent/not answerable to 122 subjects (7.4%). The quarantining of areas was in approved by 717 respondents (43.7%), in disapproved with 774 (47.2%) and indifferent/not answerable to 149 (9.1%).

As for the willingness to get vaccinated should a vaccine be developed, 162 or 9.9% were highly interested, 278 or 17% were interested, 294 or 17.9% were slightly interested and 196 or 12% showed little interest; 529 respondents or 32.3% declared no interest at all and 181 or 11% didn't know or didn't answer.

Taking now into account the associations between dependent and independent variables, one should first notice that gender differences did not result in significant differences as to: regular hand-washing, the use of disinfectants, the wearing of a mask, the fourteen days isolation measure, the quarantining of persons and the quarantining of areas. More of the female (88.4%) than of male (83.7%) respondents stated they were in agreement with social distancing and with limitations on the freedom of movement (67.1% as opposed to 60.3%). More males than females however (37.1% as opposed to 25.6%) were very willing to get vaccinated.

Age didn't present significant differences as to the approval of regular hand washing. As for the use of disinfectants, more subjects over 70 years of age (97.8%) were in agreement and fewer of those under 70 (ranging from 86.2% of the 30 to 39 years of age group and 91.65% of those 50 to 59). Respondents over 70 were the least likely to agree to social distancing (77.3% as opposed for instance to those between 60 and 69 at 93.9%). See the data in Table 1.

The special situation of the last age category is somewhat applicable also to mask wearing agreement (76.7% of those over 70 as opposed to 84% of those 60 to 69 years of age). The approval of mask wearing was lowest among young ages (68.9% for those 30 to 39 and 72.5% of those 18 to 29). More of the older subjects were in agreement with restrictions on the freedom of movement (79.5% of the 60 to 69 years of age and 75.6% of those over 70) compared to younger ones (59.9% of the 18 to 29 years old and 59.3% of the 30 to 39).

Age Group and Agreement with Social Distancing

Table 1

		Agreement with Social Distancing		Total
		Yes	No	
Age	18-29	522	89	611
		85.4%	14.6%	100.0%
	30-39	275	55	330
		83.3%	16.7%	100.0%
	40-49	279	33	312
		89.4%	10.6%	100.0%
	50-59	169	21	190
		88.9%	11.1%	100.0%
	60-69	108	7	115
		93.9%	6.1%	100.0%
	70 and over	34	10	44
		77.3%	22.7%	100.0%

The respondents over 70 were least likely to agree to the fourteen days isolation period (65.5%) as opposed to those 60 to 69 (80.2%). The attitude of those over 70 is similar to that of those 18 to 29 (66.4%) and 30 to 39 (67.2%). Fewer of the 18 to 29 (69.8%) and of the 30 to 39 (69.2%) approved the quarantining of persons. Among the rest of age categories, the proportion of those in agreement with the quarantining of persons was over 75%. The distribution of those agreeing to the quarantining of areas was similar: fewer of the respondents from the age groups of 18 to 29 (41.9%) and 30 to 39 (44.1%). Among the other age groups, the percentage of those approving the quarantining of areas was over 50%, reaching a peak at 61% among those 60 to 69 and over 70 years of age. The high willingness to get vaccinated was encountered in over 50% among those 60 to 69 (51%) and those 70 and over (54%). That level of willingness was only found in less than a quarter of those 18 to 29 (21.8%), and in those 30 to 39 (24.2%).

With regard to schooling what strikes as very visible is the attitude of the least educated (primary school). This group displays systematically lower rates of approval than those having graduated from secondary school for: regular hand washing – (88.9% as opposed to 98.9%), the use of disinfectants – (77.8% as opposed to 94.7%), social distancing – (55.6% as opposed to 84.9%), mask wearing – (66.7% as opposed to 83.7%), restrictions on movement – (55.6% as opposed to 65.9%), 14 day isolation – (62.5% as opposed to 74.4%), the quarantining of persons – (62.5% as opposed to 78.7%), and the quarantining of areas – (33.3% as opposed to 52.3%). None of the primary school graduates displayed a high or very high willingness to get vaccinated. The highest proportion of those stating a high and very high willingness to get vaccinated was encountered among those having graduated from secondary school (48.1%), followed by university graduates 32.4%. Respondents having graduated from high school were very willing to get vaccinated in proportion of 21.4%.

Having been infected with SARS-CoV-2 did not bring significant differences as to the approval of regular hand washing as a preventive measure. Some small differences

were highlighted though as to the use of disinfectants. Thus 93.9% of those that have been infected were in agreement with the use of disinfectants and also 89.9% of those that haven't. Similar small differences were encountered with regard to social distancing and wearing masks. An interesting case is that of those that *did not know* if they had or not been infected. Only 87.9% of those stated being in agreement with mask wearing. As for social distancing, only 82% were in agreement, compared to 89% of those that *had* been infected. Interesting is also the fact that only 59.5% of those that have been infected declared themselves in agreement with the restrictions of movement as opposed to 67% of those that had not been infected. And to the restrictions of movement, those that did not know if they had been infected or not had the lowest rate (57%). Those that experienced infection were less so in agreement with the fourteen days isolation period (66.7% as opposed to 71.3% of those that had not been infected). Being infected or not did not seem to make a difference as to the agreement for the quarantining of persons. With the quarantining of areas more of those that had not been infected than those that had been were in agreement, 49.0% as opposed to 45.7% respectively. In the matter of vaccination, a smaller proportion of those that did not know being infected or not were much and very much willing to get vaccinated (24.1% as opposed of 30% of those that had indeed been infected). One should remember though that having been infected didn't necessarily mean a more acute willingness to get vaccinated (Table 2).

Table 2

*Infection with SARS-CoV-2 and the Willingness to get Vaccinated
(Valid Answers = 1451)*

		If during the following months a vaccine is developed, how willing are you to get it?					Total
		<i>Very Much</i>	<i>Much</i>	<i>Little</i>	<i>Very Little</i>	<i>At all</i>	
Have you been infected with SARS-CoV-2?	<i>Yes</i>	15	25	28	19	39	126
		11.9%	19.8%	22.2%	15.1%	31.0%	100.0%
	<i>No</i>	117	208	207	128	371	1031
		11.3%	20.2%	20.1%	12.4%	36.0%	100.0%
	<i>Not know</i>	30	41	59	48	116	294
		10.2%	13.9%	20.1%	16.3%	39.5%	100.0%

Having family members deceased due to COVID-19 did not generate significant differences as to regular hand washing, the use of disinfectants, mask wearing, fourteen days isolation measure and the quarantining of persons. One interesting fact was that in agreement with social distancing were somewhat more of those that did not have close relatives or family members deceased because of COVID-19 (86.9%) as opposed to those that had (82.1%). See Table 3.

Table 3

*Family Members Deceased from COVID-19 and Agreement to Social Distancing
(Valid Answers = 1593)*

		Agreement to Social Distancing		Total
		Yes	No	
Have you had family members deceased from COVID-19?	Yes	64	14	78
		82.1%	17.9%	100.0%
	No	1316	199	1515
		86.9%	13.1%	100.0%

More of those that had family members deceased from COVID-19 than those that didn't were in agreement with the quarantining of areas (57.1% as opposed to 47.6%); 36.7% of those that had close relatives deceased as a result of COVID-19 and 29.8% of those that didn't were much and very much willing to get vaccinated.

3.3. Discussions

Looking at the agreement with various prevention measures as an expression of attitudinal compliance, firstly we noticed its level being high for regular hand washing, the use of disinfectants and social distancing. The attitudinal compliance was dropping gradually starting with mask wearing, following with the quarantining of persons, fourteen days isolation, restrictions on movement and ending with the quarantining of areas.

Overall, the results seem to confirm those studies finding a high level of compliance (Raude et al., 2020). This however is valid only for some of the preventive measures. It is important to mention that attitudinal compliance was gradually decreasing as restrictions had a more obvious community impact, or to put it in a different way, when they were of greater concern for others than for the respondent him/herself.

The willingness to get vaccinated was also very low, only a little more than a quarter of the respondents being willing to get vaccinated.

In spite of the expectations of high levels of compliance from women in general, the results show a higher level of compliance only when it came to social distancing and restrictions of movement. With regard to vaccination, there were fewer women than men who were much and very much willing to get vaccinated.

Our results partially confirm those of other studies that revealed a lower level of compliance among young ages (Solomou and Constantinidou, 2020). In our case it was about the compliance with mask wearing, restrictions of movement, fourteen days isolation, the quarantining of persons and the quarantining of areas.

Young people were the least open to being vaccinated, but also interesting was that subjects over 70 had similar attitudes with those of young ages when it came to distancing, wearing masks and fourteen days isolation measures. This appears to be a vulnerability in addition to those already mentioned in connection to ages (Scala et al., 2020).

The relatively low attitudinal compliance of those with lower education levels may constitute a red flag. Attention is also to be paid to the level of compliance of high school graduates, which at times matched closely that of primary school graduates, but smaller than that of secondary school graduates. The strongest approval of prevention measures was shown by secondary school and university graduates. One interesting topic would be to study the similarities between these two categories. Generally speaking, our research seems to confirm those studies that indicate higher levels of compliance being associated with higher levels of education (Bish and Michie, 2010).

Being infected with the virus somewhat surprisingly was associated with lower levels of compliance, especially when it came to restrictions on movement, isolation or the quarantining of areas. The uncertainty of having been infected is also associated to lower levels of compliance. There is the possibility that those respondents that have been infected feel safer by virtue of their exposed immune system. Our research, while not confirming such results directly, it retains as possible that such lower perception of risk might be attributable to subjects that were previously infected as suggested (Dryhurst et al., 2020, p. 1003). The willingness to get vaccinated of those that had been infected was not higher either and it reached the lowest levels for the undecided ones.

The attitudinal compliance wasn't necessarily higher in those that experienced deaths among relatives or family members; that can only be said about the compliance to the quarantining of the areas. The willingness to get vaccinated was indeed a bit higher in those that experienced deaths in their families.

4. Conclusions

Overall, the current paper confirms the findings of a series of previous research, but not all. Neither the confirmations nor the contradictions can be said to be categorical, that is supported by indisputable statistical data. Notwithstanding this qualification, one could retain several aspects coming out of this work, that are that attitudinal compliance appears poorly differentiated based on gender, but somewhat stronger with regard to age and level of education. Having had direct experience with COVID-19 contamination (personal or death of a family member) does not seem to associate with higher compliance.

Referring to attitudinal compliance (i.e. declared) and not to behavioral compliance (i.e. actual), we would like to believe that we have managed to sketch some probable tendencies rather than facts. This only allows for limited generalizations, especially considering the fact that we did not use a random sample or that we have made any attempt to construct proportions that matched the existing proportions of gender, age or education of the real demographic model of the normal population.

The data analysis needs more in-depth examination in order to enrich the understanding of tendencies. Certainly, there is a need for qualitative research in order to enrich the comprehensive dimension of knowing the determinants of attitudinal compliance. Towards this end, and not only, there is a need for more solid theoretical foundations and for a cross-disciplinary approach, as suggested being suitable for this pandemic crisis (Betsch, 2020, p. 438).

Keeping these limitations in mind, a series of findings justify the practical importance of such a study. West and his colleagues noted that the isolation and the social distancing measures that have been attempted all over the world in order to reduce the spread of the virus came with enormous costs for the people and for society in general. To add to these measures interventions that may help the adoption of behaviors which result in better protection for individuals and those around them were suggested, models based on applied behavioral science (West et al., 2020, p. 451). It is our opinion that through the promotion of the attitudinal compliance model, this paper could bring a small contribution to the understanding of some of the issues and promote adequate interventions.

References

- Bavel, J. J. V., Baicker, K., Boggio, P. S., Van Bavel, J. J., Baicker, K., Boggio, P. S., Capraro, V., et al. (2020). Using social and behavioural science to support COVID-19 pandemic response. *Nature - Human Behaviour*, 4, 460-471, <https://doi.org/10.1038/s41562-020-0884-z>
- Betsch, C. (2020). How behavioural science data helps mitigate the COVID-19 crisis. *Nature - Human Behaviour*, 4, 438, <https://doi.org/10.1038/s41562-020-0866-1>
- Bish, A. & Michie, S. (2010). Demographic and attitudinal determinants of protective behaviours during a pandemic: a review. *British Journal of Health Psychology*, 15(4), 797-824, <https://doi.org/10.1348/135910710X485826>
- Dryhurst, S., Schneider, C. R., Kerr, J., Freeman, A. L. J., Recchia, G., van der Bles, A. M., Spiegelhalter, D., & van der Linden, S. (2020). Risk perceptions of COVID-19 around the world. *Journal of Risk Research*, 23: 7-8, 994-1006, <https://doi.org/10.1080/13669877.2020.1758193>
- Page, S. & Lafreniere, D. K. (2005). Applied Social Psychology to the Community. In Schneider, F. W., Gruman, J. A., Coutts, L. M. (Eds.), *Applied Social Psychology. Understanding and Addressing Social and Practical Problems* (pp. 283-306). Thousand Oaks, London, New Dehli: Sage Publications, Inc.
- Pascaru, M. (2021). *Cum trăim în pandemie? Raport rezultate preliminare* [How do We Live During the Pandemic? Preliminary Results Report], January 2021, Alba Iulia: "1 Decembrie 1918" University of Alba Iulia. Retrieved from https://www.researchgate.net/publication/348564232_CUM_TRAIM_IN_PANDEMIE_HOW_DO_WE_LIVE_DURING_THE_PANDEMIC?channel=doi&linkId=600529e5a6fdcdbc8609794&showFulltext=true
- Raude, J., Lecrique, J.-M., Lasbeur, L., Leon, C., Guignard, R., du Roscoät, E., & Arwidson, P., (2020). Determinants of Preventive Behaviors in Response to the COVID-19 Pandemic in France: Comparing the Sociocultural, Psychosocial, and Social Cognitive Explanations. *Frontiers in Psychology*, 30 November 2020. Retrieved from <https://www.frontiersin.org/articles/10.3389/fpsyg.2020.584500/full>.
- Saurabh, K., & Ranjan, S. (2020). Compliance and Psychological Impact of Quarantine in Children and Adolescents due to Covid-19 Pandemic. *Indian journal of pediatrics*, 87(7), 532-536. Retrieved from <https://doi.org/10.1007/s12098-020-03347-3>.

- Scala, A., Flori, A., Spelta, A., Brugnoli, E., Cinelli, M., Quattrocioni, W., & Fabio Pammolli, F. (2020). Time, space and social interactions: exit mechanisms for the Covid-19 epidemics. *Nature - Scientific Reports*, 10, Article number: 13764 (2020), <https://doi.org/10.1038/s41598-020-70631-9>.
- Sargeant, E., Murphy, K., McCarthy, M., & Williamson, H. (2021). The Formal-Informal Control Nexus During COVID-19: What Drives Informal Social Control of Social Distancing Restrictions During Lockdown? *Crime & Delinquency*, First Published February 3, 2021, 1–20, <https://doi.org/10.1177/0011128721991824>.
- Solomou, I. & Constadinidou, F. (2020). Prevalence and Predictors of Anxiety and Depression Symptoms during the COVID-19 Pandemic and Compliance with Precautionary Measures: Age and Sex Matter. *International Journal of Environmental Research and Public Health*, 17(14), 4924. Retrieved from <https://doi.org/10.3390/ijerph17144924>.
- West, R., Michie, S., Rubin, G. J., & Amlôt, R. (2020). Applying principles of behaviour change to reduce SARS-CoV-2 transmission. *Nature - Human Behaviour*, 4, 451-459, <https://doi.org/10.1038/s41562-020-0887-9>