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Self-transcendence values, vaccine hesitancy, and COVID-19 vaccination: some results from Italy

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ABSTRACT

Despite the relevance of vaccination as one of the greatest successes of public health, many individuals nurture doubts over vaccines and choose to delay or refuse vaccination, despite its availability. This study investigates whether – independently of support for government restrictions, conspiracy beliefs, and informational contamination – benevolence and universalism values separately relate to COVID-19 vaccination uptake via attitudes toward vaccines. The mediational analyses, carried out via MPLUS on 214 Italian participants who had completed an online questionnaire, show that universalism was related to the decision to get vaccinated through the mediation of attitudes toward vaccines, whereas benevolence is related to it only directly. This study contributes to a deeper understanding of the individual factors playing a role in COVID-19 vaccination uptake.

Vaccinations are generally considered one of the foremost achievements in public health. In the case of the COVID-19 pandemic, a growing number of effective vaccines against COVID-19 have been developed in the last 2 years. In epidemiological studies in various countries, these vaccines are confirmed to be safe and effective both in healthy individuals and in specific populations (such as the elderly), particularly against severe illness (Sharma et al., 2021). The vast majority of people in the medical field promote the importance of COVID-19 vaccination in individuals, also in view of the multiple mutant strains of SARS-CoV-2 circulating globally.

Nonetheless, in recent years, growing attention has been addressed to what has been termed 'vaccine hesitancy', indicating 'hesitant' citizens who may refuse or delay taking some vaccines, but undertake others, while remaining unsure of doing so (e.g., Rhodes et al., 2020; Smith et al., 2022). Based on the Strategic Advisory Group of Experts on Immunization (SAGE), vaccine hesitancy is the term used to describe a 'delay in acceptance or refusal of vaccination despite availability of vaccination services' (MacDonald, 2015, p. 4163). This definition has contributed to reducing the strong dichotomy between 'pro' and 'anti'-vaccination individuals/groups, as hesitant individuals may locate themselves

somewhere on the continuum ranging from total acceptors to complete refusers (i.e., anti-vaxxers) (Dubé et al., 2013). Thus, even those who are vaccinated can harbor diffidence toward certain aspects of the vaccinations (e.g., Enkel et al., 2018).

Recent literature reviews have shown that (COVID-19) vaccine hesitancy has been studied with various methods and designs (e.g., Kerrigan et al., 2020; Sallam, 2021; Troiano & Nardi, 2021). For instance, in quantitative studies, it has been investigated by considering the acceptance rate of certain vaccines (e.g., Murphy et al., 2021) or the attitudes toward the vaccines (e.g., Domek et al., 2018), while in qualitative studies it has been explored by examining the beliefs about vaccinations and their refusal (e.g., Lockyer et al., 2021). This heterogeneity of assessment is partially due to the broad definition of vaccine hesitancy presented above, not considered solely in terms of vaccine refusal, but also in terms of some degree of uncertainty about the safety and appropriateness of the vaccines. In this quantitative study, we take apart the concept of vaccine hesitancy, and we measure it either in terms of attitudes toward the vaccine or in terms of the actual behavior of vaccination uptake (or refusal).

In the literature, attitudes toward the vaccines have been found to be a strong predictor of COVID-19 vaccine intention and uptake (e.g., Butter et al., 2022; Mangla et al., 2021; Paul et al., 2021; Simione et al., 2021). Similarly, support for government's restrictions, conspiracy beliefs, and informational contamination have been shown to relate to attitudes toward vaccines and to COVID-19 vaccine uptake in European Union (EU) and in Turkey (e.g., Pivetti et al., 2021a, 2021b, 2023).

However, many other individual factors, such as values, might be related to the decision to get vaccinated or not. Although value orientations can act as moral guiding principles for individual attitudes and behaviors, they have rarely been studied as predictors of vaccination uptake. It has been demonstrated that they influence public behaviors such as the adoption of self-protective measures during the pandemic crisis (e.g., Leder et al., 2020). In a simulation study, Lake et al. (2021) found that prioritization of social focus values (i.e., self-transcendence and conservation values) was associated with increased compliance with preventative COVID-19 behaviors, in terms of self-reported social distancing and willingness to get vaccinated (when the vaccine eventually became available).

Our study aims to verify whether self-transcendence values, distinguishing between benevolence and universalism, are uniquely related to COVID-19 actual vaccination behavior directly, and/or through the mediation of attitudes toward vaccines in general, when controlling for other well-known predictors of attitudes toward vaccine and COVID-19 vaccines like government's restrictions, conspiracy beliefs, and informational contamination.

Values and COVID-19 vaccination

Values are trans-situational goals that vary in importance and serve as guiding principles in life (Schwartz, 2012). They strongly influence the perceptions of oneself, others, and contexts. As such, values are considered the motivational core of the decision-making processes, representing fertile ground for specific attitudes and behaviors. People do indeed strive to evaluate and act in line with the values they identify with (Roccas & Sagiv, 2017; Russo et al., 2022a). According to Schwartz's Theory of basic human values (Schwartz, 1992), there are 10 motivationally distinct

types of values, among which are the values of benevolence and universalism. Benevolence refers to protecting and enhancing the well-being of people with whom one is in frequent close personal contact, while universalism refers to protecting and understanding all people, including those far away, and it also includes taking care of the natural environment. Both benevolence and universalism are self-transcendence values, being characterized by a concern for the welfare and interests of others (Schwartz, 2012) and a motivation to nurture collaborative relationships. These are considered 'healthy values' because they comply with the basic requirements of relatedness, autonomy, and competence, underlying both self-expansion and self-actualizing needs that promote human growth (Schwartz & Sortheix, 2018). Accordingly, Schwartz (2012) labeled them as growth, anxiety-free, and social focus values. During the pandemic, social focus values were found to be positively associated with prosociality (Russo et al., 2022b) and support for several health-preventative behaviors, such as hand-washing and social distancing (Iosifyan et al., 2023; Schuster, 2021). As already mentioned, the specific role of such values in relation to vaccine decision-making has instead been under-investigated (Wolf et al., 2020), even if some studies have indicated that they could significantly affect public behavior like the adoption of self-protective measures during the pandemic (e.g., Leder et al., 2020). One of the few exceptions is the correlational study carried out by Moosa et al. (2022) in the Maldives, who reported a significant and positive association between benevolence and vaccine uptake behavior. In their research involving a large sample of Australian adults, Lake et al. (2021) found that social values (comprising universalism and benevolence together) were weakly correlated to vaccine willingness in a positive direction. Interestingly, social values were also found to be negatively related to science skepticism (assessed in terms of attitudes on vaccination rejection, climate change denial, and creationism) (Maciuszek et al., 2020).

Thus, to date, only a pair of studies focused on the link between social values and vaccine uptake (i.e., Lake et al., 2021; Moosa et al., 2022), but none of them 1) considered the specificity of benevolence and universalism or 2) investigated values in a more complex relationship with vaccination behavior. As regards the first point, although benevolence and universalism can be combined into a higher-order dimension (i.e., self-transcendence or social value orientation), they are theoretically and empirically different from each other. Theoretically, benevolence values derive from the basic requirements of coordinated social interactions and from the organismic need for affiliation. Universalism contrasts with the in-group focus of benevolence values and expresses the concern for the welfare of people in the larger society (Schwartz, 2012). Related to this, it is worthwhile noting that the practice of using higher-order dimensions often depends on empirical reasons (mainly the selection of the items that can lead to high correlations), and it is not intrinsic to the nature of values (Knoppen & Saris, 2009). With reference to the second point, the psychosocial literature on personal values is inviting researchers to study values in integrative and well-articulated models to predict behavior, as values often act as distal variables mediated by attitudes (e.g., Hitlin & Piliavin, 2004). Indeed, values may influence not only behavior but also attitudes, especially when they express the content of the value (e.g., Maio & Olson, 2000). Several studies on different behaviors (see, for example, Sedding & Davidov, 2018 on interpersonal violent behavior) showed that values can be associated with behaviors both directly and indirectly and, in

combination with attitudes, they can explain behaviors to a larger extent and help to better understand the motivational sources of behaviors.

Attitudes toward COVID-19 vaccination and its predictors

In the literature, positive attitudes toward vaccines were found to predict vaccine acceptance across countries. For instance, in a representative sample in the US, participants who had positive views about COVID-19 vaccines supported more mandatory COVID vaccinations than those who held negative views (Harris et al., 2022). In their review of 44 studies, Galanis et al. (2022) found that parents' positive attitude toward vaccinations was one of the main predictors of parents' intention to vaccinate their children. In a review of 71 studies run in Africa, Ackah et al. (2022) found that having positive perceptions toward vaccine sources and the pharmaceutical industry was reported as being facilitators of vaccine acceptance. In a multi-country study among eight Eastern Mediterranean regions such as Iraq, Jordan, Kuwait, and Qatar, Khatatbeh et al. (2022) found that parents' attitudes toward COVID-19 vaccine positively affected their children's vaccination status.

Many other factors were found to be uniquely related to attitudes toward vaccinations and vaccine uptake/refusal. Among the most studied factors, conspiracy beliefs have been associated with negative attitudes toward vaccinations (e.g., Hornsey et al., 2020; Jolley & Douglas, 2014; Tomljenovic et al., 2020). Specific COVID-related conspiracy beliefs were associated with reducing the intention to vaccinate against COVID-19 (e.g., Earnshaw et al., 2020; Howard & Davis, 2022). In the US, COVID-related conspiracy beliefs were the strongest predictors of COVID-19 vaccine hesitancy (Farhart et al., 2022). In Italy and Finland, conspiracy beliefs negatively predicted general attitudes toward vaccines both directly and indirectly via the mediation of COVID-19 conspiracy beliefs (Pivetti et al., 2021a, 2021b).

Furthermore, in previous studies, support for government's restrictions was found to predict attitudes toward vaccinations in Italy (Pivetti et al., 2021b, 2023) as well as adherence to prescribed (e.g., handwashing) and discretionary behaviors (e.g., donating to charity) during the pandemic in a 23-country study (Pagliaro et al., 2021).

Finally, the degree to which participants felt that they could trust the media and their government to provide accurate information during the crisis could also negatively affect support for COVID vaccines (e.g., Conway & Repke, 2019).

Current study

The aim of this study was to verify in a sample of Italian community adults if self-transcendence values, such as universalism and benevolence, would be directly and uniquely related to vaccination status and/or through the mediation of general attitudes toward vaccines, independently of support for government's restriction, conspiracy beliefs, and informational contamination. Based on the literature above, we speculate that endorsing a universalistic and/or benevolent worldview could be related to protecting others during the COVID-19 pandemic by means of the COVID-19 vaccine uptake. Vaccination uptake is indeed a barrier to the transmission of the virus and prevents the more 'fragile' members of the community from catching a dangerous form of COVID-19.

As suggested in previous studies, the attitudes toward vaccination would serve as a possible mediator between values and behavior, in line for instance with studies on environmental behavior (e.g., Pivetti et al., 2020).

As known, Italy was one of the European countries to be badly affected by COVID-19, especially during the spring of 2020, and was the first to adopt long-term restrictions. The COVID-19 vaccination campaign was a crucial turning point in the containment and mitigation of the virus spread (Reno et al., 2022). Although to date Italy has fully vaccinated about 90% of people fit to receive a COVID-19 vaccination (Ministry of Health, 2023), vaccination still represents one of the most controversial aspects of the pandemic in Italy (Rania et al., 2022). Actually, Italy had already been grappling with a vaccination compliance problem from the start of 2000, with plummeting coverage rates and several indicators pointing to low population confidence (Attwell et al., 2021; Pivetti et al., 2022).

Method

Participants

Participants were 219 Italians (155 women, 70.8%; 3 missing for sex), aged 18–72 years old ($M = 37.3$, $SD = 14.2$). Most of them were single (59.4%) and approximately one-third were married or in a long-term relationship (29.7%). As for education, our sample was slightly better educated than the average population, as one-third of the participants had a post-graduate degree (31.5%), one-sixth had a bachelor's degree (16.4%) and approximately one-third had a high school diploma (28.3%). Most participants were employed full-time (41.6%), and approximately one-fifth had a part-time job (18.7%).

As for their vaccination status, 171 (78.1%) were vaccinated with at least one dose, 43 (19.6%) were not vaccinated, and 5 (2.3%) were not vaccinated due to medical reasons (medical exemption). Out of 171 vaccinated participants, 15 (8.8%) had one dose, 120 (70.2%) had two doses, and 36 (31.1%) had three doses (booster).

To determine the appropriate sample size for the planned mediational analysis, a power analysis was conducted prior to data collection through MedPower by Kenny (https://davidakenny.shinyapps.io/MedPower/). The results revealed that, with the sample size of 205 and alpha level of .05, the planned mediation analysis has at least 80% power to detect direct effect sizes equal to or larger than .22 and indirect effect sizes equal to or larger than .05.

Procedures

The participants could access the questionnaire on Google Forms. The survey was open between November 2021 and January 2022. By that time, approximately 45% of the Italian population had been fully vaccinated (45 million people) and one-third had received the booster dose (20 million), as of 1 January 2022(source: https://ourworldindata.org/covid-vaccinations).

Participants were recruited using a convenience sample strategy (Etikan et al., 2016), with the collaboration of students and researchers who sent the link to the questionnaire to possible participants via announcements on Internet forums, social media, and various

mailing lists of acquaintances. No fee was offered for participation. On average, the questionnaire took approximately 15 min to complete.

The research complied with the WMA-Declaration of Helsinki (1964/2013) and with the Code of Ethics of the Associations of Italian Psychology (AIP, 2015). In this line, written informed consent was obtained from each participant. This study did not involve a vulnerable group; it focused on the everyday behaviors of respondents, with no deceit, and through noninvasive methods – no medicine or medical instruments were used. Data are completely anonymous, and it is not possible to identify participants from any resulting report. The use of data (and the data collection in itself) could not cause any damage or distress to subjects involved in the study and cannot hurt the personal or cultural sensitivities of the participants.

Measures

COVID-19 vaccination

The participants' vaccination status was measured via a single item: '*Did you get vaccinated against COVID-19?*' Possible answers were: 'yes', 'no, but I received medical advice not to do so', and 'no, for other reasons'. If participants replied Yes, then they were asked the following question: *If yes, how many doses? 1, 2, or 3*. Participants stating that they had not been vaccinated, as they had been advised by practitioners not to do so ($N = 5$), were excluded from the analyses. After their removal, the variable was dichotomized, with 0 = not vaccinated and 1 = vaccinated.

Attitudes toward vaccines

Ten items from the Short Version of Vaccine Acceptance Instrument (Sarathchandra et al., 2018), which had been translated into Italian (e.g., '*Vaccines are safe*') and used in previous studies (Pivetti et al., 2021b), assessed attitude toward vaccines in general. The response scale ranged from 1 (strongly disagree) to 7 (strongly agree), where higher values indicated more positive attitudes toward vaccines ($\alpha = .90$).

Benevolence and Universalism Values

The Benevolence (two items, e.g., '*It's important for him/her to help the people around him/her. He/she wants to care for their well-being*') and the Universalism (three items, e.g., '*It is important for him/her to listen to people who are different from him/her. Even when he/she disagrees with them, he/she still wants to understand them*') subscales of the Italian version of the Portrait Values Questionnaire (Capanna et al., 2005; Schwartz, 2003) assessed endorsement of benevolence and universalism values. Values were measured on a six-point scale from 1 (not similar to me) to 6 (extremely similar to me). The higher the score, the stronger the importance given to that value ($r = .61$ for benevolence, $p < .001$, and $\alpha = .64$, for universalism).

Support for the government's restrictions

The Governmental Response to Coronavirus Questionnaire – Restriction scale (Conway et al., 2022) was used to measure how the respondents felt about their government's response to the COVID-19 crisis and specifically the support for governmental restrictions via two items (e.g., '*We need a strong government right now to take action to stop the spread of the disease.*').

Support was measured on a 7-point Likert scale ranging from 1 (definitely disagree) to 7 (definitely agree), where higher values indicated stronger support for the government's restrictions ($r = .61$; $p < .001$).

Conspiracy beliefs

The General Conspiracy Beliefs Scale (Brotherton et al., 2013) was translated into Italian for the purpose of this study. It included 11 items assessing government malfeasance (three items, e.g., *'The Government is involved in the murder of innocent citizens and/or well-known public figures, and keeps this a secret'*), malevolent global conspiracies (three items, e.g., *'A small, secret group of people is responsible for making all major world decisions, such as going to war'*), personal wellbeing (two items, e.g., *'Technology with mind-control capacities is used on people without their knowledge'*) and control of information (three items, e.g., *'Groups of scientists manipulate, fabricate, or suppress evidence to deceive the public'*). The subscale on extraterrestrial cover-up was not included in the data collection as conspiracy beliefs related to UFOs are not released in Italy, as mcuh as they are in the US. Conspiracy beliefs were measured on a 7-point scale, where 1 = definitely false; 7 = definitely true ($\alpha = .96$).

Informational contamination

The Informational Contamination subscale of the Governmental Response to Coronavirus Questionnaire (Conway et al., 2022) measured the extent to which participants felt that they could trust their governments to provide accurate information during the crisis via two items (e.g., *'I distrust the information I receive about the Coronavirus (COVID-19) from my government'*). The response scale was a 7-point Likert scale ranging from 1 (definitely disagree) to 7 (definitely agree), where higher values indicated a higher level of distrust in information ($r = .88$; $p < .001$).

Data analysis

MPLUS (version 8.3) (Muthén & Muthén, 2017) with 5000 bootstraps was used to examine the hypothesized mediational effects. Bootstrapping addresses the limitations of approaches proposed by Baron and Kenny (1986) and Sobel (1982), yielding results that are more accurate and less affected by data distribution and sample size (Hayes, 2009; Preacher & Hayes, 2008). In the estimated mediation model, COVID-19 vaccinations were entered as the dependent variable, attitudes toward vaccines were entered as the mediator, and universalism, benevolence, support for government restrictions, conspiracy beliefs, and informational contamination were entered as independent variables allowed to correlate. Since the dependent variable was binary, MPLUS estimated the direct and indirect effects of X and of covariates on Y in a log-odds metric and the proportion of variance in Y that can be explained by X and covariates through R^2_{McFadden} (McFadden, 1974).

Results

Preliminary considerations

Descriptive statistics and correlations among the variables are displayed in Table 1.

Table 1. Descriptives and Pearson's correlations among the variables ($N = 214$).

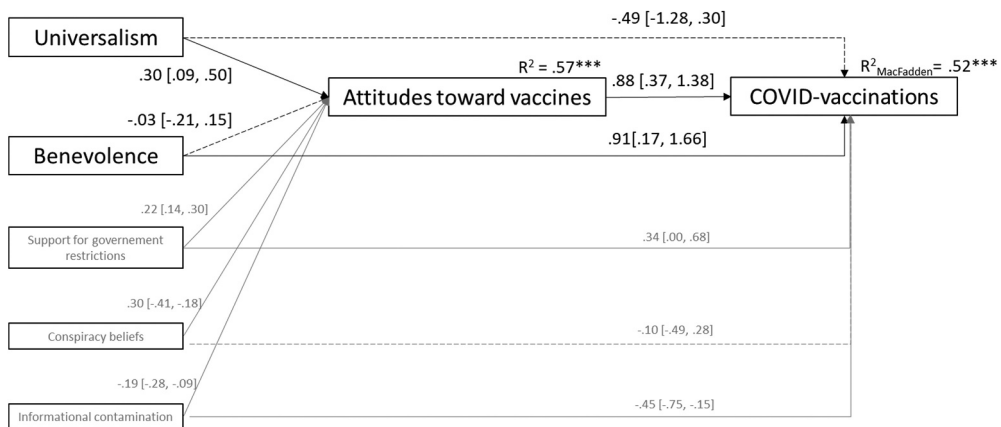|	M	SD	range	2	3	4	5	6	7
1. COVID-vaccinations	0.80	0.40	0–1	.62***	.14*	.19**	.48***	−.50***	−.60***
2. Attitudes toward vaccines	5.14	1.44	1–7		.22**	.13	.57***	−.63***	−.66***
3. Universalism	5.27	0.75	2.67–6			.50***	.16*	.00	−.10
4. Benevolence	5.33	0.85	1–6				.13	−.04	−.08
5. Support for government restrictions	4.10	1.90	1–7					−.40***	−.51***
6. Conspiracy beliefs	2.57	1.57	1–7						.72***
7. Informational contamination	2.96	2.03	1–7						

*p<.05, **p<.01, ***p<.001.

Figure 1. Model delineating the relationships among the variables of interest. Note. Universalism indirect effect = .26 [.06, .67]; Benevolence indirect effect = -.02 [-.26, .13]; Unstandardized regression coefficients are reported out of parentheses and 95% CI derived from bootstrap resample among parentheses. Regression coefficients of X and covariates on Y, as well as indirect effects, are on a log-odds metric.

Universalism is weakly correlated in the expected manner with attitudes toward vaccines and COVID-19 vaccinations; benevolence weakly correlated with COVID-19 vaccinations, but not with attitudes toward vaccines. Both universalism and benevolence were weakly related or unrelated to control variables (support for the government's restriction, conspiracy beliefs, and informational contamination).

Mediational analyses

The mediational analyses showed that, when controlling for support for the government's restriction, conspiracy beliefs, and informational contamination, universalism was related to COVID-19 vaccinations indirectly, through the mediation of attitudes toward vaccines. Specifically, universalism values were significantly related to positive attitudes toward vaccines, which in turn were related to a higher probability to be vaccinated against COVID-19. The direct effect of universalism was not significant (see Figure 1).

In contrast, attitudes toward vaccines did not mediate the link between benevolence and COVID-19 vaccinations. In fact, when controlling for support for government

restriction, conspiracy beliefs, and informational contamination, benevolence was positively related to COVID-vaccinations only directly (see Figure 1).

Discussion

Vaccine hesitancy, that is the delay or refusal of vaccination due to doubts over the safety and appropriateness of vaccines, was a growing concern both before and during COVID-19 pandemic, and still is in the prevention of future pandemics. Promoting the uptake of COVID-vaccines calls for a deeper understanding of the factors behind people's willingness to do so or not. This study has shed some light on the role of self-transcendence values, namely universalism and benevolence, in COVID-vaccine uptake in a convenience sample of Italian adults.

In the present study, we found that benevolence and universalism were differently related to COVID-vaccinations. Both are associated with the propensity to be vaccinated, but directly in the case of benevolence and indirectly (via the mediation of attitudes toward vaccines) in the case of universalism. The positive and direct benevolence-vaccination link is in line with Moosa et al.'s (2022) result, which showed a significant and positive (Spearman's) correlation between vaccine behavior and benevolence values. On the contrary, the authors did not find any significant correlation between universalism values and vaccine behavior. Also this second result from Moosa et al. (2022) is potentially compatible with our findings.

Although benevolence and universalism are both characterized by a concern for the welfare and interests of others, they are different from each other with respect to their defining goals (Schwartz, 2012). On the one hand, benevolence is defined by the preservation and enhancement of close people (i.e., the family and other primary groups) and it is strictly related to the need for affiliation. On the other hand, universalism is defined by understanding, tolerance, and protection for the welfare of all people and for nature and derives from the survival needs of individuals and groups. This contrasts with the in-group focus of benevolence. Hence, based on our findings, the decision to get vaccinated seems to directly express the goal of caring for the welfare of ingroup members and preserving collaborative relationships also through respect for social expectations. In this line, people endorsing benevolent values might choose to get vaccinated against COVID in order to preserve the wellbeing of their close friends and family members, whatever their personal attitudes toward vaccines might be.

On the contrary, the importance given to the protection for the welfare of all people and nature (i.e., universalism) is a more distal mechanism of COVID-19 vaccination behavior. We found that universalism values were positively associated with favorable attitudes toward vaccines in general that, in turn, supported COVID-19 vaccine behavior. Stronger relations between value importance and attitudes occur when attitudes are value-expressive (Maio & Olson, 1994), as in the case of the link between universalism and positive attitudes toward vaccines. Indeed, judging vaccines as safe and effective in saving all people's lives is perfectly consistent with the content of universalism values. Also, people endorsing universalistic values are more likely to get vaccinated against COVID, the more they have a favorable attitude toward vaccines, probably because they tend to consider vaccines as safe and useful to protect the well-being of others.

It is worthwhile noting that in the analysis we controlled for a series of influencing variables potentially related to COVID-19 vaccine behavior, i.e., support for

government's restrictions, conspiracy beliefs, and informational contamination. In this way, we discovered that benevolence and universalism provide a unique contribution to our understanding of vaccine behavior, beyond that of controlled variables.

The relationship between self-transcendence values and vaccine behavior deserve further research attention. In particular, the role of universalism is distal and definitively complex. For example, in their research on parental values in decisions about childhood vaccination, Cataldi et al. (2019) reported the counterintuitive result that parents giving importance to universalism have increased vaccine hesitancy.

By putting together values and attitudes in the study of vaccine hesitancy, this paper parallels the results found in environmental psychology on municipal solid waste separation, reconciling the Theory of Reasoned Action (TRA; Fishbein & Ajzen, 1980) and the Value-Belief-Norm theory (VBN; Stern, 2000). Altruistic values were found to predict attitudes toward waste separation, which in turn predicted the actual behavior (e.g., Carrus et al., 2008; Pivetti et al., 2020).

We consider our study as a small pilot one to address the role of social values in predicting actual vaccine uptake, given the shortage of studies on the topic. To our knowledge, only Moosa et al. (2022) run a similar study in the Maldives, and no study has been run in EU countries. Also, the study by Moosa et al. did not put under control predicting variables such as the conspiracy beliefs.

Also, we consider that analyzing benevolence and universalism separately is a strength of our contribution. As previous literature on the link between values and vaccine uptake is too limited in number to represent a valid comparative basis, keeping the two values separate is more informative than collapsing them into a composite score on self-transcendence values. Indeed, in our study benevolence and universalism behave differently in predicting vaccine uptake.

In order to inform interventions improving vaccine coverage, it is pivotal to understand the role of the many sociopsychological factors affecting vaccine hesitancy in the target population. As a practical implication, this study suggests policymakers and science communicators should tailor messages emphasizing the personal benefits of COVID-19 vaccination to closely related people such as family members, friends, and local communities. This would address vaccine hesitancy among benevolent citizens who value the well-being of close people. Along the same lines, tailoring messages highlighting the importance of taking the COVID-19 vaccine to protect the well-being of humankind and more distance-related people would promote vaccine uptake among universalistic people, who value the well-being of humanity at large. This would be effective among people also endorsing more positive attitudes toward vaccines in general.

Study limitations

This correlational study relies on a convenient well-educated sample of Italians, but a larger representative sample is needed to support our findings. No causal inference should be drawn from these data given the cross-sectional design of the research. We did not assess causality and our findings reflect evidence for association. However, the supposed linkage (from values to behaviors via attitudes) lies on strong theoretical reasoning (e.g., Hitlin & Piliavin, 2004, Maio & Olson, 2000; Sedding & Davidov,

2018). Moreover, the measure of conspiracy beliefs was translated into Italian specifically for this study. Further studies are needed to confirm the scale's reliability.

Conclusion

This study provides some innovative results on the relationship between benevolence and universalism values, attitudes, and COVID-19 vaccine uptake. Vaccine hesitancy was indicated as one of the 10 threats to global health in 2019 by the WHO. More studies should explore the complex reasons why people chose to vaccinate or not, by giving more relevance to personal values as possible motivational sources of vaccination-related behaviors. As the salience of values can change more than in general believed (Russo et al., 2022a), the study of values could become a promising focus of preventive interventions in health education and care.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Data availability statement

The data that support the findings of this study are available from the corresponding author (MP) upon reasonable request.

References

Ackah, B. B., Woo, M., Stallwood, L., Fazal, Z. A., Okpani, A., Ukah, U. V., & Adu, P. A. (2022). COVID-19 vaccine hesitancy in Africa: A scoping review. *Global Health Research and Policy*, *7* (1), 1–20. https://doi.org/10.1186/s41256-022-00255-1

Attwell, K., Harper, T., Rizzi, M., Taylor, J., Casigliani, V., Quattrone, F., & Lopalco, P. (2021). Inaction, under-reaction action and incapacity: Communication breakdown in Italy's vaccination governance. *Policy Sciences*, *54*(3), 457–475. https://doi.org/10.1007/s11077-021-09427-1

Baron, R. M., & Kenny, D. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173–1182. https://doi.org/10.1037/0022-3514.51.6.1173

Brotherton, R., French, C. C., & Pickering, A. D. (2013). Measuring belief in conspiracy theories: The generic conspiracist beliefs scale. *Frontiers in Psychology*, 279.

Butter, S., McGlinchey, E., Berry, E., & Armour, C. (2022). Psychological, social, and situational factors associated with COVID–19 vaccination intentions: A study of UK key workers and non–key workers. *British Journal of Health Psychology*, *27*(1), 13–29. https://doi.org/10.1111/bjhp.12530

Capanna, C., Vecchione, M., & Schwartz, S. H. (2005). La misura dei valori. Un contributo alla validazione del portrait values questionnaire su un campione italiano. *Bollettino di Psicologia Applicata*, *246*, 29.

Carrus, G., Passafaro, P., & Bonnes, M. (2008). Teoria del comportamento pianificato e norme locali: Uno studio sulla raccolta differenziata dei rifiuti domestici. *Rassegna di Psicologia*, *25*, 27–43.

Cataldi, J. R., Sevick, C., Pyrzanowski, J., Wagner, N., Brewer, S. E., Narwaney, K. J. … Kwan, B. M. (2019). Addressing personal parental values in decisions about childhood vaccination: Measure development. *Vaccine: X*, *37*(38), 5688–5697. https://doi.org/10.1016/j.vaccine.2019.08.009

Conway, L. G., III, & Repke, M. A. (2019). The psychological contamination of pro-environmental consensus: Political pressure for environmental belief agreement undermines its long-term power. *Journal of Environmental Psychology*, *62*, 12–21. https://doi.org/10.1016/j.jenvp.2019.02.001

Conway, L. G., Woodard, S. R., Zubrod, A., Tiburcio, M., Martínez-Vélez, N. A., Sorgente, A. … Balmores-Paulino, R. (2022). How culturally unique are pandemic effects? Evaluating cultural similarities and differences in effects of age, biological sex, and political beliefs on COVID impacts. *Frontiers in Psychology*, *13*, 937211. https://doi.org/10.3389/fpsyg.2022.937211

Domek, G. J., O'Leary, S. T., Bull, S., Bronsert, M., Contreras-Roldan, I. L., Ventura, G. A. B. … Asturias, E. J. (2018). Measuring vaccine hesitancy: Field testing the WHO SAGE working group on vaccine hesitancy survey tool in Guatemala. *Vaccine: X*, *36*(35), 5273–5281. https://doi.org/10.1016/j.vaccine.2018.07.046

Dubé, E., Laberge, C., Guay, M., Bramadat, P., Roy, R., & Bettinger, J. A. (2013). Vaccine hesitancy: An overview. *Human Vaccines & Immunotherapeutics*, *9*(8), 1763–1773. https://doi.org/10.4161/hv.24657

Earnshaw, V. A., Eaton, L. A., Kalichman, S. C., Brousseau, N. M., Hill, E. C., & Fox, A. B. (2020). COVID-19 conspiracy beliefs, health behaviors, and policy support. *Translational Behavioral Medicine*, *10*(4), 850–856. https://doi.org/10.1093/tbm/ibaa090

Enkel, S. L., Attwell, K., Snelling, T. L., & Christian, H. E. (2018). 'Hesitant compliers': Qualitative analysis of concerned fully-vaccinating parents. *Vaccine: X*, *36*(44), 6459–6463. https://doi.org/10.1016/j.vaccine.2017.09.088

Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics*, *5*(1), 1–4. https://doi.org/10.11648/j.ajtas.20160501.11

Farhart, C. E., Douglas-Durham, E., Trujillo, K. L., & Vitriol, J. A. (2022). Vax attacks: How conspiracy theory belief undermines vaccine support. *Progress in Molecular Biology and Translational Science*, *188*(1), 135–169. https://doi.org/10.1016/bs.pmbts.2021.11.001

Fishbein, M., & Ajzen, I. (1980). *Understanding attitudes and predicting social behavior*. Prentice Hall.

Galanis, P., Vraka, I., Siskou, O., Konstantakopoulou, O., Katsiroumpa, A., & Kaitelidou, D. (2022). Willingness, refusal and influential factors of parents to vaccinate their children against the COVID-19: A systematic review and meta-analysis. *Preventive Medicine*, *157*, 106994. https://doi.org/10.1016/j.ypmed.2022.106994

Harris, J. N., Mauro, C., Andresen, J. A., Zimet, G. D., & Rosenthal, S. L. (2022). COVID-19 vaccine uptake and attitudes towards mandates in a nationally representative US sample. *Journal of Behavioral Medicine*, *46*(1–2), 25–39. https://doi.org/10.1007/s10865-022-00317-2

Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monograph*, *76*(4), 408–420. https://doi.org/10.1080/03637750903310360

Hitlin, S., & Piliavin, J. A. (2004). Values: Reviving a dormant concept. *Annual Review of Sociology*, *30*(1), 359–393. https://doi.org/10.1146/annurev.soc.30.012703.110640

Hornsey, M. J., Finlayson, M., Chatwood, G., & Begeny, C. T. (2020). Donald Trump and vaccination: The effect of political identity, conspiracist ideation and presidential tweets on vaccine hesitancy. *Journal of Experimental Social Psychology*, *88*, 88. https://doi.org/10.1060/j.jesp.2019.103947

Howard, M. C., & Davis, M. M. (2022). The mediating role of vaccine hesitancy in the relations of COVID-19 conspiracy beliefs and vaccination outcomes: Which dimensions matter? *Journal of Health Psychology*, *28*(3), 1–10. https://doi.org/10.1177/13591053221096013

Iosifyan, M., Arina, G., & Nikolaeva, V. (2023). Beliefs about COVID-19 as a threat to values are related to preventive behaviors and fear of COVID-19. *Journal of Health Psychology*, *28*(8), 739–746. https://doi.org/10.1177/13591053221142348

Jolley, D., & Douglas, K. M. (2014). The effects of antivaccine conspiracy theories on vaccination intentions. *PLoS ONE*, *9*, e89177. https://doi.org/10.1371/journal.pone.0089177

Kerrigan, A., Aitnouri, I., Mar, J., & Altman, W. (2020). What barriers exist in the minds of vaccine-hesitant parents, and how can we address them? *Family Medicine*, *52*(9), 626–630. https://doi.org/10.22454/FamMed.2020.432940

Khatatbeh, M., Albalas, S., Khatatbeh, H., Momani, W., Melhem, O., Al Omari, O. … Al-Tammemi, A. A. B. (2022). Children's rates of COVID-19 vaccination as reported by parents, vaccine hesitancy, and determinants of COVID-19 vaccine uptake among children: A multi-country study from the Eastern Mediterranean Region. *BMC Public Health*, *22*(1), 1–11. https://doi.org/10.1186/s12889-022-13798-2

Knoppen, D., & Saris, W. (2009). Do we have to combine values in the Schwartz's human values scale? A comment on the Davidov studies. *Survey Research Methods*, *3*(2), 91–103. https://doi.org/10.18148/srm/2009.v3i2.2601

Lake, J., Gerrans, P., Sneddon, J., Attwell, K., Botterill, L. C., & Lee, J. A. (2021). We're all in this together, but for different reasons: Social values and social actions that affect COVID-19 preventative behaviors. *Personality and Individual Differences*, *178*, 110868. https://doi.org/10.1016/j.paid.2021.110868

Leder, J., Pastukhov, A., & Schütz, A. (2020). Social value orientation, subjective effectiveness, perceived cost, and the use of protective measures during the COVID-19 pandemic in Germany. *Comprehensive Results in Social Psychology*, *4*(3), 227–249. https://doi.org/10.1080/23743603.2020.1828850

Lockyer, B., Islam, S., Rahman, A., Dickerson, J., Pickett, K., Sheldon, T., & Bradford Institute for Health Research Covid–19 Scientific Advisory Group. (2021). Understanding COVID–19 misinformation and vaccine hesitancy in context: Findings from a qualitative study involving citizens in Bradford, UK. *Health Expectations*, *24*(4), 1158–1167. https://doi.org/10.1111/hex.13240

MacDonald, N. E. (2015). Vaccine hesitancy: Definition, scope and determinants. *Vaccine: X*, *33* (34), 4161–4164. https://doi.org/10.1016/j.vaccine.2015.04.036

Maciuszek, J., Polak, M., Zajas, A., & Stasiuk, K. (2020). Associations between value priorities and attitudes toward science. *Polish Psychological Bulletin*, *51*, 237–243. https://doi.org/10.24425/ppb.2020.135455

Maio, G. R., & Olson, J. M. (1994). Value—attitude–behaviour relations: The moderating role of attitude functions. *British Journal of Social Psychology*, *33*(3), 301–312.Maio. Lawrence Erlbaum. https://doi.org/10.1111/j.2044-8309.1994.tb01027.x

Maio, G. R., & Olson, J. M. (2000). Emergent themes and potential approaches to attitude function: The function-structure model of attitudes. Why we evaluate. *Functions of Attitudes*, 417–442.

Mangla, S., Zohra Makkia, F. T., Pathak, A. K., Robinson, R., Sultana, N., Koonisetty, K. S., Karamehic-Muratovic, A., Nguyen, U.S.D., Rodriguez-Morales, A.J., Sanchez-Duque, J.A. and Zamba, P.T (2021). COVID-19 vaccine hesitancy and emerging variants: Evidence from six countries. *Behavioral Sciences*, *11*(11), 148–166. https://doi.org/10.3390/bs11110148

McFadden, D. (1974). Conditional logit analysis of qualitative choice behavior. In P. Zarembka (Ed.), *Frontiers in Econometrics* (pp. 105–142). Academic Press.

Ministry of Health. (2023). Report vaccini. (Retrieved January 4, 2023). Available online: https://www.governo.it/it/cscovid19/report-vaccini/

Moosa, S., Abdul Raheem, R., Riyaz, A., Musthafa, H. S., & Naeem, A. Z. (2022). The role of social value orientation in modulating vaccine uptake in the COVID-19 pandemic: A cross-sectional study. *Humanities and Social Science Communication*, *9*(1), 467. https://doi.org/10.1057/s41599-022-01487-9

Murphy, J., Vallières, F., Bentall, R. P., Shevlin, M., McBride, O., Hartman, T. K. … Hyland, P. (2021). Psychological characteristics associated with COVID-19 vaccine hesitancy and resistance in Ireland and the United Kingdom. *Nature Communications*, *12*(1), 29. https://doi.org/10.1038/s41467-020-20226-9

Muthén, L. K., & Muthén, B. (2017). *Mplus user's guide: Statistical analysis with latent variables, user's guide*. Muthén & Muthén.

Pagliaro, S., Sacchi, S., Pacilli, M. G., Brambilla, M., Lionetti, F., Bettache, K., Bianchi, M., Biella, M., Bonnot, V., Boza, M. and Butera, F. (2021). Trust predicts COVID-19 prescribed and discretionary behavioral intentions in 23 countries. *PLoS ONE*, *16*(3), e0248334. https://doi.org/10.1371/journal.pone.0248334

Paul, E., Steptoe, A., & Fancourt, D. (2021). Attitudes towards vaccines and intention to vaccinate against COVID-19: Implications for public health communications. *The Lancet Regional Health-Europe*, *1*, 100012. https://doi.org/10.1016/j.lanepe.2020.100012

Pivetti, M., Di Battista, S., Paleari, F. G., & Hakoköngäs, E. (2021a). Conspiracy beliefs and attitudes toward COVID-19 vaccinations: A conceptual replication study in Finland. *Journal of Pacific Rim Psychology*, *15*, 1–17. https://doi.org/10.1177/18344909211039893

Pivetti, M., Melotti, G., Bonomo, M., & Hakoköngäs, E. (2021b). Conspiracy beliefs and acceptance of COVID-vaccine: An exploratory study in Italy. *Social Sciences*, *10*(3), 108–125. https://doi.org/10.3390/socsci10030108

Pivetti, M., Melotti, G., Vespa, M., Cappabianca, F., Troilo, F., & Piacentino, M. P. (2020). Predicting recycling in Southern Italy: An exploratory study. *Resources, Conservation and Recycling*, *156*, 104727. https://doi.org/10.1016/j.resconrec.2020.104727

Pivetti, M., Paleari, F. G., Ertan, I., DiBattista, S., & Ulukök, E. (2023). COVID-19 conspiracy beliefs and vaccinations: A conceptual replication study in Turkey. *Journal of Pacific Rim Psychology*, *17*, 18344909231170097. https://doi.org/10.1177/18344909231170097

Pivetti, M., Potì, S., & Di Battista, S. (2022). Discussing vaccine and autism in a mainstream newspaper in Italy: A thematic analysis. *Psicologia Della Salute*, *3*(3), 53–74. https://doi.org/10.3280/PDS2022-003007

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, *40*(3), 879–891. https://doi.org/10.3758/BRM.40.3.879

Rania, N., Coppola, I., Brucci, M., & Lagomarsino, F. (2022). Attitudes and beliefs of the Italian population towards COVID-19 vaccinations. *International Journal of Environmental Research and Public Health*, *19*, 6139. https://doi.org/10.3390/ijerph19106139

Reno, C., Sanmarchi, F., Stoto, M. A., Fantini, M. P., Lenzi, J., & Golinelli, D. (2022). The impact of health policies and vaccine rollout on the COVID-19 pandemic waves in Italy. *Health Policy Technology*, *11*(2), 100604. https://doi.org/10.1016/j.hlpt.2022.100604

Rhodes, M. E., Sundstrom, B., Ritter, E., McKeever, B. W., & McKeever, R. (2020). Preparing for a COVID-19 vaccine: A mixed methods study of vaccine hesitant parents. *Journal of Health Communication*, *25*(10), 831–837. https://doi.org/10.1080/10810730.2021.1871986

Roccas, S., & Sagiv, L. (Eds.). (2017). *Values and behavior: Taking a cross-cultural perspective*. Springer International Publishing. https://doi.org/10.1007/978-3-319-56352-7

Russo, C., Danioni, F., Zagrean, I., & Barni, D. (2022a). Changing personal values through value-manipulation tasks: A systematic literature review based on Schwartz's theory of basic human values. *European Journal of Investigation in Health, Psychology and Education*, *12*(7), 692–715. https://doi.org/10.3390/ejihpe12070052

Russo, C., Dell'era, A., Zagrean, I., Danioni, F., & Barni, D. (2022b). Activating self-transcendence values to promote prosocial behaviors among adolescents during the COVID-19 pandemic: The moderating role of positive orientation. *The Journal of Genetic Psychology*, *183*(3), 263–277. https://doi.org/10.1080/00221325.2022.2058352

Sallam, M. (2021). COVID-19 vaccine hesitancy worldwide: A concise systematic review of vaccine acceptance rates. *Vaccines*, *9*(2), 160. https://doi.org/10.3390/vaccines9020160

Sarathchandra, D., Navin, M. C., Largent, M. A., & McCright, A. M. (2018). A survey instrument for measuring vaccine acceptance. *Preventive Medicine*, *109*, 1–7. https://doi.org/10.1016/j.ypmed.2018.01.006

Schuster, C. (2021). Following health measures in the pandemic: A matter of values? *Frontiers in Psychology*, *12*, 731799. https://doi.org/10.3389/fpsyg.2021.731799

Schwartz, S. H. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. *Advances in Experimental Social Psychology*, *25*, 1–65. https://doi.org/10.1016/S0065-2601(08)60281-6

Schwartz, S. H. (2003). A proposal for measuring value orientations across nations. *Questionnaire Package of the European Social Survey*, *259*(290), 261. Available online https://www.europeansocialsurvey.org/docs/methodology/core_ess_questionnaire/ESS_core_questionnaire_human_values.pdf (Retrieved January 27, 2023).

Schwartz, S. H. (2012). An overview of the Schwartz theory of basic values. *Online Readings in Psychology & Culture*, *2*(1), 11. https://doi.org/10.9707/2307-0919.1116

Schwartz, S. H., & Sortheix, F. (2018). Values and subjective well-being. In E. Diener, & S. Oishi, & L. Tay (Eds.), *Handbook of well-being* (pp. 1–25). Noba Scholar.

Sedding, D., & Davidov, E. (2018). Values, attitudes toward interpersonal violence, and interpersonal violent behavior. *Frontiers in Psychology*, *9*, 604. https://doi.org/10.3389/fpsyg.2018.00604

Sharma, K., Koirala, A., Nicolopoulos, K., Chiu, C., Wood, N., & Britton, P. N. (2021). Vaccines for COVID-19: Where do we stand in 2021? *Paediatric Respiratory Reviews*, *39*, 22–31. https://doi.org/10.1016/j.prrv.2021.07.001

Simione, L., Vagni, M., Gnagnarella, C., Bersani, G., & Pajardi, D. (2021). Mistrust and beliefs in conspiracy theories differently mediate the effects of psychological factors on propensity for COVID-19 vaccine. *Frontiers in Psychology*, 2441. https://doi.org/10.3389/fpsyg.2021.683684

Smith, S. E., Sivertsen, N., Lines, L., & De Bellis, A. (2022). Decision making in vaccine hesitant parents and pregnant women–an integrative review. *International Journal of Nursing Studies Advances*, *4*, 100062. https://doi.org/10.1016/j.ijnsa.2022.100062

Sobel, M. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. *Sociological Methodology*, *13*, 290–312. https://doi.org/10.2307/270723

Stern, P. C. (2000). New environmental theories: Toward a coherent theory of environmentally significant behavior. *Journal of Social Issues*, *56*(3), 407–424. https://doi.org/10.1111/0022-4537.00175

Tomljenovic, H., Bubic, A., & Erceg, N. (2020). It just doesn't feel right—the relevance of emotions and intuition for parental vaccine conspiracy beliefs and vaccination uptake. *Psychology & Health*, *35*(5), 538–554. https://doi.org/10.1080/08870446.2019.1673894

Troiano, G., & Nardi, A. (2021). Vaccine hesitancy in the era of COVID-19. *Public Health*, *194*, 245–251. https://doi.org/10.1016/j.puhe.2021.02.025

Wolf, L. J., Haddock, G., Manstead, A. S. R., & Maio, G. R. (2020). The importance of (shared) human values for containing the COVID-19 pandemic. *British Journal of Social Psychology*, *59*(3), 618–627. https://doi.org/10.1111/bjso.12401