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How Guilt Shapes Public Health Compliance: Distinct Moral–Emotional Pathways During the COVID-19 Pandemic

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Abstract

The COVID-19 pandemic posed unprecedented challenges, requiring compliance with public health measures. Notably, guilt is a powerful motivator for rule adherence; however, different types of guilt could have fueled the decision to stay home. This study investigated how guilt propensity influenced Italians' self-reported motivations for adhering to containment rules. The propensity to different types of guilt, namely deontological and altruistic, was assessed in a total of 393 participants (261 females, 66.4%; 132 males, 33.6%; M age = 34.4, SD = 12.6) in May 2020, between the first and the second phases of Italian lockdown. The survey assessed four guilt dispositions—Moral Norm Violation (MNV), Moral Dirtiness (MODI), Harm-based guilt (HARM), and Empathy-based guilt (EMPATHY)—alongside fear of COVID-19, trust in authorities, and motivations for rule compliance (e.g., protecting one's own and others' well-being, respecting authorities, and avoiding sanctions). MNV emerged as a positive predictor of prosocial, authority-based and personal motivations, whereas MODI predicted lower prosocial motivation. HARM selectively predicted prosocial motivation and was negatively associated with authority-based motivations, while EMPATHY negatively predicted self-focused motivations. Moderation analyses revealed small but significant interaction effects, indicating that fear of COVID-19 slightly amplified the influence of EMPATHY and attenuated the effect of HARM, whereas trust in authorities strengthened the link between EMPATHY and prosocial compliance and reduced the association between MNV and prosocial motivations. These findings suggest that compliance during the pandemic was shaped by distinct emotional–moral pathways and that the motivational impact of guilt depends on perceived threat and institutional trust, highlighting the relevance of specific guilt profiles in promoting cooperative and health-protective behaviors.

Keywords: COVID-19; deontological guilt; altruistic guilt; moral emotions; public health compliance; fear of COVID-19; trust in authorities

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1. Introduction

The COVID-19 pandemic created unprecedented public health challenges worldwide, requiring sustained adherence to preventive measures such as mask-wearing, physical distancing, and prolonged lockdowns (Rajkumar 2020). In Italy, these measures were implemented through stringent national decrees, including the Prime Minister's Decree of 8 March 2020, which imposed a nationwide stay-at-home mandate. While extensive

research has examined the psychological burden of the pandemic—from anxiety and social isolation to pandemic fatigue (Coelho et al. 2020; Pancani et al. 2021; Haktanir et al. 2022), as well as the impact of quarantine on family functioning and parental distress (Pugliese et al. 2023)—less attention has been devoted to understanding the emotional and moral motivations underlying rule compliance. Identifying these motivational pathways is essential for public health strategies, as adherence depends not only on information and risk perception but also on how citizens morally interpret responsibility, duty, and threat during collective crises.

Evidence from later phases of the pandemic indicates that compliance with public health measures is shaped by an interplay of affective, moral, and social factors, including perceived collective responsibility, social norms, and institutional legitimacy (Betsch et al. 2020; Van Bavel et al. 2020; Bicchieri et al. 2022). In particular, compliance has been shown to depend not only on individual risk perception but also on perceived social expectations and trust in collective action frameworks.

Within moral psychology, moral intuitions—such as care, fairness, and respect for authority—are thought to anchor moral emotions and guide behavior when these values are threatened (Graham et al. 2013). Recent extensions of this framework further emphasize that moral intuitions operate dynamically in crisis contexts, where rapidly changing norms and uncertainty amplify reliance on intuitive moral judgments and emotional cues (Brady et al. 2020). Consistent with this view, empirical studies conducted during the pandemic support the role of moral norms in motivating preventive behavior (Turner et al. 2023, 2025).

The COVID-19 pandemic therefore offers a natural context to examine how moral orientations and their associated guilt responses support or undermine public health compliance. For example, Italian research indicates that moral disengagement reduces adherence, whereas social trust promotes it and attenuates disengagement effects (Alessandri et al. 2020). However, public messages relying on guilt or shame may have paradoxical effects: although they can elicit short-term compliance, they often impair long-term adherence and evoke reactance or withdrawal when perceived as punitive or identity-threatening (Legate et al. 2022). Consistently, research conducted during the COVID-19 pandemic showed that lower endorsement of conspiracy beliefs was associated with stronger support for containment measures, higher feelings of guilt related to rule violations, and greater compliance intentions (Giacomantonio et al. 2022), suggesting that cognitive interpretations of the crisis may shape whether moral emotions effectively motivate adherence. In line with this view, studies on pandemic communication suggest that moral emotions such as guilt can promote short-term compliance but may also elicit resistance when perceived as externally imposed or manipulative, particularly in low-trust contexts (Porat et al. 2020).

Consistent with this perspective, recent work has shown that moral norms predict COVID-19 prevention intentions through anticipated guilt (Turner et al. 2023) and that mask wearing can be framed as a prosocial behavior within a moral norms activation model in which anticipated guilt plays a mediating role (Turner et al. 2025).

Beyond messaging, contextual appraisals also shape compliance. Alongside motivations oriented toward others and institutions, compliance may also reflect a sense of moral responsibility toward oneself—protecting one's own health, avoiding unnecessary risk, and fulfilling a perceived duty of self-care. Within moral psychology, self-preservation has been conceptualized as a form of moral responsibility (e.g., duties to oneself in Kantian traditions) and has been shown to operate alongside prosocial motives when individuals face collective threats (Jørgensen et al. 2021). Preventive behaviors can therefore serve both relational aims (protecting others) and self-focused aims (protecting oneself), which often coexist rather than being mutually exclusive.

Indeed, empirical evidence suggests that these motivational domains often interact, with individuals simultaneously endorsing self-protection and collective responsibility, especially under conditions of heightened uncertainty and perceived interdependence (Jordan et al. 2021).

Perceived threat during the pandemic increased prosocial behavior, particularly when accompanied by fear or physiological arousal (Vieira et al. 2022). Fear of COVID-19 predicted both preventive behaviors and social cohesion (Harper et al. 2021; Pakpour and Griffiths 2020), whereas institutional trust emerged as a decisive factor, with trust in science more predictive of compliance than threat perception alone (Plohl and Musil 2021). Recent findings additionally suggest that trust amplifies the motivational power of prosocial emotions but weakens punitive or authoritarian motivations (Karakulak et al. 2023).

Additional research further indicates that trust in institutions not only predicts compliance but also shapes how individuals interpret public health messaging, influencing whether compliance is experienced as a cooperative act or as externally imposed control (Devine et al. 2021; Pagliaro et al. 2021).

Yet, despite these advances, the role of distinct forms of guilt—and the extent to which their motivational impact depends on contextual appraisals—remains poorly understood.

1.1. Guilt as a Differentiated Moral Emotion

Guilt is widely recognized as a pivotal motivator of reparative and prosocial behavior (de Hooge et al. 2011). Recent work has refined this view by conceptualizing guilt as a multifaceted construct, showing that different guilt experiences may differentially predict reparative versus avoidant behaviors depending on appraisal processes and perceived responsibility (Tilghman-Osborne et al. 2010). The dualist theory distinguishes two forms of guilt: deontological guilt (DG)—arising from perceived violations of rules or authoritative expectations—and altruistic guilt (AG)—rooted in empathic concern for others' suffering (Mancini and Gangemi 2021). This distinction can be framed within broader models of moral psychology that differentiate between rule-based and care-based moral processing. DG reflects sensitivity to norm violations and authority-based obligations, whereas AG aligns with care-oriented moral concerns centered on harm prevention and the welfare of others (Cushman 2013; Graham et al. 2013).

DG is associated with fear of punishment, sensitivity to disgust, and self-directed negative emotions such as self-contempt and self-anger (Basile et al. 2011; Ottaviani et al. 2018), reinforcing adherence to rigid moral principles such as the "Do not play God" rule (Gangemi and Mancini 2013; Mancini and Mancini 2015; Parisi et al. 2021). In contrast, AG is linked to compassion-based responses, prosocial behavior, and costly helping (Cameron 2018) and is also associated with internalizing symptoms (Pulcu et al. 2014; O'Connor et al. 2002; Tone and Tully 2014). Neuroimaging evidence further suggests that DG is more strongly associated with insula activation (Basile et al. 2011), which is a well-known structure implicated in disgust processing (Wicker et al. 2003) and self-contempt (Beuchat 2022). Conversely, AG preferentially recruits medial prefrontal areas, commonly implicated in theory-of-mind, mind reading and empathic-related processing (Basile et al. 2011).

Crucially, distinct guilt experiences reflect different moral attributions of responsibility and control. DG is typically linked to beliefs that one could or should have acted differently (Tracy and Robins 2006), thereby potentially producing hyper-responsibility (Rachman 1993; Salkovskis et al. 2000). Conversely, AG encompasses other-oriented guilt experiences such as empathic/vicarious guilt and survivor guilt (Mancini and Gangemi 2021). Empathic or vicarious guilt emerges from witnessing others' suffering in the absence of personal causation (Zahn-Waxler and Radke-Yarrow 1990; Scaffidi Abbate et al. 2022), whereas survivor guilt arises from perceived moral imbalance (Tangney and Dearing 2003; Murray

et al. 2021). These distinctions suggest that guilt cannot be conceptualized as a uniform driver of compliance; rather, its motivational effects depend on the underlying moral orientation from which it arises.

Despite these advances, relatively little research has examined how distinct forms of guilt—grounded in different moral orientations—translate into specific motivational pathways for compliance, particularly in real-world crisis contexts such as the COVID-19 pandemic.

Addressing this gap may offer more precise insights into the emotional mechanisms underlying cooperative behavior in large-scale collective threats.

1.2. The Current Study

The present study investigated how distinct guilt orientations relate to motivations for complying with COVID-19 public-health regulations in Italy, using the Moral Orientation Guilt Scale (MOGS; Mancini et al. 2022). The MOGS was developed to assess guilt experiences grounded in different moral orientations and comprises four subscales: Moral Norm Violation (MNV), which captures guilt arising from the perceived violation of internalized moral rules and obligations (e.g., disobeying authority, neglecting one's duties); Moral Dirtiness (MODI), which reflects self-condemning guilt experienced as moral "stain" or contamination; Empathy, which indexes guilt linked to others' misfortune and unmet altruistic goals (e.g., not helping those in need, feeling guilty for one's relative advantage); and Harm, which measures guilt associated with causing or failing to prevent harm and the tendency to engage in reparative, care-oriented behavior. In line with dualist accounts, we considered MNV and MODI as expressions of deontological guilt, rooted in the violation of internalized norms and duties, and Empathy and Harm as expressions of altruistic guilt, grounded in concern for others and harm prevention (Mancini and Gangemi 2021).

This distinction is consistent with broader models of moral cognition that differentiate between rule-based and care-based moral processing, often associated with distinct emotional and motivational systems (Cushman 2013; Crockett 2017).

We focused on three broad domains of motivations for staying at home during the national lockdown: prosocial motivations (e.g., protecting loved ones and the community), authority-/legality-based motivations (e.g., obedience to authorities, respect for the law), and self-focused motivations (e.g., protecting one's own health, fulfilling a duty toward oneself). On this basis, we formulated the following hypotheses.

(1) *Deontological guilt and duty-based compliance*. We hypothesized that deontological guilt (MNV, MODI) would be positively associated with motivations framed in terms of duty and obligation, particularly those referring to respect for rules and institutional authority. At the same time, because internalized duties can function both as moral guidance and as punitive self-standards, we expected an ambivalent relation with authority-/legality-based motivations, whereby higher levels of deontological guilt may sustain adherence both when individuals endorse institutional rules as legitimate and when they experience stronger concern about having violated their own moral standards. On the other hand, intense feelings of moral self-debasement could elicit a defensive and distrustful view of authority and an inverse relationship with prosocial engagement. In addition, given that duty-based reasoning can extend to self-preservation and personal responsibility for one's own well-being, we expected deontological guilt to be positively related to self-focused motivations for compliance.

(2) *Altruistic guilt and prosocial compliance*. We hypothesized that altruistic guilt (Empathy, Harm) would be more strongly associated with prosocial motivations, such as protecting close others and contributing to collective welfare, reflecting its outward-looking orientation centered on preventing or repairing harm to others. By contrast,

we expected altruistic guilt to show weaker—and possibly inverse—associations with purely self-focused motives, to the extent that a strong concern for others may shift attention away from self-interest.

(3) *Moderating role of fear and institutional trust*. Finally, we examined whether fear of COVID-19 and trust in authorities would moderate the relationship between guilt orientations and compliance motivations. Specifically, we expected higher fear of COVID-19 to enhance the motivational impact of guilt—particularly altruistic guilt—on both prosocial and self-protective motives by making the threat to oneself and others more salient. Likewise, we expected higher institutional trust to facilitate more cooperative and prosocial interpretations of compliance, strengthening the link between altruistic guilt and prosocial motivations and reducing reliance on purely rule-based or punitive forms of deontological guilt for authority-based adherence.

2. Materials and Methods

2.1. Sample

The study included 393 participants (261 F, 66.4%; 132 M, 33.6%) with a mean age of 34.4 years (SD = 12.6). Eligibility criteria required participants to be 18 years or older, fluent in Italian, have completed at least secondary school, and have reliable internet access. Exclusion criteria included current suicidal ideation or a clinical diagnosis of severe psychiatric conditions such as schizophrenia, other psychotic disorders, bipolar disorder, or dissociative disorders. Most participants resided in Central Italy (69.7%), followed by Southern (18.3%) and Northern Italy (12.0%). Regarding education, 2.0% had only completed secondary school, 30.5% held a high school diploma, 15.5% had a bachelor's degree, 30.5% a master's degree, and 21.4% a PhD or postgraduate specialization.

2.2. Procedure

Participants were recruited from the Italian general population via word of mouth and social media (e.g., Facebook, Instagram) using a convenience sampling strategy aimed at rapidly collecting data during the acute phase of the national lockdown. Participants completed a 20 min online survey in May 2020, during the transition between the first and the second phase of the COVID-19 lockdown in Italy. Electronic informed consent was obtained before accessing the survey. Prior to completing the standardized questionnaires, participants provided demographic information, including age, city of residence, marital status, education level, and the number of days spent at home due to lockdown, which averaged 39 days. The study was approved by the Ethics Committee of our institution (protocol code: 3.1/2020; approval date: 1 May 2020) and conducted in accordance with national and institutional ethical standards, as well as the 1975 Helsinki Declaration (revised in 2013).

The margin of error for the sample, assuming a 95% confidence level and maximum variability ($p = 0.50$), was approximately $\pm 4.9\%$.

2.3. Measures

Ad hoc *questions*. Motivations for adhering to COVID-19 lockdown regulations were measured through ten items, each beginning with "I stay at home because. . .", and rated on a 5-point Likert scale (1 = "strongly disagree", 5 = "strongly agree"). The statements were: (1) "For the well-being of my loved ones," (2) "For the well-being of the community," (3) "Out of duty towards my loved ones," (4) "Out of duty towards the community," (5) "Out of obedience to authority," (6) "Out of respect for the law," (7) "Because I trust national authorities," (8) "To avoid penalties," (9) "For my own well-being, to protect my health," and (10) "Out of duty towards myself."

Participants also rated their fear of COVID-19 ("How afraid are you of COVID-19?") and trust in authority ("How much do you trust national authorities to manage the pandemic?") using 5-point Likert scales ranging from 1 ("not at all") to 5 ("extremely"/"completely").

Moral Orientation Guilt Scale (MOGS). MOGS was developed by Mancini and colleagues (2022) to assess individuals' propensity to experience different forms of guilt based on their moral orientation. The scale consists of 17 items, each rated on a 5-point Likert scale (1 = not at all to 5 = very much). It evaluates four distinct factors: Moral Norm Violation (MNV), Moral Dirtiness (MODI), Empathy, and Harm. The four-factor structure of the MOGS has been supported by both exploratory and confirmatory analyses, with confirmatory factor analysis showing excellent fit indices (CFI = 0.988; RMSEA = 0.035; SRMR = 0.061), indicating the psychometric distinctiveness of its subscales (Mancini et al. 2022). A sample item for the Moral Norm Violation (MNV) subscale is "*I feel guilty if I do not respect figures who, for me, represent authority*." For the Moral Dirtiness (MODI) subscale, an example is "*When I think about my mistakes, I feel like a bad person*." For the Empathy subscale, an example is "*When I see someone suffering, I feel pity for them*." Finally, for the Harm subscale, an example is "*I feel guilty if my actions or inactions have caused harm to someone*." The MOGS demonstrates good reliability and validity, providing a nuanced assessment of guilt experiences linked to different moral orientations. The Cronbach's alpha in the original validation study ranged from 0.70 to 0.87 for the four subscales, while in our sample, it ranged from 0.61 to 0.78.

Although some subscales showed lower Cronbach's alpha coefficients compared to the original validation study, these values remain acceptable for group-level analyses, as thresholds for internal consistency are context-dependent and may vary according to scale characteristics and sample conditions (Taber 2018).

2.4. Statistical Analyses

All analyses were conducted in RStudio (version 2025.05.1+513). We first examined the structure of the 10 items assessing motivations for complying with governmental COVID-19 restrictions. Descriptive statistics and inter-item correlations were inspected, and a parallel analysis supported the retention of three factors. Accordingly, we estimated an exploratory factor analysis (EFA) using maximum likelihood extraction with oblimin rotation, given the expected conceptual overlap between motivational dimensions.

The three-factor solution offered a reasonable reproduction of the correlation matrix (RMSR $\approx$ 0.04; off-diagonal fit $\approx$ 0.98), although global indices (e.g., RMSEA) suggested that the structure was adequate but not optimal, warranting a degree of caution in interpretation. Internal consistency was acceptable to good for each scale derived from the EFA: prosocial motivations ($\alpha \approx 0.79$), authority/legality ($\alpha \approx 0.73$), and self-focused motivations ($\alpha \approx 0.79$). The complete pattern of factor loadings is presented in Table 1.

Next, we examined whether different forms of guilt predicted each motivational dimension, and whether these effects were moderated by contextual appraisals: (a) fear of COVID-19 and (b) trust in authorities. To this end, we fit three multiple regression models (one per motivational factor), including all guilt predictors, both moderators, and all two-way interaction terms. Predictors were standardized to facilitate interpretation and reduce multicollinearity. Age, gender, and education were included as control variables in all models. Because the models included several predictors and interaction terms, the issue of multiple testing was considered. The moderation analyses were specified a priori based on the theoretical framework distinguishing deontological and altruistic guilt and their interaction with contextual appraisals (fear of COVID-19 and trust in authorities). Given the limited number of theoretically driven tests, no formal correction for multiple

comparisons was applied. Therefore, results—particularly moderation effects—should be interpreted with caution and warrant replication in future studies.

Table 1. Exploratory factor analysis of rule-compliance motivations (N = 393).

Item	Prosocial	Authority/Legality	Personal	h^2
Benefit to close others	**0.71**	−0.15	0.09	0.49
Benefit to the community	**0.50**	0.12	0.10	0.38
Duty toward close others	**0.84**	0.00	−0.05	0.67
Duty toward the community	**0.60**	0.26	−0.01	0.55
Avoiding sanctions	−0.13	**0.44**	−0.02	0.16
Trust in authority	0.08	**0.65**	0.06	0.50
Obedience to authority	−0.02	**0.86**	−0.03	0.71
Respect for the law	0.02	**0.70**	0.07	0.54
Benefit to oneself	−0.02	0.00	**1.00**	1.00
Duty toward oneself	0.31	0.12	**0.41**	0.46

Note. Bolded loadings indicate the primary factor for each item. h^2 = communality.

A sensitivity power analysis was conducted using G*Power 3.1 for linear multiple regression (fixed model, R^2 deviation from zero). With $\alpha = 0.05$, power $(1 - \beta) = 0.80$, N = 393, and 17 predictors, the minimum detectable effect size was $f^2 = 0.052$, indicating that the study was adequately powered to detect small-to-moderate effects.

3. Results

Exploratory Factor Analysis. As shown in Table 1, the first factor reflected prosocial motivations, with strong loadings on items capturing obligations and benefits to close others and the broader community (e.g., Duty toward close others: 0.84, $h^2 = 0.67$; Benefit to close others: 0.71, $h^2 = 0.49$). The second factor represented authority-/legality-based motivations, defined by respect for laws and institutions (e.g., Obedience to authority: 0.86, $h^2 = 0.71$; Respect for the law: 0.70, $h^2 = 0.54$). The third factor captured self-focused motivations, characterized by personal benefit and duty toward oneself (Benefit to oneself: 1.00, $h^2 = 1.00$; Duty toward oneself: 0.41, $h^2 = 0.46$). Communalities ranged from 0.16 to 1.00, indicating that although most items were well represented, the item "Avoiding sanctions" showed limited explanatory capture ($h^2 = 0.16$), aligning with its comparatively lower loading.

Overall, the EFA supports a conceptually coherent tripartite distinction between prosocial, authority-based, and self-directed motivations for complying with COVID-19 regulations.

Moderation Models. Results for the three regression models are summarized in Table 2. Across motivational domains, MNV emerged as a consistent positive predictor of compliance motivations. Higher MNV was associated with stronger prosocial, authority-based, and personal motivations (b = 0.10 to 0.27, all $p < 0.015$), suggesting that rule-based guilt reliably promotes compliance across different motivational orientations (see Figure 1). In contrast, MODI showed weaker and directionally negative effects, reaching significance only for prosocial motivation (b = −0.13, $p < 0.001$), indicating that this form of guilt may dampen cooperative or community-oriented motivations (Figure 2).

Table 2. Direct and moderated effects of guilt, fear of COVID-19, and trust in authorities on motivations for compliance.

Model	Predictor	Estimate	SE	t	95% CI	*p*
Prosocial motivations	Intercept	4.78	0.22	21.42	[4.34, 5.22]	<0.001 ***
	MNV	0.10	0.04	2.51	[0.02, 0.19]	0.012 *
	MODI	−0.13	0.04	−3.32	[−0.20, −0.05]	<0.001 ***
	Empathy	−0.01	0.04	−0.14	[−0.09, 0.08]	0.891
	Harm	0.18	0.04	4.50	[0.10, 0.26]	<0.001 ***
	Fear of COVID-19	0.14	0.03	4.13	[0.07, 0.20]	<0.001 ***
	Trust in authorities	0.06	0.03	1.85	[−0.00, 0.13]	0.065
	MNV × Fear of COVID-19	−0.05	0.04	−1.35	[−0.13, 0.02]	0.177
	MNV × Trust in authorities	−0.07	0.03	−2.01	[−0.13, −0.00]	0.046 *
	MODI × Fear of COVID-19	0.02	0.03	0.57	[−0.05, 0.09]	0.569
	MODI × Trust in authorities	0.01	0.04	0.35	[−0.06, 0.08]	0.728
	Empathy × Fear of COVID-19	0.13	0.04	3.71	[0.06, 0.20]	<0.001 ***
	Empathy × Trust in authorities	0.10	0.04	2.56	[0.02, 0.18]	0.011 *
	Harm × Fear of COVID-19	−0.15	0.04	−3.58	[−0.23, −0.07]	<0.001 ***
	Harm × Trust in authorities	−0.04	0.04	−0.92	[−0.11, 0.04]	0.359
Authority motivations	Intercept	3.19	0.25	12.97	[2.71, 3.68]	<0.001 ***
	MNV	0.27	0.05	5.82	[0.18, 0.36]	<0.001 ***
	MODI	0.02	0.04	0.57	[−0.06, 0.11]	0.571
	Empathy	−0.02	0.05	−0.36	[−0.11, 0.07]	0.717
	Harm	−0.10	0.05	−2.23	[−0.19, −0.01]	0.026 *
	Fear of COVID-19	0.06	0.04	1.75	[−0.01, 0.14]	0.082
	Trust in authorities	0.30	0.04	7.96	[0.23, 0.37]	<0.001 ***
	MNV × Fear of COVID-19	0.08	0.04	1.81	[−0.01, 0.17]	0.072
	MNV × Trust in authorities	−0.02	0.04	−0.60	[−0.10, 0.05]	0.549
	MODI × Fear of COVID-19	−0.01	0.04	−0.31	[−0.09, 0.06]	0.756
	MODI × Trust in authorities	0.05	0.04	1.34	[−0.03, 0.13]	0.180
	Empathy × Fear of COVID-19	0.09	0.04	2.31	[0.01, 0.17]	0.021 *
	Empathy × Trust in authorities	0.04	0.04	0.85	[−0.05, 0.12]	0.394
	Harm × Fear of COVID-19	−0.13	0.05	−2.73	[−0.22, −0.04]	0.007 **
	Harm × Trust in authorities	−0.03	0.04	−0.64	[−0.11, 0.06]	0.520
Personal motivations	Intercept	4.31	0.34	12.51	[3.63, 4.98]	<0.001 ***
	MNV	0.27	0.06	4.19	[0.14, 0.39]	<0.001 ***
	MODI	−0.05	0.06	−0.91	[−0.17, 0.06]	0.362
	Empathy	−0.19	0.06	−2.95	[−0.31, −0.06]	0.003 **
	Harm	−0.03	0.06	−0.40	[−0.15, 0.10]	0.690
	Fear of COVID-19	0.40	0.05	7.78	[0.30, 0.50]	<0.001 ***
	Trust in authorities	0.14	0.05	2.57	[0.03, 0.24]	0.011 *
	MNV × Fear of COVID-19	−0.14	0.06	−2.18	[−0.26, −0.01]	0.030 *
	MNV × Trust in authorities	−0.02	0.05	−0.42	[−0.12, 0.08]	0.676
	MODI × Fear of COVID-19	−0.00	0.05	−0.02	[−0.10, 0.10]	0.984
	MODI × Trust in authorities	0.04	0.06	0.73	[−0.07, 0.15]	0.464
	Empathy × Fear of COVID-19	0.09	0.05	1.76	[−0.01, 0.20]	0.079
	Empathy × Trust in authorities	0.01	0.06	0.09	[−0.12, 0.13]	0.931
	Harm × Fear of COVID-19	0.03	0.06	0.45	[−0.10, 0.16]	0.652
	Harm × Trust in authorities	0.08	0.06	1.32	[−0.04, 0.19]	0.189

Note. Unstandardized regression coefficients (b) are reported. Predictors were standardized prior to the creation of interaction terms. All models include four guilt dimensions (MNV, MODI, EMPATHY, HARM), fear of COVID-19, trust in authorities, and their two-way interactions, while controlling for age, gender, and education. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

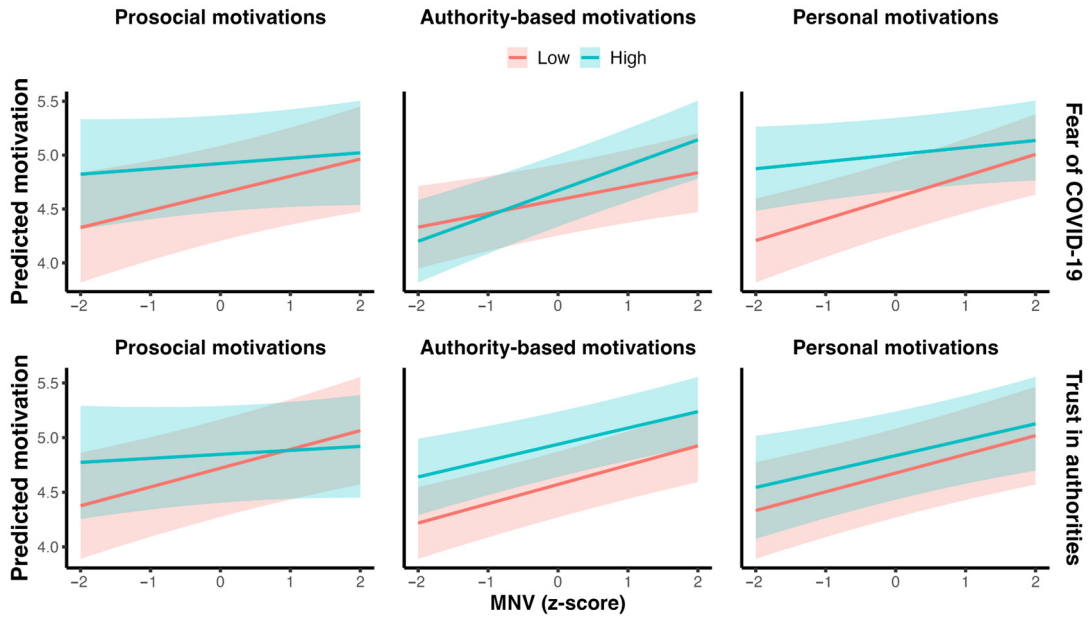

Figure 1. Moderation of fear of COVID-19 and trust in authorities in the association between MNV and motivations for compliance. Note. Low and high levels of moderators represent −1 and +1 standard deviations from the mean. Shaded areas represent 95% confidence intervals. All variables were standardized. Models include controls for age, gender, and education.

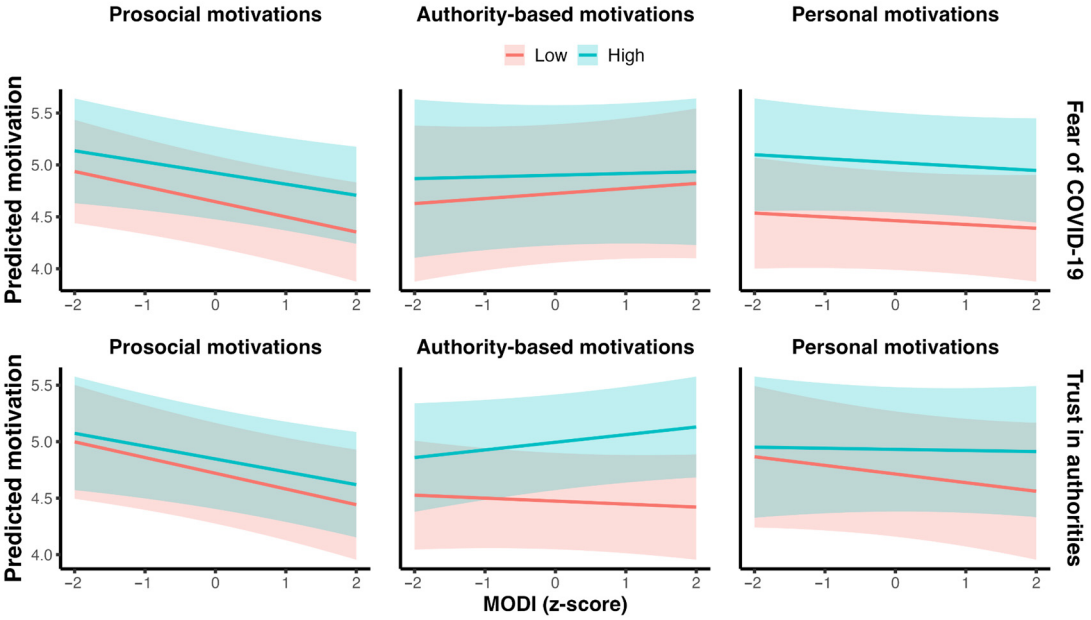

Figure 2. Moderation of fear of COVID-19 and trust in authorities in the association between MODI and motivations for compliance. Note. Low and high levels of moderators represent −1 and +1 standard deviations from the mean. Shaded areas represent 95% confidence intervals. All variables were standardized. Models include controls for age, gender, and education.

Differentiated patterns were observed for HARM and EMPATHY (Figures 3 and 4). HARM was a robust positive predictor of prosocial motivation (b = 0.18, $p < 0.001$), yet negatively associated with authority-based motivations (b = −0.10, $p = 0.026$) and unrelated to personal motives, pointing to a more selective and context-sensitive role in compliance. EMPATHY, by contrast, was negatively associated with personal motivation (b = −0.19, $p = 0.003$), suggesting that empathy may orient individuals away from self-focused motives.

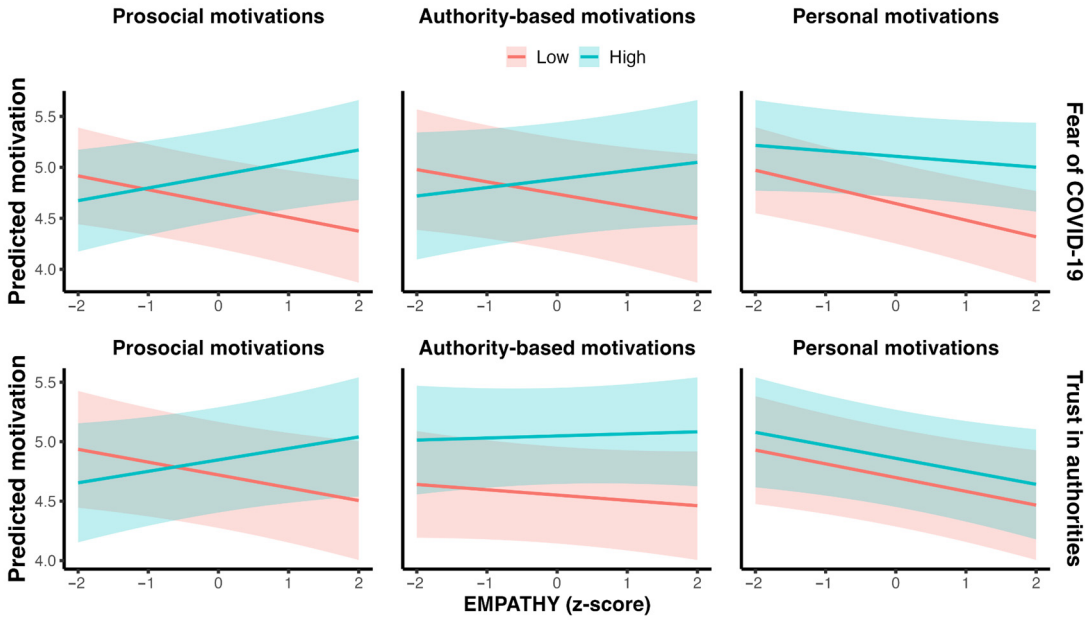

Figure 3. Moderation of fear of COVID-19 and trust in authorities in the association between EMPATHY and motivations for compliance. Note. Low and high levels of moderators represent −1 and +1 standard deviations from the mean. Shaded areas represent 95% confidence intervals. All variables were standardized. Models include controls for age, gender, and education.

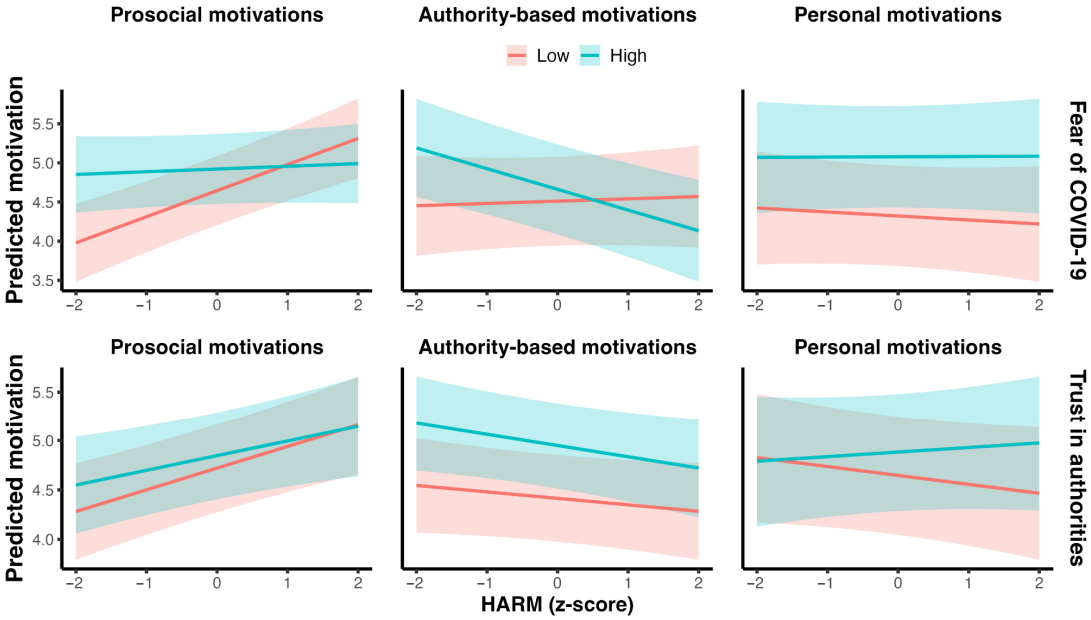

Figure 4. Moderation of fear of COVID-19 and trust in authorities in the association between HARM and motivations for compliance. Note. Low and high levels of moderators represent −1 and +1 standard deviations from the mean. Shaded areas represent 95% confidence intervals. All variables were standardized. Models include controls for age, gender, and education.

Regarding contextual appraisals, Fear of COVID-19 was strongly associated with personal motivations (b = 0.40, $p < 0.001$) and positively related to prosocial motivations (b = 0.14, $p < 0.001$), supporting the idea that perceived threat promotes both self-protection and solidarity. Trust in authorities was the strongest predictor of authority-based motivations (b = 0.30, $p < 0.001$) and showed smaller positive associations with prosocial and personal motivations (b = 0.06–0.14).

Several moderation effects indicated that guilt-based motives are context dependent. Fear was associated with small moderation effects, slightly amplifying the positive association between EMPATHY and both prosocial and authority motivations ($b \approx 0.09$–0.13, $p \leq 0.021$), while attenuating the influence of HARM on these outcomes ($b \approx -0.13$ to -0.15, $p \leq 0.007$). For personal motivation, Fear strengthened the negative association between MNV and compliance ($b = -0.14$, $p = 0.030$). Finally, Trust moderated the effect of EMPATHY on prosocial motivation ($b = 0.10$, $p = 0.011$) and reduced the association between MNV and prosocial motives ($b = -0.07$, $p = 0.046$), suggesting that institutional confidence shapes whether guilt motivates community-oriented versus more self-directed compliance.

To assess the robustness of these findings, additional diagnostic analyses were conducted. Multicollinearity was not a concern (all VIFs ≤ 4). Residual diagnostics indicated some deviation from normality and heteroscedasticity in the prosocial and personal models, which is not uncommon in large samples and complex behavioral data, while no highly influential observations were detected (maximum Cook's distance < 0.13). Importantly, the overall explanatory power of the models was moderate ($R^2 = 0.27$–0.40), and the inclusion of interaction terms accounted for additional variance in all models ($\Delta R^2 = 0.02$–0.07), corresponding to small-to-moderate effect sizes ($f^2 = 0.03$–0.10). These results indicate that, although moderation effects are relatively small in magnitude, they are consistent and theoretically meaningful.

4. Discussion

The aim of this study was to clarify how deontological guilt (DG) and altruistic guilt (AG) shape individuals' motivations to comply with public health regulations during the COVID-19 lockdown in Italy and how these effects depend on contextual appraisals of fear of the virus and trust in public institutions. Our findings support the view that guilt is not a unitary emotional reaction to wrongdoing but a constellation of moral emotions that guide behavior through divergent motivational mechanisms (Basile and Mancini 2011; Ottaviani et al. 2018). This view is consistent with research showing that moral emotions regulate behavior in functionally distinct ways depending on responsibility appraisals and social context (Tangney et al. 2007; Travaglino and Moon 2021).

Consistent with this distinction, recent research conducted in Italy during the COVID-19 emergency showed that rule compliance was primarily driven by diligence and altruistic motives rather than fear-based deterrence, while punitive or sanction-focused interventions appeared largely ineffective (Travaini et al. 2023). Similarly, evidence suggests that compliance was embedded within a broader social response marked by increased civic engagement, symbolic integration, and reliance on trust toward legitimate authority rather than coercive control (Stanzani 2020). Together, these findings align with the idea that moral emotions—particularly those grounded in duty or care—can support adherence through distinct pathways, both normative and prosocial, depending on how individuals interpret responsibility and social belonging under threat.

Deontological guilt, which stems from transgressing internalized moral rules or disobeying an authority (Basile and Mancini 2011), emerged as the most reliable driver of public-health compliance, yet not uniformly across its two subcomponents, assessed through the Moral Norm Violation (MNV) and Moral Dirtiness (MODI) MOGS's subscales. Partially in line with our first hypothesis, MNV—assessing guilt arising from neglecting one's own or an authority's duties or moral rules—was consistently associated with stronger authority-based and self-focused motivations to comply with authorities but also correlated with higher prosocial behavior motivations. This suggests that fear of having violated a moral norm or offended an authority functions as a generalized regulatory mechanism aimed at preventing punishment or further transgression. In turn, rule-based

motivations may be particularly effective in high-threat contexts but less stable over time when not supported by internalized prosocial values. In contrast, MODI—a response associated with moral self-contempt and sensitivity to external disapproval (Brandt and Reyna 2011)—did not reveal any significant association with authority-based and self-focused motivations to stay home but instead showed a significant negative association with prosocial motivation. This pattern further supports the view that not all deontological guilt facets foster constructive conformity: whereas MNV reflects internalized moral duty, MODI may index feelings of shame-like inferiority and social threat, fostering avoidance or defensive disengagement rather than collaborative prosocial action.

This interpretation aligns with recent evidence indicating that shame-like or self-condemning moral emotions are associated with withdrawal and disengagement from goal-directed behavior, rather than cooperative engagement (Semaan 2025).

Importantly, the negative association between MODI and prosocial motivation may be understood in light of its contamination-based nature, namely the experience of feeling morally tainted or degraded, which tends to direct attention inward rather than toward others. Consistent with its conceptualization within the MOGS framework, MODI reflects a sense of moral contamination and self-directed disgust (Mancini et al. 2022; Basile et al. 2011), which may elicit withdrawal and avoidance. At the same time, perceiving moral judgment as externally imposed may foster a conflictual representation of authority, potentially eliciting defensive reactions and disengagement. This interpretation is consistent with evidence suggesting that heightened moral sensitivity may coexist with anger and vengeful motivations when individuals feel criticized or controlled, leading to oppositional responses rather than cooperative behavior (Barcaccia et al. 2022). In line with this perspective, research on the "Macbeth effect" shows that experiences of moral contamination can increase the need for self-cleansing and reduce engagement in subsequent prosocial behaviors, as alleviating the sense of moral stain diminishes the motivation for reparative actions (Zhong and Liljenquist 2006). This may explain why this dimension, despite belonging to the deontological domain, does not translate into prosocial compliance.

The role of altruistic guilt was more circumscribed and in line with the second hypothesis of the study. Harm-based guilt selectively predicted prosocial motivations while showing a negative association with authority-based motivations and no association with personal motives, consistent with theories proposing that concern for others' vulnerability—rather than abstract duty—drives caregiving behaviors rooted in compassion, pity, and sorrow for others' suffering (Mancini and Gangemi 2021). This suggests that those who are disposed to feel guilt when harming others are motivated by a form of compliance anchored in preventing harm and promoting collective well-being, rather than obedience, and may rely less on authority-based motivations.

More recent studies on pandemic behavior similarly show that prosocial motivations —especially concern for close others—are among the most robust predictors of compliance across contexts (Jordan et al. 2021).

From a conceptual perspective, harm-based and empathy-based guilt can be distinguished in terms of perceived responsibility and causal involvement. Harm-based guilt is typically associated with direct or indirect responsibility for negative outcomes, activating reparative and protective behaviors (Donohue and Tully 2019). In contrast, empathy-based guilt emerges in response to others' suffering even in the absence of personal causation, reflecting a vicarious emotional process that may not necessarily translate into action-oriented compliance (Soyören and Aktaş 2024).

This pattern is consistent with evidence from Italy showing that individuals adhered to the regulations because they were concerned about the health of their family members, rather than because of civic mindedness or internalization of legal norms (Travaini et al.

2023). Empathy-based guilt showed an even more distinctive pattern, being negatively associated with self-focused motivations to comply. Individuals high in empathy may resist perceiving compliance as an act of self-protection. This aligns with research showing that empathy fosters autonomous moral reasoning based on internal principles rather than external norms or authority demands (Ball et al. 2017) and that obeying orders can suppress empathic processing when compliance entails harming others (Caspar et al. 2020). These findings collectively suggest that empathy may orient compliance away from self-interest and toward other-focused considerations but may not reliably motivate adherence when the behavior is framed solely as personal risk management. This pattern is consistent with evidence suggesting that empathic concern promotes cooperative behavior primarily when actions are framed in relational or collective terms rather than individual self-interest (Van Bavel et al. 2020).

An important contribution of this study is evidence that the motivational impact of guilt is not fixed but context-dependent. Fear of COVID-19 and trust in authorities significantly moderated the association between guilt dispositions and motivations for compliance. Fear amplified the influence of empathy on prosocial and authority-based motivations but not on self-focused motivations as expected, suggesting that empathic individuals may experience heightened concern for others when facing collective threat; yet the same emotional arousal attenuated the effect of harm-based guilt, possibly because heightened fear may reduce individuals' capacity to engage in other-oriented protective behavior. Conversely, trust in authorities, which reflects expectations that authorities act in the best interest of the community (Levi and Stoker 2000), strengthened the link between empathy-based guilt and prosocial compliance, indicating that empathic concern translates into cooperative behavior when public authorities are perceived as legitimate and aligned with moral care values. Our finding is in line with a previous Italian study where authors observed that trust in institutions predicts acceptance of government-imposed anti-COVID measures and, eventually, even the intention of adopting others in the future (Di Marco et al. 2022). Trust in authorities also reduced the association between MNV and prosocial motivation, suggesting that individuals with strong internalized rule-based guilt may rely less on institutional validation and more on personal moral standards to determine appropriate behavior. Taken together, these results indicate that public-health compliance is not simply a matter of responsibility, risk appraisal, or rule-following but is morally and emotionally structured by both dispositional moral emotions and the perceived credibility of the institutions issuing directives (Plohl and Musil 2021).

It is also important to consider the specific temporal context in which the data were collected. May 2020 in Italy represented a phase of heightened uncertainty, emotional salience, and intense media exposure, likely amplifying the role of emotional drivers such as fear and guilt in shaping compliance motivations. As the pandemic progressed, processes such as habituation and pandemic fatigue may have attenuated these effects. Therefore, the present findings should be interpreted within this early, high-intensity phase of the pandemic.

5. Conclusions

This study shows that deontological guilt and altruistic guilt contribute to public-health compliance through distinct motivational routes. Deontological guilt—particularly guilt linked to moral norm violation (MNV)—was associated with a broad spectrum of compliance motives, whereas guilt marked by moral self-condemnation (MODI) showed weaker and less adaptive associations. In contrast, altruistic guilt predicted prosocial motives, although its impact depended on contextual factors: fear of COVID-19 was associated

with modest increases in the motivational role of empathic guilt, while trust in authorities showed a small moderating effect, strengthening its translation into cooperative behavior.

These findings highlight that compliance during collective crises is shaped by differentiated moral–emotional orientations rather than uniformly driven by fear or deterrence. They also underscore the importance of institutional trust in enabling care-based motivations and in buffering less adaptive forms of guilt. Public-health communication may therefore benefit from strategies that reinforce institutional credibility and frame adherence in ways that resonate with citizens' moral motivations, rather than relying on undifferentiated or punitive messaging.

6. Limitations and Future Directions

A few limitations should be considered when interpreting these findings. The cross-sectional nature of the study precludes causal inference, and the observed associations may reflect bidirectional or reverse relationships, whereby individuals with stronger compliance motivations retrospectively report higher guilt sensitivity.

Although guilt dispositions are often conceptualized as relatively stable tendencies, future longitudinal research is needed to clarify whether moral emotions prospectively predict sustained compliance or post-crisis prosociality.

Some measures were adapted for the pandemic context and require further validation. Moreover, the present study relied on self-reported measures, which may be influenced by social desirability or retrospective bias.

Furthermore, the study tested multiple predictors and interaction effects within the same regression models. Although these analyses were theoretically driven, the number of statistical tests increases the possibility of Type I error. Therefore, the moderation effects observed in this study—especially those of small magnitude—should be interpreted with caution and warrant replication in future research.

Additionally, the sample was not fully representative of the general population, being characterized by a higher proportion of women and a relatively young mean age, and was recruited through online convenience sampling. This may have led to an overrepresentation of more educated and digitally connected individuals, thus limiting the generalizability of the findings.

In addition, the study assessed motivations for compliance rather than actual behavioral adherence, which may not fully translate into real-world behavior, particularly under constrained conditions such as national lockdowns.

Furthermore, individual difference factors such as personality traits or political ideology were not assessed and may play a role in moderating emotional–moral responses to public communication.

Moreover, the reliance on self-report measures captures relatively discrete emotional tendencies and may not fully account for the complexity of emotionally ambivalent states that can emerge in contexts of normative uncertainty. Individuals may simultaneously experience trust and suspicion toward authorities, or compliance alongside resistance, reflecting internal tensions that are difficult to detect through questionnaire-based approaches. Recent research suggests that such ambivalence may be more effectively captured through linguistic and interactional patterns in real-world communication (e.g., Bodrunova et al. 2020), highlighting a limitation of purely psychometric assessments.

Future research could therefore adopt multimethod and longitudinal designs integrating self-report measures of guilt with behavioral and discourse-based data, such as social media analyses, to examine how moral emotions are dynamically expressed and negotiated over time. Such approaches would allow researchers to better capture the interplay between

dispositional guilt and context-dependent, socially mediated emotional processes, as well as their translation into observable communicative and behavioral patterns.

Nevertheless, the present findings suggest that public-health compliance cannot be fully understood without considering how people experience moral emotions and how these experiences interact with fear and trust in rulers in shaping behavior. Integrating moral emotion theory into clinical support and policy design may prevent the pathologization of moral distress and improve public-health messaging by aligning communication strategies with the emotional and moral frameworks that guide individuals' actions in times of crisis.

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Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data supporting the findings of this study are not publicly available due to ethical restrictions related to participant confidentiality. However, anonymized data are available from the corresponding author upon reasonable request.

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References

Alessandri, Guido, Lorenzo Filosa, Marie S. Tisak, Elisabetta Crocetti, Giuseppe Crea, and Luca Avanzi. 2020. Moral Disengagement and Generalized Social Trust as Mediators and Moderators of Rule-Respecting Behaviors During the COVID-19 Outbreak. *Frontiers in Psychology* 11: 2102. [CrossRef] [PubMed]

Ball, Courtney L., Judith G. Smetana, and Melissa L. Sturge-Apple. 2017. Following My Head and My Heart: Integrating Preschoolers' Empathy, Theory of Mind, and Moral Judgments. *Child Development* 88: 597–611. [CrossRef]

Barcaccia, Barbara, Matti Cervin, Susanna Pallini, Alessandro Couyoumdjian, Francesco Mancini, and Andrea Pozza. 2022. Anger and revenge in obsessive–compulsive symptoms in adolescence. *Journal of Obsessive-Compulsive and Related Disorders* 35: 100763. [CrossRef]

Basile, Barbara, and Francesco Mancini. 2011. Eliciting Guilty Feelings: A Preliminary Study Differentiating Deontological and Altruistic Guilt. *Psychology* 2: 98. [CrossRef]

Basile, Barbara, Francesco Mancini, Emiliano Macaluso, Carlo Caltagirone, Richard S. J. Frackowiak, and Marco Bozzali. 2011. Deontological and Altruistic Guilt: Evidence for Distinct Neurobiological Substrates. *Human Brain Mapping* 32: 229–39. [CrossRef]

Betsch, Cornelia, Lars H. Wieler, and Karsten Habersaat. 2020. Monitoring behavioural insights related to COVID-19. *The Lancet* 395: 1255–56. [CrossRef]

Beuchat, Hélène. 2022. The Evaluation of Expressed Self-Contempt: A Multi-Method Evaluation. Doctoral dissertation, University of Fribourg, Fribourg, Switzerland. Available online: https://folia.unifr.ch/global/documents/320593 (accessed on 25 February 2026).

Bicchieri, Cristina, Eugen Dimant, Simon Gächter, and Daniele Nosenzo. 2022. Social proximity and the erosion of norm compliance. *Games and Economic Behavior* 132: 59–72. [CrossRef]

Bodrunova, Svetlana S., Kamilla Nigmatullina, Ivan S. Blekanov, Anna Smoliarova, Nina Zhuravleva, and Yulia Danilova. 2020. When Emotions Grow: Cross-Cultural Differences in the Role of Emotions in the Dynamics of Conflictual Discussions on Social Media. In *International Conference on Human-Computer Interaction*. Cham: Springer International Publishing, pp. 433–41.

Brady, William J., M.J. Crockett, and Jay J. Van Bavel. 2020. The MAD model of moral contagion: The role of motivation, attention, and design in the spread of moralized content online. *Perspectives on Psychological Science* 15: 978–1010. [CrossRef]

Brandt, Mark J., and Christine Reyna. 2011. Stereotypes as Attributions. *Perspectives on Psychological Science* 6: 47–80. [CrossRef]

Cameron, C. Daryl. 2018. Motivating Empathy: Three Methodological Recommendations for Mapping Empathy. *Social and Personality Psychology Compass* 12: e12418. [CrossRef]

Caspar, Emilie A., Kalliopi Ioumpa, Christian Keysers, and Valeria Gazzola. 2020. Obeying Orders Reduces Vicarious Brain Activation towards Victims' Pain. *NeuroImage* 222: 117251. [CrossRef]

Coelho, Carlos M., Panrapee Suttiwan, Nikolett Arato, and Andras N. Zsido. 2020. On the Nature of Fear and Anxiety. Triggered by COVID-19. *Frontiers in Psychology* 11: 581314. [CrossRef] [PubMed]

Crockett, Molly J. 2017. Moral outrage in the digital age. *Nature Human Behaviour* 1: 769–71. [CrossRef]

Cushman, Fiery. 2013. Action, outcome, and value: A dual-system framework for morality. *Personality and Social Psychology Review* 17: 273–92. [CrossRef] [PubMed]

de Hooge, Ilona E., Rob Nelissen, Seger M. Breugelmans, and Marcel Zeelenberg. 2011. What Is Moral about Guilt? Acting "Prosocially" at the Disadvantage of Others. *Journal of Personality and Social Psychology* 100: 462–73. [CrossRef]

Devine, Daniel, Jennifer Gaskell, Will Jennings, and Gerry Stoker. 2021. Trust and the coronavirus pandemic: What are the consequences of and for trust? An early review of the literature. *Political Studies Review* 19: 274–85. [CrossRef]

Di Marco, Graziella, Zira Hichy, and Francesca Sciacca. 2022. Attitudes towards Lockdown, Trust in Institutions, and Civic Engagement: A Study on Sicilians during the Coronavirus Lockdown. *Journal of Public Affairs* 22: e2739. [CrossRef]

Donohue, Meghan R., and Erin C. Tully. 2019. Reparative prosocial behaviors alleviate children's guilt. *Developmental Psychology* 55: 2102–13. [CrossRef]

Gangemi, Amelia, and Francesco Mancini. 2013. Moral Choices: The Influence of the Do Not Play God Principle. In *Proceedings of the 35th Annual Meeting of the Cognitive Science Society: Cooperative Minds: Social Interaction and Group Dynamics*. Austin: Cognitive Science Society, pp. 2973–77.

Giacomantonio, Mauro, Valerio Pellegrini, Valeria De Cristofaro, Maurizio Brasini, and Francesco Mancini. 2022. Expectations about the "Natural Order of Things" and Conspiracy Beliefs about COVID-19. *International Journal of Environmental Research and Public Health* 19: 9499. [CrossRef]

Graham, Jesse, Jonathan Haidt, Sena Koleva, Matt Motyl, Ravi Iyer, Sean P. Wojcik, and Peter Ditto. 2013. Moral Foundations Theory: The Pragmatic Validity of Moral Pluralism. In *Advances in Experimental Social Psychology*. Edited by Patricia Devine and Ashby Plant. Burlington: Academic Press, vol. 47, pp. 55–130. [CrossRef]

Haktanir, Abdulkadir, Nesime Can, Tolga Seki, M. Furkan Kurnaz, and Bülent Dilmaç. 2022. Do We Experience Pandemic Fatigue? Current State, Predictors, and Prevention. *Current Psychology* 41: 7314–25. [CrossRef] [PubMed]

Harper, Craig A., Liam P. Satchell, Dean Fido, and Robert D. Latzman. 2021. Functional Fear Predicts Public Health Compliance in the COVID-19 Pandemic. *International Journal of Mental Health and Addiction* 19: 1875–88. [CrossRef]

Jordan, Jillian J., Erez Yoeli, and David G. Rand. 2021. Don't get it or don't spread it: Comparing self-interested versus prosocial motivations for COVID-19 prevention behaviors. *Scientific Reports* 11: 20222. [CrossRef]

Jørgensen, Frederik, Alexander Bor, and Michael Bang Petersen. 2021. Compliance without Fear: Individual-Level Protective Behaviour during the First Wave of the COVID-19 Pandemic. *British Journal of Health Psychology* 26: 679–96. [CrossRef]

Karakulak, Ayşe, Burcu Tepe, Radosveta Dimitrova, Mohammed Abdelrahman, Plamen Akaliyski, Rana Alaseel, Yousuf Abdulqader Alkamali, Azzam Amin, Danny A. Lizarzaburu Aguinaga, Andrii Andres, and et al. 2023. Trust in Government Moderates the Association between Fear of COVID-19 as well as Empathic Concern and Preventive Behaviour. *Communications Psychology* 1: 43. [CrossRef]

Legate, Nicole, Tuong-Vi Nguyen, Netta Weinstein, Arne Moller, Lisa Legault, Zahir Vally, Zuzanna Tajchman, Andras N Zsido, Miha Zrimsek, Zhang Chen, and et al. 2022. A Global Experiment on Motivating Social Distancing during the COVID-19 Pandemic. *Proceedings of the National Academy of Sciences of the United States of America* 119: e2111091119. [CrossRef]

Levi, Margaret, and Laura Stoker. 2000. Political Trust and Trustworthiness. *Annual Review of Political Science* 3: 475–507. [CrossRef]

Mancini, Alessandra, and Francesco Mancini. 2015. Do Not Play God: Contrasting Effects of Deontological Guilt and Pride on Decision-Making. *Frontiers in Psychology* 6: 1251. [CrossRef] [PubMed]

Mancini, Alessandra, Umberto Granziol, Daniele Migliorati, Andrea Gragnani, Giuseppe Femia, Teresa Cosentino, Angelo Maria Saliani, Katia Tenore, Olga Ines Luppino, Claudia Perdighe, and et al. 2022. Moral Orientation Guilt Scale (MOGS): Development and Validation of a Novel Guilt Measurement. *Personality and Individual Differences* 189: 111495. [CrossRef]

Mancini, Francesco, and Amelia Gangemi. 2021. Deontological and Altruistic Guilt Feelings: A Dualistic Thesis. *Frontiers in Psychology* 12: 651937. [CrossRef] [PubMed]

Murray, Hannah, Yash Pethania, and Evelina Medin. 2021. Survivor Guilt: A Cognitive Approach. *The Cognitive Behaviour Therapist* 14: e28. [CrossRef]

O'Connor, Lynn E., Jack W. Berry, Joseph Weiss, and Paul Gilbert. 2002. Guilt, Fear, Submission, and Empathy in Depression. *Journal of Affective Disorders* 71: 19–27. [CrossRef]

Ottaviani, Cristina, Francesco Mancini, Samantha Provenzano, Alberto Collazzoni, and Francesca D'Olimpio. 2018. Deontological Morality Can Be Experimentally Enhanced by Increasing Disgust: A Transcranial Direct Current Stimulation Study. *Neuropsychologia* 119: 474–81. [CrossRef] [PubMed]

Pagliaro, Stefano, Simona Sacchi, Maria Giuseppina Pacilli, Marco Brambilla, Francesca Lionetti, Karim Bettache, Mauro Bianchi, Marco Biella, Virginie Bonnot, Mihaela Boza, and et al. 2021. Trust predicts COVID-19 prescribed and discretionary behavioral intentions in 23 countries. *PLoS ONE* 16: e0248334. [CrossRef]

Pakpour, Amir H., and Mark D. Griffiths. 2020. The Fear of COVID-19 and Its Role in Preventive Behaviors. *Journal of Concurrent Disorders* 2: 58–63. Available online: https://concurrentdisorders.wordpress.com/2020/04/03/the-fear-of-covid-19-and-its-role-in-preventive-behaviors/ (accessed on 25 February 2026). [CrossRef]

Pancani, Luca, Marco Marinucci, Nicolas Aureli, and Paolo Riva. 2021. Forced Social Isolation and Mental Health: A Study on 1006 Italians under COVID-19 Lockdown. *Frontiers in Psychology* 12: 663799. [CrossRef]

Parisi, Irene, Alessandra Mancini, Francesco Mancini, Salvatore M. Aglioti, and Maria Serena Panasiti. 2021. Deontological Guilt and Disgust Sensitivity Modulate Moral Behaviour. *Clinical Neuropsychiatry* 18: 196. [CrossRef] [PubMed]

Plohl, Nejc, and Bojan Musil. 2021. Modeling Compliance with COVID-19 Prevention Guidelines: The Critical Role of Trust in Science. *Psychology, Health & Medicine* 26: 1–12. [CrossRef]

Porat, Talya, Rune Nyrup, Rafael A. Calvo, Priya Paudyal, and Elizabeth Ford. 2020. Public health and risk communication during COVID-19—enhancing psychological needs to promote sustainable behavior change. *Frontiers in Public Health* 8: 573397. [CrossRef]

Pugliese, Erica, Oriana Mosca, Daniele Paolini, Francesco Mancini, Domenica Puntonieri, and Fridanna Maricchiolo. 2023. Families in Quarantine for COVID-19 in Italy: Resilience as a Buffer of Parental Distress and Problematic Children's Emotions and Behaviors. *Current Psychology* 42: 20101–13. [CrossRef]

Pulcu, Erdem, Karen Lythe, Rebecca Elliott, Sophie Green, Jorge Moll, John F. W. Deakin, and Roland Zahn. 2014. Increased Amygdala Response to Shame in Remitted Major Depressive Disorder. *PLoS ONE* 9: e86900. [CrossRef]

Rachman, Stanley. 1993. Obsessions, Responsibility and Guilt. *Behaviour Research and Therapy* 31: 149–54. [CrossRef]

Rajkumar, Ravi Philip. 2020. COVID-19 and Mental Health: A Review of the Existing Literature. *Asian Journal of Psychiatry* 52: 102066. [CrossRef]

Salkovskis, Paul M., Abigail L. Wroe, Ann Gledhill, Norma Morrison, Elizabeth A. Forrester, Candida Richards, Martina Reynolds, and Susan J. Thorpe. 2000. Responsibility Attitudes and Interpretations Are Characteristic of Obsessive Compulsive Disorder. *Behaviour Research and Therapy* 38: 347–72. [CrossRef] [PubMed]

Scaffidi Abbate, Costanza, Raffaella Misuraca, Michele Roccella, Lucia Parisi, Luigi Vetri, and Silvana Miceli. 2022. The Role of Guilt and Empathy on Prosocial Behavior. *Behavioral Sciences* 12: 64. [CrossRef] [PubMed]

Semaan, Rania W. 2025. Shame withdraws, guilt corrects: Distinguishing shame and guilt in goal pursuit—An experimental study. *Behavioral Sciences* 15: 725. [CrossRef]

Soyören, Şevval Aymila, and Büşra Eylem Aktaş. 2024. Personal belief in a just world moderates the link between induced empathy and willingness to volunteerism among non-volunteers, but not volunteers. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations* 35: 1205–18. [CrossRef]

Stanzani, Sandro. 2020. Trust and Civic Engagement in the Italian COVID-19 Lockdown. *Italian Sociological Review* 10: 917–35. [CrossRef]

Taber, Keith S. 2018. The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in Science Education* 48: 1273–96. [CrossRef]

Tangney, June Price, and Ronda L. Dearing. 2003. *Shame and Guilt*. New York: Guilford Press.

Tangney, June Price, Jeff Stuewig, and Debra J. Mashek. 2007. Moral Emotions and Moral Behavior. *Annual Review of Psychology* 58: 345–72. [CrossRef]

Tilghman-Osborne, Carlos, David A. Cole, and Julia W. Felton. 2010. Definition and measurement of guilt: Implications for clinical research and practice. *Clinical Psychology Review* 30: 536–46. [CrossRef]

Tone, Erin B., and Erin C. Tully. 2014. Empathy as a "Risky Strength": A Multilevel Examination of Empathy and Risk for Internalizing Disorders. *Development and Psychopathology* 26: 1547–65. [CrossRef]

Tracy, Jessica L., and Richard W. Robins. 2006. Appraisal Antecedents of Shame and Guilt: Support for a Theoretical Model. *Personality and Social Psychology Bulletin* 32: 1339–51. [CrossRef]

Travaglino, Giovanni A., and Chanki Moon. 2021. Compliance and Self-Reporting during the COVID-19 Pandemic: A Cross-Cultural Study of Trust and Self-Conscious Emotions in the United States, Italy, and South Korea. *Frontiers in Psychology* 12: 565845. [CrossRef]

Travaini, Guido, Emma Flutti, Roberta Sala, Sarah Songhorian, Palmina Caruso, Giulia Mugellini, and Lorenzo Blandi. 2023. Compliance with Recommended Preventive Behaviours and Restrictions for COVID-19: An Exploratory Analysis of Italians' Attitudes. *Acta Biomedica* 94: 1–13. [CrossRef]

Turner, Monique M., Youjin Jang, Rachel Wade, Ruth Jinhee Heo, Qijia Ye, Larry A. Hembroff, and Jong In Lim. 2023. The Effects of Moral Norms and Anticipated Guilt on COVID-19 Prevention Behaviors. *Current Psychology* 43: 16767–79. [CrossRef] [PubMed]

Turner, Monique M., Youjin Jang, Ruth Heo, Qijia Ye, Rachel Wade, Maria Knight Lapinski, and Tai-Quan Peng. 2025. Mask Wearing as a Prosocial Behavior: Proposing and Testing the Moral Norms Activation Model. *PLoS ONE* 20: e0322921. [CrossRef]

Van Bavel, Jay J., Katherine Baicker, Paulo S. Boggio, Valerio Capraro, Aleksandra Cichocka, Mina Cicara, Molly J. Crockett, Alia J. Crum, Karen M. Douglas, James N. Druckman, and et al. 2020. Using social and behavioural science to support COVID-19 pandemic response. *Nature Human Behaviour* 4: 460–71. [CrossRef]

Vieira, Joana B., Stephen Pierzchajlo, Simon Jangard, Abigail A. Marsh, and Andreas Olsson. 2022. Acute Anxiety during the COVID-19 Pandemic Was Associated with Higher Levels of Everyday Altruism. *Scientific Reports* 12: 18619. [CrossRef]

Wicker, Bruno, Christian Keysers, Jane Plailly, Jean-Pierre Royet, Vittorio Gallese, and Giacomo Rizzolatti. 2003. Both of Us Disgusted in My Insula: The Common Neural Basis of Seeing and Feeling Disgust. *Neuron* 40: 655–64. [CrossRef] [PubMed]

Zahn-Waxler, Carolyn, and Marian Radke-Yarrow. 1990. The Origins of Empathic Concern. *Motivation and Emotion* 14: 107–30. [CrossRef]

Zhong, Chen-Bo, and Katie Liljenquist. 2006. Washing Away Your Sins: Threatened Morality and Physical Cleansing. *Science* 313: 1451–52. [CrossRef] [PubMed]