


Adherence to social distancing during the Covid-19 pandemic in Italy: The role of autonomous motivation and defiance

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Abstract

To maintain social distancing in the long term, in the current COVID-19 scenario, people's motivation must be strong and of high quality. Many governments adopted measures enforcing social distancing. Enforcement, however, can produce feelings of defiance and backfiring effects. The present work aims at investigating the relationship between autonomous motivation and intentions to maintain social distancing, through adherence to recommendations and feelings of defiance. A sample of 502 Italian residents, from different parts of Italy, completed an online survey assessing their present behavior, levels of autonomous motivation and feelings of defiance, as well as intentions to observe social distancing in the short and long term. Results support the hypotheses that autonomous motivation is related to stronger intentions to maintain social distancing, particularly in the long term, and that feelings of defiance mediate this relationship. These results underline importance of promoting understanding and internalizing reasons for social distancing, beyond norms.

Keywords

autonomous motivation, COVID-19, defiance, health behavior, social distancing

Introduction

According to the World Health Organization (WHO), the COVID-19 disease contagion, recognized as a pandemic in March 2020, involved 221 nations. In this scenario, Italy has been one of the most affected countries, other than being the first nation to confront the virus in Europe. To reduce diffusion of the virus, both international organizations and national governments adopted some restrictive and preventive measures; some of these measures were prohibition to leave one's home except for primary necessities during peaks of the contagion, obligation to

use protections such as surgical face masks and to maintain social distancing. WHO defines social distancing as minimization of physical contact among people not part of the same household, through the recommendation to stay at home as much as possible and, when out of

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the house, maintaining a physical distance of at least 1 m from non-cohabitant people (WHO, 2020). Public health experts raised the possibility that more periods of social distancing are required for years to come, before the pandemic runs its course (Kissler et al., 2020; Young, 2020). Adherence to social distancing recommendations therefore implies a prolonged commitment on part of the citizens and it represents a challenge which demands a considerable change in lifestyle. For these reasons many find it distressing or hard to comply with (Dezeczache et al., 2020). It is therefore relevant for public health in the short and in the long term, to understand which could be the most effective ways to promote adherence to social distancing measures. The present study, carried out on a sample of Italian citizens, is part of a broader international project which has exactly this aim (Legate et al., 2021). In particular, the current work considers the role of a particular type of motivation, namely autonomous motivation (Deci and Ryan, 2000), analyzing its relationship to intention to adhere to social distancing measures in the short and in the long term. In addition, it takes into account the role of feelings of defiance (Van Petegem et al., 2015) and present behavior of participants.

Motivation

A fundamental element in promoting behavior change and its maintenance in the long term is individual motivation, considered both in quantitative (how much the person is motivated) and qualitative (what kind of motivation the person has) terms. For motivation to have positive behavioral outcomes, it is not sufficient that it is high in quantity, it also has to be of high quality. This perspective is embraced particularly by theorists of Self-Determination Theory (SDT; Deci and Ryan, 1985; Ryan and Deci, 2017) who have repeatedly verified it in empirical research and interventions. According to SDT, a crucial factor for motivational quality is the Perceived Locus of Causality (PLOC; Deci and Ryan, 2000; Ryan and Connell, 1989) of a certain behavior. The PLOC can be more or less

internal to the individual; depending on where the PLOC falls in the internal-external axis, motivation moves on a continuum ranging from autonomous to controlled motivation. Autonomous motivation, in its various degrees of intrinsic, integrated and identified regulation, relates to behaviors that are perceived as originating within the person. These perception could arise because of the pleasure derived from the behavior itself or because of perceived congruence of the behavior and of its consequences with the person's values or goals. When motivation is autonomous, the individual perceives their behavior as self-determined and feels a sense of ownership and responsibility over it. On the contrary, controlled motivation, which comprehends introjected and external regulation, relates to behaviors that are not perceived as originating from the individual but are enacted to comply with external contingencies or pressures. These can be completely external, such as prohibitions, sanctions or rewards, or introjected by the individual and generating a sense of guilt, shame or need for approval. In the case of controlled motivation behavior is perceived as heteronomous and the individual does not feel ownership or responsibility over their actions. The presence of autonomous motivation is therefore indicative of a behavior that is intrinsically motivating for the individual or that has become part of their personal system of values and goals.

Scientific literature has underlined the central role of autonomous motivation in promoting health behaviors, changes in lifestyle and their maintenance in the long term: according to a meta-analysis on SDT applications in health contexts (Ng et al., 2012), behavior change is more effective and lasting when patients are autonomously motivated. Results evidence effects up to 24 months. Similar conclusions are drawn from a recent literature review on the subject (Teixeira et al., 2020). Among behaviors that are effectively sustained by autonomous motivation there is physical activity for overweight patients (Silva et al., 2011) and patients with type II diabetes (Koponen et al., 2017), adherence to medications outside the

hospital (Williams et al., 1998, 2009), abstinence from tobacco use (Williams et al., 2006, 2009). Studies underline how maintaining a new behavior or habit in the long run results specifically from internalization of said behavior, which is associated with autonomous motivation to enact it. Literature also suggests that autonomous motivation may be a predictor of behavioral intentions that are closely linked to actual behavioral outcomes. Within the Theory of Planned Behavior, Ajzen asserts that intentions predict behavior in that they are an indicator of how much effort people are willing to exert in order to perform said behavior (Ajzen, 1991). Many studies have subsequently verified this predictive power (see Sheeran, 2002 for a meta-analysis) but have also highlighted a gap between intention and behavior, so that the first doesn't perfectly predict the latter (Sheeran and Webb, 2016). Sheeran and Webb (2016) address the factors that can fill the gap, and some of these refer to the basis of intentions: when intentions stem from the persons' system of value and beliefs and are integrated into the self-concept, they are more likely to result in the corresponding behavior. These characteristics are coherent with autonomous motivation. Studies that take into account intentions along with behavior, highlight how autonomous motivation is predictive of both. For example, Chan et al. (2014) find autonomous motivation to be predictive both of intention to engage in myopia-preventive behaviors and actual behavior; similar results are obtained by Brooks et al. (2018) in relation to intention to exercise and actual physical activity in patients affected by chronic pain and persistent disabilities.

Defiance

Maintaining social distancing in the pandemic situation can be considered a positive behavior for personal and public health, since it is functional in reducing contagion and in contrasting overcrowding of intensive therapy wards. However, the request to respect social distancing can notably reduce the person's freedom and action field, undermining also essential

freedoms such as that of movement. This is particularly true when considering recommendations such as avoiding leaving the house, avoiding certain social situations/activities or certain places. The reduction of freedom is even greater when measures are applied not only through recommendations, but also through explicit prohibition and sanctions, as it happened in Italy. According to Psychological Reactance Theory (PRT; Brehm, 1966; Miron and Brehm, 2006), freedom reduction and elimination or perception of threat toward a person's freedom, can trigger a psychological and behavioral reaction aimed at restoring the lost, damaged or threatened freedom. As a consequence, feelings of defiance can emerge, that is the strong desire to ignore the received request and behave in the exact opposite way (Van Petegem et al., 2015). It is a compensatory mechanism that comes into play when individuals are prone to re-establish a sense of autonomy, feeling a threat to one's freedom and self-determination (Weinstein et al., 2020). It is therefore possible that measures such as those applied in the Italian context elicit feelings of defiance from citizens; it is also possible however that such feelings diminish when the individual is autonomously motivated to comply with government requests. As outlined in the previous paragraph, presence of autonomous motivation for enactment of a certain behavior entails that the person has internalized the value of the behavior, understanding the reasons behind it and endorsing its importance. Restrictions or impositions applied from outside could therefore be perceived as less harmful or less threatening to one's freedom, inasmuch as enactment of the behavior, in this case social distancing, represents an expression of the individual's personal will.

Aims and hypotheses

Promoting social distancing in the short and long term has particular relevance for individual and public health in the COVID-19 pandemic. However, the freedom restriction that derives from norms enforcing social distancing

can elicit the feelings of defiance and intentions to ignore the requested behavior. Autonomous motivation can play a pivotal role in promoting intention to adhere to social distancing rules, both in the short and in the long term, and in reducing feelings of defiance that the person can experience in reaction to restricting norms. Therefore, autonomous motivation could promote intentions to adhere to social distancing, both directly and through reduction of feelings of defiance and promotion of present behavioral adherence. Given these premises, the aim of the present work is to take a first step in verifying whether autonomous motivation could play such a role, by analyzing its direct and mediated relationships with intentions to adhere to social distancing. The following hypotheses are formulated:

H1. Autonomous motivation correlates with present behavior of adherence to social distancing norms, feelings of defiance and behavioral intentions to adhere to recommendations. Specifically:

-*H1a.* Autonomous motivation correlates positively with present adherence to social distancing norms.

- *H1b.* Autonomous motivation correlates negatively with feelings of defiance.

- *H1c.* Autonomous motivation correlates positively with intentions to adhere to recommendations in the short (1 week) and in the long term (6 months).

H2. In a mediation model, the positive relation of autonomous motivation with behavioral intentions in the short term is mediated by a positive relation with present adherence to social distancing norms and a negative relation with feelings of defiance.

H3. In a mediation model, the positive relation of autonomous motivation with behavioral intentions in the long term is mediated by a positive relation with present adherence to social distancing norms and a negative relation with feelings of defiance.

Methods

Procedure

Data collection took place online from April 29th, 2020 to June 1st, 2020, a timeframe which in Italy was one of the most critical times in the Covid-19 pandemic. A convenience sample of adult people resident in Italy was involved in the study; data collection took place in two main centers, in diverse regions of Italy, guaranteeing heterogeneity of participants on the national territory. Participants voluntarily agreed to take part in the study and could interrupt their participation at any time. Data was collected through an online survey; survey completion took about 15 minutes and it began after participants gave their informed consent to study participation and data treatment. The survey, developed as part of a larger research project, comprised an experimental procedure assigning participants to different conditions. Before proceeding with analyses, it was assessed whether experimental conditions had any effect on variables included in the present work. Since no significant effect emerged in the present sample, it was not accounted for in subsequent analyses. The project was approved by the responsible ethical commission at both participating universities (Protocol numbers: RM-2020-291; IRB-2020-84).

Participants

The sample comprised 502 Italian adults: 211 men (42%) and 278 women (55%). The remaining 13 participants (3%) preferred not to answer and in one case indicated another gender. Mean age is 38.58 years (s.d.: 13.69, range: 18–81). Regarding education, participants were mostly highly educated: 226 (45%) had a high education level (bachelor's degree or higher), while 220 (44%) held a high school diploma. Only 44 participants (9%) had a low education level (elementary, middle school or professional certificate), while 11 participants (2%) did not provide information on their education. A minimum percentage of participants (0.8%) declared to be

in isolation due to symptoms at the time of data collection and 19 participants (4%) indicated to have had recent contacts with people certainly or possibly positive to Covid-19.

Measures

The administered survey was divided in different sections, illustrated below. Reliability of measures was assessed through Cronbach's Alpha; all scales met a reliability cut-off of $\alpha > 0.70$ (Tabachnick and Fidell, 2019).

Socio-demographic information. The following information was collected: age, gender, education, presence of symptoms and consequent isolation, recent certain/possible exposure to cases of Covid-19.

Present behavior of adherence to social distancing. Indicates present level of adherence to recommendations to stay home as much as possible. The variable was measured through the following item: "How much are you currently following the recommendation to stay home as much as possible?." Participants were asked to answer on a 7-point Likert-type scale (1 = not at all; 7 = completely).

Autonomous motivation ($\alpha = 0.85$). Autonomous motivation was measured through four items, adapted from a previous measure of *Perceived Locus of Causality* (Ryan and Connell, 1989; Soenens et al., 2009). Participants were presented with different motivations to adhere to the recommendations and were asked to rate their agreement with each motivation on a 7-point Likert-type scale (1 = strongly disagree; 7 = strongly agree). A sample item is: "(I plan to follow these recommendations because. . .) I understand why these recommendations are important."

Feelings of defiance ($\alpha = 0.767$). This variable was measured through four items adapted from a previous study (Vansteenkiste et al., 2014). Participants rated their agreement on a 7-point Likert-type scale (1 = strongly disagree; 7 = strongly agree). One sample item is: "These

recommendations make me feel like I want to do exactly the opposite."

Behavioral intentions in the short and in the long term. Intentions were measured through two items, formulated on the basis of the measure used by McGarrity and Huebner (2014). Intentions in the short term referred to 1 week: "How likely are you to follow the recommendation to participate in social distancing (stay home as much as possible) over the next week?"; participants were asked to answer on a 7-point Likert-type scale (1 = extremely unlikely; 7 = extremely likely). Intentions in the long term referred to a period of 24 weeks (6 months): "Assuming the guidelines last for 24 weeks (in other words, 6 months), how long do you intend on cooperating?"; in this case participants were asked to answer indicating the number of weeks (0–24).

Data analysis

Analyses were carried out through use of the software SPSS—*Statistical Package for Social Science* v. 27 and Jamovi v. 1.2.27.0. The latter was used to test mediation models. Regarding the first hypothesis, correlations were analyzed between autonomous motivation, feelings of defiance, present behavior and intentions in the short and long term. To answer the second and third hypotheses, two multiple mediation models were tested, one for short term intentions and the other for long term intentions. Both models included autonomous motivation as the independent variable and feelings of defiance and present behavior as mediating variables.

Results

Descriptive analyses

Table 1 illustrates descriptive statistics of observed variables. Mean levels of autonomous motivation in the sample are high, while feelings of defiance are low in average. Regarding adherence to social distancing, present behavior

Table 1. Descriptive statistics of measured variables.

	Autonomous motivation	Feelings of defiance	Present behavior	Intentions 1 week	Intentions 6 months
Mean	6.39	2.90	6.40	6.26	18.78
S.d.	1.07	1.60	0.99	1.34	7.66
Min	1	1	1	1	0
Max	7	7	7	7	24
Theoretical range	1–7	1–7	1–7	1–7	0–24

is of average high adherence, with the lowest variation in the sample (s.d.=0.99). Intentions to cooperate with recommendations related to social distancing is high on average both in the short term (1 week) and in the long term (6 months). Regarding the latter, participants on average are willing to meet recommended behaviors for almost 5 months ($M=18.78$ weeks).

Correlational analyses

The first hypothesis was verified analyzing Pearson's correlations between autonomous motivation, feelings of defiance, present behavior, and intentions in the short and long term. As reported in Table 2, all variables are significantly related. Autonomous motivation correlates strongly and negatively with feelings of defiance (*H1b*), positively with present adherence to social distancing (*H1a*), and positively with behavioral intentions (*H1c*), both in the short and in the long term. Regarding the relationship between autonomous motivation and intentions, it is interesting to note that autonomous motivation shows a correlation $r=0.353$ ($p < 0.001$) with intentions in the long term and a correlation $r=0.295$ ($p < 0.001$) with intentions in the short term.

In addition to hypothesized relationship, the analysis highlights a positive correlation between present behavior and intentions, particularly in the short term ($r=0.31$, $p < 0.001$), but also in the long term ($r=0.25$, $p < 0.001$); the two types of intentions are also positively related. On the contrary, feelings of defiance show a negative relation with present adherence to social distancing recommendations and with

both behavioral intentions. This relation is strong particularly with intentions in the long term ($r=-0.37$, $p < 0.001$).

Mediation models

The second hypothesis (*H2*) was verified through test of a multiple mediation model (Figure 1).

The total effect of autonomous motivation on short term intentions is positive and significant ($\beta=0.30$; $t(494)=6.98$; $p < 0.001$). Such effect is composed by a significant direct effect ($\beta=0.19$; $t(492)=3.94$; $p < 0.001$), a significant indirect effect mediated by present behavior ($\beta=0.075$; $p < 0.001$) and an indirect effect mediated by feelings of defiance which does not reach significance ($\beta=0.04$; $p=0.07$). As shown in Figure 1, autonomous motivation relates positively to present behavior and negatively to feelings of defiance. In turn, present behavior of adherence to social distancing has a positive relation to short term intentions while feelings of defiance have a negative one. The model explains overall 15% of the variance in short term intentions ($R^2=0.15$).

An analogous model was tested to verify the third hypothesis (*H3*) and is shown in Figure 2.

The total effect of autonomous motivation on long term intentions is positive and significant ($\beta=0.36$; $t(458)=8.21$; $p < 0.001$). Such effect is composed by a significant direct effect ($\beta=0.20$; $t(456)=4.17$; $p < 0.001$) and by two significant indirect effects, the first mediated by present behavior ($\beta=0.13$; $t(456)=2.93$;

Table 2. Pearson's correlations among observed variables, two tailed.

	Autonomous motivation	Feelings of defiance	Present behavior	Intentions 1 week	Intentions 6 months
Autonomous motivation	1	-0.437***	0.316***	0.295***	0.353***
Feelings of defiance		1	-0.228***	-0.225***	-0.372***
Present behavior			1	0.313***	0.253***
Intentions 1 week				1	0.237***
Intentions 6 months					1

*** $p < 0.001$.

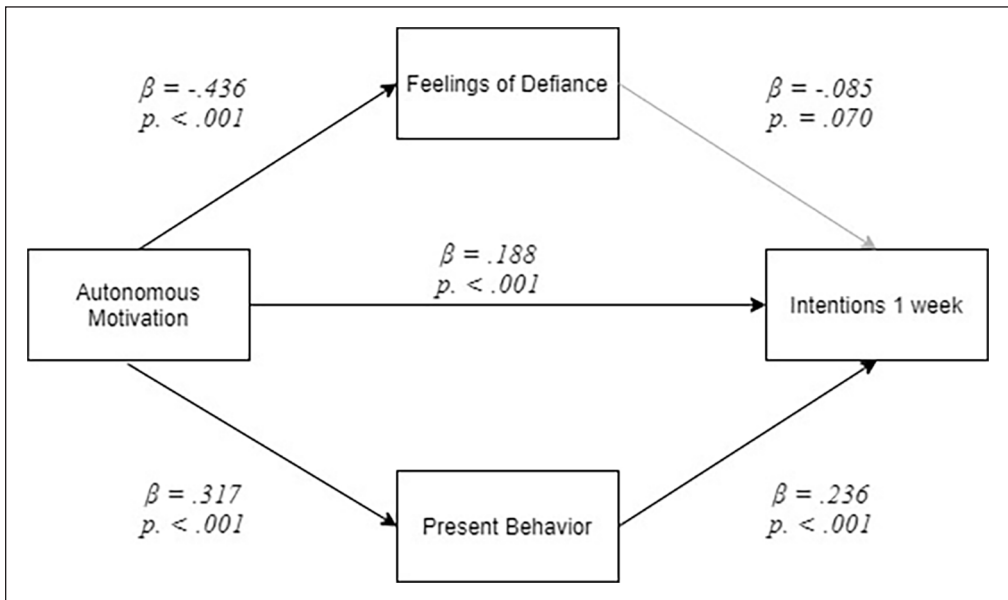


Figure 1. Multiple mediation model for short term intentions.

$p=0.004$), the second mediated by feelings of defiance ($\beta=-0.25;t(456)=-5.31; p < 0.001$). As shown in Figure 2, the valence of the effects is similar to that highlighted for short term intention. Present behavior of adherence to social distancing has a positive effect on long term intentions and is positively related to autonomous motivation; similarly, feelings of defiance have a negative effect on long term intentions and are negatively related to autonomous motivation. In this case however, the negative effect of feelings of defiance on intentions is stronger and significant. In this model the proportion of explained variance is higher,

as the model explains 20% of the variance in long term intentions ($R^2=0.20$).

Discussion

The proposed hypotheses about correlations of autonomous motivation (H1) were confirmed. Indeed, analyses confirm a positive relationship of autonomous motivation with present adherence to social distancing and intentions to maintain the behavior in the short (1 week) and long term (6 months). Results also highlight a negative relationship of autonomous motivation with feelings of defiance about social distancing

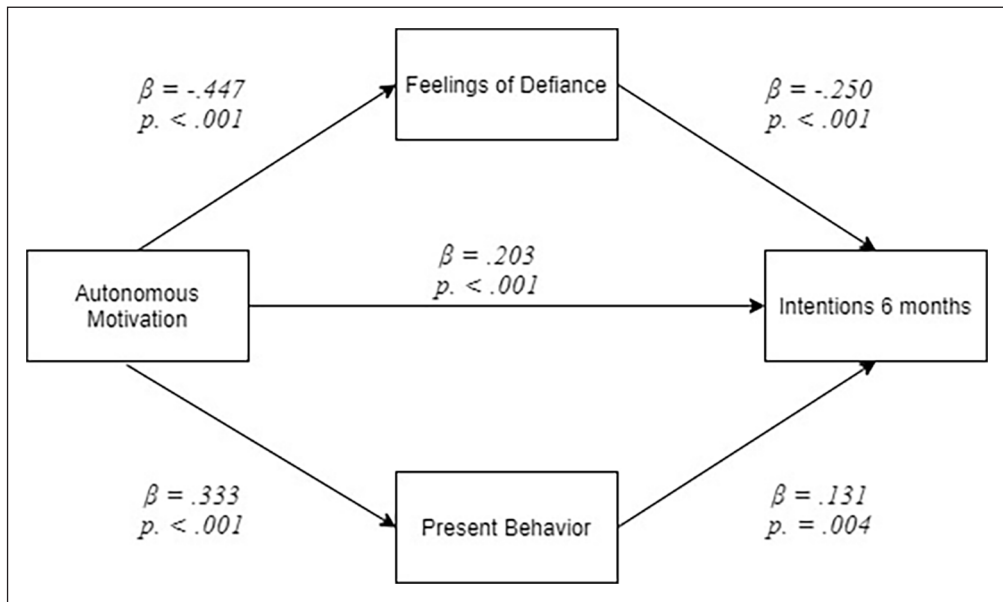


Figure 2. Multiple mediation model for long term intentions.

recommendations. It was also hypothesized that autonomous motivation would significantly predict intentions both in the short and long term and that this relationship would be mediated by present behavior and feelings of defiance (H2 and H3). The hypothesized model was confirmed for long term intentions (H3), while it was only partially confirmed for short term intentions (H2). In the latter, mediation through feelings of defiance was not significant. The tested models therefore highlighted some differences between effects on short term intentions and effects on long term intentions. Some limitations of the present work must be considered. These involve the cross-sectional nature of the study, as well as the use of single-item measures for some of the variables (i.e. present behavior; intentions in the short and long term). Although several studies have supported the use of these measures (DeSalvo et al., 2006; Jovanović and Lazić, 2020), they should be approached with caution (Diamantopoulos et al., 2012; Fisher et al., 2016). A similar consideration applies to the use of a different scaling (namely 0–24 weeks) for the variable relative to intentions in the long term. Despite such limitations,

results underline relevant elements for those interested in how to promote and maintain behaviors related to social distancing. Overall a positive relation emerges between autonomous motivation, present behavioral adherence and sustained intention to maintain such behaviors. Analyses also highlight a stronger role of both autonomous motivation and feelings of defiance when it comes to long term intentions. The effects detected in the mediation analyses are stronger in the model which considers long term intentions as the outcome variable. In this case autonomous motivation explains a higher portion of variance, compared to that explained in short term intentions. Moreover, with respect to intentions in the long term, the effect is significantly mediated not only by present behavior (as it happens for short term intentions) but also by feelings of defiance. Indeed, this variable plays a stronger mediating role in this model compared to present behavior.

Along with existing literature, these results highlight that difficulties related to the experience of defiance in maintaining social distancing behaviors, can particularly arise in the long run. When a perception of threat to one's

freedom is perceived for a prolonged period of time, reactance and feelings of defiance are prone to increase (Rains, 2013). The present results underline that their negative effect on intentions to comply with recommendations could also become stronger when it comes to envisioning a longer timeframe. Sustaining autonomous motivation however could decrease the experience of reactance and feelings of defiance, acting as a protection against their negative effects. As stated, autonomous motivation reflects awareness, comprehension and internalization of the value of the behavior to enact (Ryan and Deci, 2017). Results suggest that if the value for social distancing is internalized, the norms are respected willfully and more effectively; this would be in line with previous work underlining the role of personal endorsement of behavior to carry through with intentions (Sheeran and Webb, 2016). Moreover, effects in the model predicting intentions in the long term, result overall stronger compared to effects in the model predicting intentions in the short term. This is in line with research that highlights the role of autonomous motivation, particularly in sustaining behavior in the long run (Ng et al., 2012; Teixeira et al., 2020).

Conclusions

The present work provided the opportunity to investigate, in an ecological context, the role of defiance in the relationship between autonomous motivation and behavioral intentions. The essential role of high motivational quality, in the form of autonomous motivation, was confirmed, highlighting its importance particularly in the long term and in the reduction of defensive reactions, in the form of feelings of defiance, which naturally occur with constraints and obligations. In the present pandemic situation, such a role is all the more relevant in the Italian scenario, where behavioral requests were advanced only in the form of normative enforcements and were not accompanied by communications that supply rationales and reasons, allowing to internalize the value of

the behavior. As SDT scholars have shown through years of research and practice (Ryan and Deci, 2017, 2020) communication strategies are an important element in the support of autonomous motivation (Legault et al., 2011; Soenens et al., 2009; Su and Reeve, 2011). As PRT states (Brehm, 1966; Miron and Brehm, 2006), introducing norms that limit one's freedom could be counterproductive and backfire; it is therefore essential that behavioral requests are communicated in ways that allow people to understand and endorse the reasons and the value of the behavior they are asked to adopt. Only in this way can people adhere willfully to the behavioral change and autonomously maintain it for a prolonged time, with lower costs for society and public health. The application of strategies derived from SDT has proven effective in supporting health behavior in different contexts (Koponen et al., 2017; Ryan et al., 2008; Silva et al., 2011; Teixeira et al., 2020; Williams et al., 2006). SDT's suggestions on support of autonomous motivation and on communication strategies could be useful tools for policy makers and health departments wishing to promote social distancing and other behaviors that would reduce spread of the virus, such as use of protections or vaccination.

Data sharing statement

The current article is accompanied by the relevant raw data generated during and/or analysed during the study, including files detailing the analyses and either the complete database or other relevant raw data. These files are available in the Figshare repository and accessible as Supplemental Material via the SAGE Journals platform. Ethics approval, participant permissions, and all other relevant approvals were granted for this data sharing.


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