

Alma Mater Studiorum Università di Bologna
Archivio istituzionale della ricerca

Effect of Actuation Errors on a Purely-Translational Spatial Cable-Driven Parallel Robot

This is the final peer-reviewed author's accepted manuscript (postprint) of the following publication:

Published Version:

Mottola, G., Gosselin, C., Carricato, M. (2019). Effect of Actuation Errors on a Purely-Translational Spatial Cable-Driven Parallel Robot. Piscataway, N.J. : IEEE-Institute of Electrical and Electronics Engineers [10.1109/CYBER46603.2019.9066627].

Availability:

This version is available at: <https://hdl.handle.net/11585/756380.2> since: 2020-04-22

Published:

DOI: <http://doi.org/10.1109/CYBER46603.2019.9066627>

Terms of use:

Some rights reserved. The terms and conditions for the reuse of this version of the manuscript are specified in the publishing policy. For all terms of use and more information see the publisher's website.

This item was downloaded from IRIS Università di Bologna (<https://cris.unibo.it/>).
When citing, please refer to the published version.

(Article begins on next page)

Abstract

The literature on authoritarianism has shown that the perception of threat and social insecurity is connected to attitudes of submission to authority and a greater acceptance of freedom restraints. In the present research, the relationship between concerns for COVID-19 – measured in terms of the fear of personal and close to others exposure to COVID-19 – on authoritarianism was analysed in Italy whilst considering participants' basic values as a potential mediator. Results on 406 participants show high mean values on concerns for COVID-19 experienced during the lockdown phase. As hypothesized, such concerns are positively related to authoritarianism, and a mediation analysis showed that the link between these two variables can be explained by the relevance attributed to conservation values.

Keywords: COVID-19; authoritarianism; values; Italy; threat

Since the book *Escape from Freedom* by Fromm (1941), the literature on authoritarianism has highlighted how the perception of threat and of social insecurity is connected to attitudes of submission to authority (see Duckitt, 2013). Indeed, these studies show that there is a tendency to be more passive towards authorities and to seek a strong leader in order to feel more secure. The main theoretical explanations of authoritarianism, and particularly of its submissive facets, indicated threat and perceiving the world as a dangerous place as possible causative factors (Shaffer & Duckitt, 2013). A recent longitudinal analysis by Mirisola and colleagues (2014) confirmed this possible increase in the levels of right-wing authoritarianism (RWA) as a function of perceived societal threat to safety. It is worthwhile noting that other studies underlined the reverse relation as well, showing that the more people are high in RWA, the more they are threat-sensitive and concerned about dangers (Carriere, 2019).

In the present research, the relationship between concerns for COVID-19 and authoritarianism was analysed. Concerns for COVID-19 were assessed by considering individual fear of personal and close to others (e.g., relatives) exposure to COVID-19. The context of the research was Italy, one of the first European nations with officially declared COVID-19 positive cases after China (31/1/2020). Already by mid-March 2020, the confirmed deaths exceeded those of the Asian country becoming the country with the highest number of cases (later overtaken by other nations). Italy was also the first European country (on 9 March, 2020) to restrict free movement and apply measures to contain the spread of the disease via enforced quarantine of the whole population (the so-called *lockdown* phase). Although the usefulness of this policy was later confirmed by the substantial decrease in positive cases, the lockdown measure has also been described as the largest restraint of constitutional rights since the founding of the post-war Italian republic in 1946 (Cundari, 2020). Moreover, as shown in the first weeks of lockdown by the Italian flags visible in many places and the national anthem being sung from the balconies, there were overt manifestations of patriotic and nationalist feelings being expressed across the country (Scorza, 2020). In this regard, some recent studies have analysed how threats related to the pandemic have

impacted support for more authoritarian political systems. For instance, Amat and colleagues (2020) showed that the pandemic fostered a widespread demand for a strong leader and governance and a certain willingness to waive individual liberties.

The COVID-19 emergency is an interesting real example of how the fear of an unknown threat can be linked to authoritarian attitudes and submissive acceptance of the restriction of personal freedom. In the present research, the aim was to analyse how this relationship may be explained by importance attached to basic personal values. The main contribution of this research is to jointly analyse the relationships between threat perception, values and attitudes of authoritarianism, and to investigate this within the context of a threat situation experienced by everyone (i.e. the COVID-19 pandemic).

Schwartz (1992) considers values as trans-situational goals that vary in importance and serve as guiding principles in one's own life. The theory recognises ten values organized along two bipolar dimensions: openness to change *vs.* conservation values, self-transcendence *vs.* self-enhancement values. As concerns the relationship with authoritarianism, studies (e.g. Duriez & Van Hiel, 2002; Feather & McKee, 2012; Passini, 2017) have shown that RWA tend to be positively correlated with conservation (i.e. conformity, security and tradition) and negatively with openness to change (i.e. stimulation and self-direction) values. RWA is indeed theorized to be based on motivational goals of social cohesion, conformity, security, and authoritarian attitudes occur especially when a threat is perceived to these motivational goals (Manson, 2020). Considering that more recent theories of authoritarianism see the priority given to values of conformity over autonomy at the core of the concept itself (see Feldman, 2003), we can assume that the relevance attached to conservation over openness to change values may affect these attitudes. Moreover, although theoretically the values are considered to be relatively stable over time (Schwartz, 1992), various studies have shown that external circumstances and important context changes, such as the COVID-19 pandemic, can lead to some changes (e.g. Bojanowska et al., 2020; Bonetto et al.,

2021). These studies suggest that the perception of a threat may lead to an increase in conservative values.

Methods

Participants

The participants were contacted online, using an Internet questionnaire, and were recruited by means of a *snowballing* procedure. Students involved in their thesis research projects were asked to recruit adult individuals. Respondents were advised that their participation would be voluntary and anonymous. The data was collected from March 13 to April 28, 2020.

A total of 406 Italian citizens (62.1% women) responded. Participant ages ranged from 18 to 71 years ($M = 31.49$, $SD = 11.53$). As regards their level of education, 8.2% declared they had completed middle school, 44.8% declared they had earned a high school diploma, 43% a university degree and 4% a Master/Ph.D. qualification. Job-wise, 36.1% stated they were white-collar workers, 27.8% university students, 13.2% self-employed, 10.6% factory workers/artisans, 7% teachers, 3% unemployed, 0.8% retired, and, finally, 1.5% chose *other*.

Measures

All measures employed a seven-point response scale (from 1 = *strongly disagree/not at all* to 7 = *strongly agree/very much*).

Concerns for COVID-19. Participants were asked to answer to three questions about the COVID-19 pandemic, created specifically for the present research: “How worried are you about the coronavirus?,” “How worried are you about your relatives and loved ones as regards the risk of contagion?” and “how often do you think about the coronavirus?” These three items were aggregated using the mean to compute a unique index (“COVID-19,” $\alpha = .78$).

Values. Values were measured with the 21-item version of the Portrait Values Questionnaire (PVQ, Schwartz et al., 2001) in its Italian translation (see Capanna et al., 2005). Participants rated how similar or dissimilar the person descriptions were compared to themselves. In the present research, just the conservation (6 items, $\alpha = .70$, e.g. “She/he believes that people should do what

they're told. She/he thinks people should follow rules at all times, even when no-one is watching”) and the openness to change values (4 items, $\alpha = .73$, e.g. “It is important to her/him to make her/his own decisions about what she/he does. She/he likes to be free and not depend on others”) were used.

Right-wing Authoritarianism (RWA). This construct was measured by an Italian 12-item scale constructed and validated by Passini (2017). A sample item is “our country will be great if we do what the authorities tell us to do.” A total score was computed using the mean ($\alpha = .84$).

Results

Less than 0.1% of data was missing. As concerns COVID-19, participants show high mean values (see Table 1), demonstrating some anxiety experienced during the lockdown phase. As hypothesized, COVID-19 was positively correlated to RWA. Statistical power analysis supported the current sample size to detect $r > |0.20|$: power= 0.993.

TABLE 1

Next, a two parallel mediators analysis was conducted by using Hayes' (2013) PROCESS procedure for SPSS based on 10,000 bootstrap samples. The model was controlled for sex, age, and level of education (as in indicator for SES). Statistical power was estimated thorough Monte Carlo power analysis for indirect effect. Sobel test was used to assess the significance of the mediation. Results (see Figure 1) showed that the total effect of COVID-19 on RWA ($\beta = .23, p < .001$) was significantly mediated by conservation values (indirect effect $\beta = .15$, sobel test $z = 5.20, p < .001$, statistical power = 1.00), but not significantly by openness to change values (indirect effect $\beta = .00$, $z = -0.43, p = .67$, statistical power = 0.06), leaving a non-significant direct effect of $\beta = .08, p = .06$. As concerns control variables, sex (0 = female, 1 = male) was positively related to RWA ($\beta = .22, p = .009$), age was negatively related to openness to change ($\beta = -.28, p < .001$), and SES was negatively related to conservation ($\beta = -.20, p < .001$) and RWA ($\beta = -.19, p < .001$). These results are in line with literature on values and RWA.

Discussion

The results showed that participants reported high levels of concern about the pandemic. As shown by the mediation analysis, even with the limits deriving from correlational data, the link between concerns for COVID-19 and authoritarianism can be explained by the importance given to conservation values. Instead, openness to change is neither related to concerns for COVID-19 nor to RWA. We could speculate that this absence of a correlation is due to the specific situation, which probably leaves little room for importance regarding making one's own decisions independently. The results are thus in line with those studies that have shown how conservative values and the desire for security are connected with a passive acceptance of the reduction in individual freedoms. If some limitations, at the moment of the containment of a pandemic, can be adopted as an extreme measure to get through a terrible emergency, it is necessary to understand whether the end of the emergency will then coincide with the return to previously acquired freedoms and will not instead add greater authoritarian power to the institutions. The risk is that there could be an increase in attitudes of passive submission to authority and a decrease in active criticism of the institutions, with a consequent decline in democratic values (Amat et al., 2020; Passini & Morselli, 2010). As Fromm (1941) had already pointed out, a solution could be to nurture a greater awareness of the world in which we live and the news we listen to, so that we can rightly follow the institutions' measures when they guide us out of an emergency, while at the same time maintaining a focus on what the priorities of a democratic nation are, namely the protection of individual rights and freedoms.

This research has some limitations. First, because the data are correlational, causality can only be inferred. Perception of threat may also be a consequence of authoritarianism, and longitudinal studies alone may in part solve the issue. However, the specific threat situation analysed in this research should be considered. The threat of contagion arose quite unexpectedly for everyone and had a major impact on everyone's life. Second, another limitation concerns the snowballing procedure. This method of recruiting participants has the limit of leading to quite homogeneous samples, although more heterogeneous than those formed by students alone.

Notwithstanding these limitations, research findings support the existence of a relationship between threat perception, conservation values and authoritarianism. It is believed that the fact of having the opportunity to couch the research in a situation that had an effect on the lives of all participants, no one excluded, is very important. The experience of COVID-19 has indeed had an impact on people's lives, certainly economic, but also social, relational and psychological. This experience should make us consider that rather than just triggering our obedience and submission to the authorities, we should trigger our active and critical participation in the community.

References

- Amat, F., Arenas, A., Falcó-Gimeno, A., & Muñoz, J. (2020). *Pandemics meet democracy. Experimental evidence from the COVID-19 crisis in Spain*.
<https://doi.org/10.31235/osf.io/dkusw>
- Bojanowska, A., Kaczmarek, \Lukasz D., Kościelniak, M., & Urbńska, B. (2020). *Values and well-being change amidst the COVID-19 pandemic in Poland*.
<https://doi.org/10.31234/osf.io/xr87s>
- Bonetto, E., Dezechache, G., Nugier, A., Inigo, M., Mathias, J.-D., Huet, S., Pellerin, N., Corman, M., Bertrand, P., Raufaste, E., Streith, M., Guimond, S., Sablonnière, R. de la, & Dambrun, M. (2021). Basic human values during the COVID-19 outbreak, perceived threat and their relationships with compliance with movement restrictions and social distancing. *PLOS ONE*, *16*(6), e0253430. <https://doi.org/10.1371/journal.pone.0253430>
- 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*, 29–41.
- Carriere, K. R. (2019). Threats to human rights: A general review. *Journal of Social and Political Psychology*, *7*(1), 8–32. <https://doi.org/10.5964/jspp.v7i1.897>
- Cundari, F. (2020, March 24). Un uomo solo è al comando dell'Italia, e nessuno ha niente da ridire. *Linkiesta*. <https://www.linkiesta.it>
- Duckitt, J. (Ed.). (2013). Authoritarianism in societal context: The role of threat [Special Section]. *International Journal of Psychology*, *48*(1), 1–59.
<https://doi.org/10.1080/00207594.2012.738298>
- Duriez, B., & Van Hiel, A. (2002). The march of modern fascism. A comparison of social dominance orientation and authoritarianism. *Personality and Individual Differences*, *32*(7), 1199–1213.
[https://doi.org/10.1016/s0191-8869\(01\)00086-1](https://doi.org/10.1016/s0191-8869(01)00086-1)

- Feather, N. T., & McKee, I. R. (2012). Values, right-wing authoritarianism, social dominance orientation, and ambivalent attitudes toward women. *Journal of Applied Social Psychology*, 42(10), 2479–2504. <https://doi.org/10.1111/j.1559-1816.2012.00950.x>
- Feldman, S. (2003). Enforcing social conformity: A theory of authoritarianism. *Political Psychology*, 24(1), 41–74. <https://doi.org/10.1111/0162-895x.00316>
- Fromm, E. (1941). *Escape from freedom*. Holt, Rinehart and Winston.
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. The Guilford Press.
- Manson, J. H. (2020). Right-wing Authoritarianism, Left-wing Authoritarianism, and pandemic-mitigation authoritarianism. *Personality and Individual Differences*, 167, 110251. <https://doi.org/10.1016/j.paid.2020.110251>
- Mirisola, A., Roccato, M., Russo, S., Spagna, G., & Vieno, A. (2014). Societal threat to safety, compensatory control, and right-wing authoritarianism. *Political Psychology*, 35(6), 795–812. <https://doi.org/10.1111/pops.12048>
- Passini, S. (2017). Different ways of being authoritarian: The distinct effects of authoritarian dimensions on values and prejudice. *Political Psychology*, 38(1), 73–86. <https://doi.org/10.1111/pops.12309>
- Passini, S., & Morselli, D. (2010). Disobeying an illegitimate request in a democratic or authoritarian system. *Political Psychology*, 31(3), 341–355. <https://doi.org/10.1111/j.1467-9221.2010.00761.x>
- Schwartz, S. H. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (pp. 1–65). Academic Press.
- Schwartz, S. H., Melech, G., Lehmann, A., Burgess, S., Harris, M., & Owens, V. (2001). Extending the cross-cultural validity of the theory of basic human values with a different method of

measurement. *Journal of Cross-Cultural Psychology*, 32(5), 519–542.

<https://doi.org/10.1177/0022022101032005001>

Scorza, G. (2020, March 13). Coronavirus, l'Italia sul balcone: Canzoni contro la paura. *La Repubblica*. <https://www.repubblica.it>

Shaffer, B., & Duckitt, J. (2013). The dimensional structure of people's fears, threats, and concerns and their relationship with right-wing authoritarianism and social dominance orientation.

International Journal of Psychology, 48(1), 6–17.

<https://doi.org/10.1080/00207594.2012.696651>

Table 1.

Means, Standard Deviations and Pearson Correlation Coefficients among all the Variables.

Measures	<i>M</i>	<i>SD</i>	1	2	3
1. Concerns for COVID-19	4.76	1.24	—		
2. Conservation Values	4.79	0.98	.27***	—	
3. Openess to Change Values	4.94	1.10	.10	.08	—
4. Right-Wing Authoritarianism	3.17	1.02	.20***	.59***	.08

Note. All the variables extended from 1 to 7. * $p < .05$. ** $p < .01$. *** $p < .001$.

Figure Caption

Figure 1. Mediation model. *Note.* RWA = Right-Wing Authoritarianism. Parameter coefficients are standardized. Total effect is indicated in parentheses.

