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**How risky is it to not wear a mask? Moral emotions increase preventative health behaviours
during the COVID-19 pandemic in India**

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Abstract

Given the high transmission rates of the COVID-19 virus, policies aim at the maximal adoption of preventative health behaviours (PHBs) such as mask-wearing and maintaining physical distance. Moral emotions, risk perception, and message frames have previously been shown to foster favourable PHBs during various pandemics. To investigate the factors associated with PHBs during the COVID-19 pandemic, the present study explored the predictive role of moral emotions and message frames on PHBs (reduced physical contact and COVID-19 related policy support), controlling for risk perception regarding wearing a mask. Thus, a 2 (target of the message: self vs others) x 2 (valence: negative vs positive) between-groups experiment was conducted amongst Indians. Negative moral emotions predicted both (reduced) physical contact and policy support, and positive moral emotions predicted policy support. Exposure to differently framed health messages did not predict PHBs. The present study contributes to the field of health communication by highlighting the need for culture-specific practices such as focusing on the affective aspects of such communication. The results are increasingly relevant owing to the continuance of the COVID-19 crisis in India, and suggest that eliciting moral emotions through COVID-19 communication may significantly improve compliance with PHBs.

Keywords: COVID-19; moral emotions; preventative health behaviours; masking behaviours; physical distancing

How risky is it to not wear a mask? Moral emotions increase preventative health behaviours during the COVID-19 pandemic in India

In declaring the novel coronavirus (COVID-19) a public health emergency of international concern on 30th January 2020, the World Health Organization stressed the need to minimize the risk posed by the virus (*2019-NCoV Outbreak Is an Emergency of International Concern*, 2020). This involves behaviours facilitated by citizens, apart from those of health-care workers. Therefore, citizens had been advised to adopt certain health behaviours via policies that vary in stringency across time and nations (Hale et al., 2020). COVID-19-related preventative health behaviours (PHBs), essential in safeguarding oneself and others, involve maintaining social distance, wearing a face covering when outdoors, and washing hands frequently. Global compliance of these behaviours, thus, becomes the aim (see West et al., 2020). To investigate the factors associated with PHBs, the present study explored the roles of moral emotions, message frames, and risk perception in predicting PHBs.

The Role of Emotions

The COVID-19 pandemic presents us with more risky consequences than not. These perceived risks have been found to be significantly correlated with overall negative emotions and individual negative emotions (people report feeling anxious, nervous, depressed, exhausted, lonely, and bored; Han et al., 2021). This is also supplemented by the risk-as-feeling model, wherein it is postulated that emotions such as worry, fear, dread, or anxiety impact responses to risky situations (although the direction of impact is not clarified; Loewenstein et al., 2001). Emotions such as anger and happiness are associated with the behavioural approach system, and fear with the behavioural inhibition system (Yan et al., 2012). Likewise, anticipatory emotions (those arising from considering consequences) and incidental emotions (those arising from factors unrelated to such decisions) also impact responses (Loewenstein & Lerner, 2003). In the ongoing pandemic, anticipatory emotions are salient as they involve uncertain situations. For example, worrying about the consequences of contracting COVID-19 (something that one cannot be sure of until they get tested for the virus – after an incubation period of a couple of days during which their prognosis can worsen, and they may act as carriers of the virus, unknowingly).

Moral Emotions

Public health, in the purview of moral standards, is contingent on moral emotions, and risk-taking is, to a large extent, morally motivated (Athanasoulis & Ross, 2010). Thus, the present study focuses on moral emotions, which have been conceptualized by Haidt (2003) as emotions linked to associated persons or societal welfare (c.f. Tangney et al., 2007). Moral emotions, providing epistemic access to moral values especially in cases of moral judgements, act as a source of ethical knowledge (Roeser, 2012). They are also argued to be motivating states (Hayat et al., 2018; Popa & Salanță, 2013), and a necessity when understanding the moral impact of associated risks (Roeser, 2012).

Moral emotions are postulated to provide the power and energy to do “good,” and avoid “bad” (Kroll & Egan, 2004). This has also been observed in the context of health-based decisions. For example, Americans are more likely to consider other-focused messages in terms of morality, compared to self-focused messages. Further, such other-focused messages, aimed at improving social distancing during the pandemic, are more likely to be persuasive for those who view health messages through a moral lens (Luttrell & Petty, 2020).

Therefore, moral emotions have been linked with prosociality, conceptually. Guilt has been linked with lower antisocial behaviour in children, and prosocial behaviour was found to be predicted by additive interactions between empathy and pride, and negatively by shame (Barón et al., 2018). Akin to this, people who performed prosocially in incentivized economic games (prior to the pandemic) were found to be more likely to adopt prevention intentions during the pandemic (Jordan et al., 2020). In a sample that comprised North Americans and Europeans, social distancing was facilitated to the largest degree by prosocial motivations (wanting to protect others, and a sense of responsibility to protect one’s community), followed by self-focused motivations (wanting to protect oneself; Coroiu et al., 2020). Therefore, the importance of moral emotions is evident in the ongoing pandemic.

Further, health behaviours are intrinsically, both self- and other-centred in the context of the pandemic. Therefore, eliciting prosocial behaviours via moral emotions becomes one avenue to mitigate the spread of the virus. According to Haidt’s (2003) model for prototypical moral emotions, understanding the prosocial effectiveness of moral emotions requires an understanding of

disinterested elicitors (emotions that are triggered without a personal stake) and prosocial action tendencies (the degree to which one upholds social order as a function of triggering events). Moral emotions are dictated by these two; these emotions are also theorized to be intrinsically linked to others' welfare and inducing selfless prosociality (Haidt, 2003). Further, whereas guilt inhibits selfish tendencies (participants acted in favour of people who have been wronged by one's action), it does not make people neglect their own self-interest (guilt also produced disadvantageous side effects for non-victimized others; Hooge et al., 2011).

On the other hand, moral emotions also act as motivators to demand "good" behaviour from others. When others transgress against others' moral standards and sensibilities, moral emotions are theorized to act as catalysts to demand change in behaviour of the offending party. This may be done by either stopping or punishing them (Grappi et al., 2013). In China, a sense of responsibility was built into famous communications regarding COVID-19. These were revealed to link the use of facemasks to a "larger love" (towards Chinese people) as opposed to just a "smaller love" (for one's family; Ji, 2020). These indicate greater liability if citizens do not comply with expert-recommended behaviour.

Thus, it is observed that moral emotions are highly contextual. Therefore, the importance of understanding the structure of moral emotions in this specific context of the pandemic becomes crucial. The present study's focus on moral emotions is further strengthened as strong moral conviction leads to greater distance and intolerance of others who are attitudinally dissimilar (Skitka et al., 2005). In the ongoing pandemic, given that everyone's behaviour has moral undertones, one's moral emotions may further dictate their reaction to others' moral transgressions (if any).

Emotions have often been held accountable for lapses in accurate decision-making (Naqvi et al., 2006) and risk perception (Sjöberg, 2007). Contrastingly, in the context of COVID-19, fear and anxiety were concluded to play a functional role in predicting adoption of expert-recommended behaviour (e.g., hand washing, social distancing; Harper et al., 2020). Also, greater willingness to self-isolate was reported, owing to emotional responses to both self- and other-focused messages (Heffner et al., 2021).

Therefore, contrasting evidence regarding the role of moral emotions motivates investigation in the context of the COVID-19 pandemic. The social nature of the pandemic further motivates the study of moral emotions in the following manner¹:

RQ1A: What is the factor structure of moral emotions in the context of masking during COVID-19?

RQ1B: How do moral emotions affect COVID-19 policy support?

RQ1C: How do moral emotions affect reduced physical contact?

Message Framing

Risk communication places due importance on message framing. Valence-based message framing involves consistent messages framed either positively (gains: positive consequences of performing an action) or negatively (losses: negative consequences of not performing an action), and target-based message framing involves consistent messages that focus on consequences for self or others.

Other-focused health messages, as opposed to self-focused health messages, have been previously observed to lead to greater adoption of suggested health behaviours such as desire to stop smoking (Lipkus et al., 2013; Yilmaz et al., 2006) and hand hygiene (Grant & Hofmann, 2011). This pattern also extended to the COVID-19 situation wherein, messages focusing on public threat had a stronger impact on prevention intentions than messages focusing on personal and personal+public threats (Jordan et al., 2020).

Similarly, messages framed negatively (in terms of valence) have been found to have a greater impact, and are recalled to a greater degree as opposed to positively framed messages (Biener et al., 2004). These messages are posited to have different internal processes. Specifically, messages focusing on missed gains and negative health outcomes activate one's emotional processes whereas, messages

¹ Initially, moral emotions were only considered as mediators in the relationship between message framing and preventative health behaviours. Therefore, the pre-registered questions reflect this. Our preregistered hypotheses look at message framing as a predictor variable. However, upon performing the analyses, framing was not found to be significant, but moral emotions were, and therefore, we discuss moral emotions here. Hence, the pre-registered research questions were updated in the current manuscript.

focusing on avoided losses and positive health outcomes activate both emotional and cognitive processes (Carfora et al., 2021). The general consensus remains that effective message framing can contribute to the adoption of expert-recommended health behaviours (Gallagher & Updegraff, 2012).

Health communication is also informed by the Health Belief Model, suggesting higher risk perception and adoption of recommended behaviour especially in the advent of serious consequences and vulnerability to a health outcome (Park et al., 2012). Moreover, during the inception of the pandemic, an underestimation of personal COVID-19 related fatality risk was observed, and lower risk perception was seen to inspire lesser preventative behaviours (Niepel et al., 2020). Correspondingly, promotion of protective behaviours was observed to involve appropriate risk communication (Bruine de Bruin & Bennett, 2020). Given this, we ask²:

RQ2A: How does the interaction of differently framed health messages affect preventative health behaviours?

The context of COVID-19 provides a unique opportunity to study moral emotions in a pandemic. Herein, the larger aim is to inspire prosocial behaviour (in this case, PHBs), either by framing health messages or moral emotions. The present study becomes increasingly important, considering that there are cultural differences with respect to the processing of message frames (Hamamura et al., 2009), rules of emotional expressions (Matsumoto et al., 2008), perception of different kinds of risks (Lee et al., 2015; Siegrist & Árvai, 2020), as well as emotional expressions in response to norm violations (Hareli et al., 2015). The present study seeks to understand factors associated with PHB adoption, by taking risk perception and moral emotions into account. Specifically, we checked for whether moral emotions are associated with self-reported reduction in physical contact and compliance with social distancing norms. We also considered communication of the consequence of wearing (or not wearing) a mask to oneself (or close ones), and the risk of not wearing a mask.

² As with the previous set of research questions, these ones were also updated. Initially, they were framed to reflect that the target and valence were separate predictors. However, in the updated models, the groups were all taken in the same statistical models.

Method

Design

A 2 (target of the message: self vs other) x 2 (valence of the message: negative vs positive) between-participant experimental design was pre-registered. Specifically, the participants were exposed to differently framed messages about the long-term consequences (positive vs. negative) of not wearing a mask (self- vs. other-focused). Before the experimental manipulation, the participants also rated the risks associated regarding likelihood of COVID-19 contraction. After the experimental manipulation, each participant responded to questions on moral emotions regarding (not) wearing a mask and the risk associated with wearing a mask. Preventative health behaviours (PHBs) of policy support and (reduced) physical contact were used as the dependent variables. All tools used for measurement are presented in Appendix A.

This study has obtained ethical clearance from the Institution Review Board (046-020) at Monk Prayogshala in September 2020.

Participants

Participants were recruited online, through multi-site entry across various social media websites. Traczyk, Sobkow, and Zaleskiewicz's (2015) Experiment 1 tested the effects of emotional valence of risk-related thoughts on risk taking, as mediated by stress and risk perception. Their regression coefficient was .11, which translates to a Cohen's f^2 of .124. Using this, and based on a power of .8, it was computed that 129 participants would be required for each of the four groups. Sobkow et al's (2016) experiment 2 tested whether a positive and negative frame would predict risk perception via affect, with an effect size of .12 (calculated manually using the package "pwr"). Alternatively, Dillard et al (2012) found betas between .11 and .17 while assessing the effects of feelings of risk on worry. Therefore, in the present study, the SESOI was determined to be .11. Based on these, the sample size for each group was determined to be 130, and the total sample size to be 520.

The required sample size was not met owing to time and resource constraints. A sample of 494 Indians took part in the study, via multisite online entry. Data were collected on Qualtrics, and the

participation link was advertised on various social media platforms as well as specific groups. After excluding participants on the basis of missing data (87 participants) and age (<18 years; 2 participants), data from 406 Indians were employed ($M_{\text{age}} = 30.56$ years, $SD = 12.20$; men = 134, women = 158, non-binary = 16, prefer not to answer = 98) for the purpose of the study. An equal sample for groups based on messages was attempted. Therefore, there were 102, 107, 97, and 100 participants in negative vs. positive, and self- vs. other-focused message frame groups, respectively.

Measures

Demographics

Participants were asked to provide information on their age, gender, sexual orientation, relationship and employment status, living situation (and how many people they are living with who are above 60 and below 13 years of age), area of residence, whether they or an acquaintance was diagnosed with COVID-19, and how they place themselves on a ladder representing an average Indian's money, education, and job status.

Risk perception (General)

Participants were asked about the risk perceived of the general likelihood of COVID-19 contraction for themselves and an average person in India. The two items were rated on a linear scale of 1 (impossible) to 100 (certain).

Risk frame Vignettes

Four vignettes were created, highlighting how wearing or not wearing a mask could be positive (coded as 0) or negative (coded as 1) for oneself (coded as 0) or for others (coded as 1; see Supplementary Materials). The vignettes comprised three components. First, information about the long-term consequence of (not)wearing a mask was included in brief; this introductory piece of information was to establish context for the experimental manipulation. Second, participants were asked to check off what they think are the long-term consequences of contracting COVID-19 from a list. This list had both probable (example, lung damage) and improbable (example, paralysis) consequences of COVID-19. Third, the participants were provided with evidence-based information (updated information at the time of data collection) about the long-term consequences of contracting

the disease (e.g., possibility of severe lung damage). The participants were also provided the sources of the cited research studies during the debrief part of the experiment.

Visualization

After the administration of the health messages, the participants were asked to rate on a scale of 1 (not at all) to 10 (extremely well), how well they were able to visualize the (positive vs. negative) health related scenario of not wearing a mask (for themselves vs. others).

Moral Emotions

Based on Haidt's (2003) theory of moral emotions, participants were asked to rate positive and negative moral emotions on how they feel about others and their own selves not wearing a mask. The items read as "Contempt towards those who don't wear masks," "Shame if you did not wear a mask," "Awe towards others who wear masks," and "Pride for wearing a mask." The items were rated on a 5-point Likert scale ranging from 1 (not at all) to 5 (very much). Based on Haidt's (2003) theory, moral emotions were initially categorized as self-condemning (i.e., shame, embarrassment, and guilt; 3 items; $\alpha = .87$), other-condemning (i.e., contempt, anger, and disgust; 3 items; $\alpha = .84$), self-praising (i.e., pride; 1 item), and other-praising (i.e., gratitude, awe, and compassion; 3 items; $\alpha = .75$). As self-praising had a single item, reliability analysis could not be computed. Further, factor analysis was conducted to check for the structure of moral emotions regarding masking behaviours in the COVID-19 context, and to reduce the aforementioned factors. Hence, two factors emerged: negative ($\alpha = 0.89$; 6 items) and positive ($\alpha = 0.82$; 4 items) moral emotions. These two factors were thus used for further analyses.

Preventative Health Behaviours

Policy support. Participants were asked to rate five questions developed by Van Bavel et al. (2020), scored from 0 (strongly disagree) to 100 (strongly agree), on their agreement with recommended cessation of public gatherings. For example, "for as long as it is unsafe in my community due to the coronavirus (COVID-19) pandemic, I will be: - In favour of forbidding all public gatherings where many people are gathered at one place (sports and culture)."

(Reduced) physical contact. Participants were asked to rate five questions developed by Van Bavel et al. (2020), scored from 0 (strongly disagree) to 100 (strongly agree), on personal physical

distancing. For example, “for as long as it is unsafe in my community due to the coronavirus (COVID-19) pandemic, I will be: Keeping the number of grocery store visits at an absolute minimum.”

Risk of not wearing a mask

Participants were asked about the perceived risk and likelihood of not wearing a mask, on a scale ranging from 1 (not at all) to 10 (extremely).

Results

Descriptive statistics are reported in Table 1a and zero-order correlations are reported in Table 1b. Endorsement of PHBs per group is presented in Fig 1.

Factors in moral emotions

Principal components analysis was run, with varimax rotation, to check for underlying factors in moral emotions (RQ1A). Two factors emerged – negative ($\alpha = .88$) and positive ($\alpha = .82$) moral emotions. The theorized distinction of moral emotions on the basis of target (self vs. others) was found to be redundant in the context of wearing a mask during the COVID-19 pandemic (Table 2). Hence, composite scores on negative and positive moral emotions were used for further analyses.

Risk perception of contacting COVID-19

Risk perception of oneself ($b = .06$, $SE = .42$, $R^2 = .007$, $p = .305$) and others ($b = -.11$, $SE = .36$, $R^2 = .007$, $p = .076$) contracting COVID-19 did not predict policy support. Similarly, risk perception of oneself ($b = .06$, $SE = .33$, $R^2 = .004$, $p = .348$) and others ($b = -.07$, $SE = .29$, $R^2 = .004$, $p = .237$) contracting COVID-19 did not predict reduced physical contact. Therefore, general risk perception was not used as a predictor in further analyses.

Moral emotions

Both negative and positive message frames were found to be significantly correlated with PHBs (Table 1b). Therefore, they were employed as predictors (Step 4) in hierarchical regression models with significantly correlated controls entered as Step 1, message frames entered as Step 2, and risk perception of wearing a mask entered as Step 3.

Negative moral emotions predicted policy support ($b = .22$, $SE = .50$, $R^2 = .18$, $p < .000$), with likelihood of wearing a mask ($b = .24$, $SE = 4.20$, $R^2 = .18$, $p < .000$) acting as a significant control (RQ1B; Table 3a; Figure 2a). Negative moral emotions also predicted (reduced) physical contact ($b = .18$, $SE = .34$, $R^2 = .26$, $p < .001$), with likelihood of wearing a mask ($b = .31$, $SE = 3.06$, $R^2 = .26$, $p < .000$) acting as a significant control (RQ1C; Table 3b; Figure 2b).

Positive moral emotions predicted policy support ($b = .14$, $SE = 1.35$, $R^2 = .16$, $p < .011$), with the likelihood of wearing a mask ($b = .31$, $SE = 3.99$, $R^2 = .16$, $p < .000$) acting as a significant control (RQ1B; Table 4a; Figure 3a). Positive moral emotions did not predict (reduced) physical contact ($b = .09$, $SE = 0.95$, $R^2 = .24$, $p = .91$; RQ1C; Table 4b; Figure 3b).

Message frames

Message frames were entered in hierarchical regression models as Step 4. As the zero-order correlations highlighted different associated variables, the models for policy support and (reduced) physical contact had different controls.

For policy support (RQ2A; Table 5), correlated demographics were entered as Step 1, risk perception of wearing a mask as Step 2, and positive and negative moral emotions as Step 3. Message frames did not predict policy support ($b = -.03$, $SE = 5.82$, $R^2 = .19$, $p = .629$).

For (reduced) physical contact (RQ2B; Table 5), correlated demographics were entered as Step 1, risk perception of wearing a mask and contracting COVID-19 were as Step 2, and positive and negative moral emotions as Step 3. Message frames did not predict (reduced) physical contact ($b = .03$, $SE = 4.11$, $R^2 = .27$, $p = .576$).

Discussion

The present study sought to explore whether COVID-19 related health behaviours (supporting governmental policies of closing public spaces and reduced physical contact) can be predicted by moral emotions regarding self and others' behaviour of (not) wearing a mask, risk perception and likelihood of wearing a mask, and different health message frames based on target (self- vs. other-focused) and valence (negative vs. positive). Results point to a 2-factor structure of moral emotions regarding masking (negative emotions against not wearing a mask and positive emotions for wearing a mask).

Moral emotions were found to play a predictive role in PHBs, and message frames did not. Risk perception and likelihood of wearing a mask act as controls in these prediction models.

Negative moral emotions

Negative moral emotions such as contempt towards others and shame towards self, all loaded onto a single factor, labelled negative moral emotions. Therefore, it is seen that not wearing a mask (irrespective of who is doing it) is criticised, and considered untoward. Further, this explains both — policy support and reduced physical contact.

Past research has also hinted that other-focused negative moral emotions represent a single factor. For example, Grappi et al. (2013) found that emotions, when other-focused, such as disgust, anger, and contempt (the “hostility triad;” Izard, 1977) load onto a single factor, and lead to negative consumer behaviour in opposition to ethical transgressions (violation of freedom or dignity of those involved) by corporations. These moral emotions are strongly experienced, to the extent that they inspire bad word of mouth and protest behaviour from the consumers. In fact, studying these other-focused moral emotions independently has been deemed premature, as there is a greater likelihood of these emotions coherently leading to disapproval of moral transgression (Gutierrez & Giner-Sorolla, 2007). Worry, linked with anger (Ramesh et al., 2020), has also been shown to impact policy support in the context of the global phenomena of climate change. More specifically, it leads to greater support for policies regarding regulation of carbon-dioxide (Smith & Leiserowitz, 2014). Therefore, indirect links between negative moral emotions and policy support have also been explored in a different context.

Similarly, self-focused negative moral emotions have been shown to comprise a single factor. Emotions such as guilt and shame, when self-directed, converge to form a “guilty conscience” that inspires moral actions in the context of pro-environmentalism. Specifically, it has been shown to impact intentions to participate in neighbourhood-based initiatives or climate change (Rees & Bamberg, 2014) and intentions to sign a petition for an environment related cause (Rees et al., 2015). This can be

extended to the case of PHBs in the pandemic, wherein individuals not complying with mask-wearing may exhibit similar negative self-directed emotions.

The present study builds on this past literature, and shows that, in the context of the COVID-19 pandemic, the categorization of negative moral emotions into self- versus other-focused is redundant. Therefore, there is no disparity in how moral emotions are rated towards others and oneself. This means that both the hostility triad and the guilty conscience operate when it comes to evaluating non-maskers, and that people hold similar moral standards for their own behaviours. Collectively, these negative and positive moral emotions have been found to impact both policy support and reduced physical contact.

Positive moral emotions

Positive moral emotions such as awe towards others and pride towards self, all loaded onto a single factor, labelled positive moral emotions. Therefore, it is seen that not wearing a mask (irrespective of who is doing it) is appreciated, and considered socially desirable. Further, this predicts policy support, but not reduced physical contact.

Previous research has indicated that positive moral emotions such as awe, gratitude, and elevation (when other-focused) load onto a single factor. Specifically, these emotions unanimously predict consumer behaviours such as positive word-of-mouth, resistance to negative information, and investment in the company (Xie et al., 2019). Therefore, like its counterpart of other-focused negative moral emotions, other-focused positive moral emotions are also linked together through an underlying factor. In this case, the underlying factor is appreciation of others' behaviours. Gratitude has been linked with appreciation of a socially valued outcome (Williams & DeSteno, 2008). This mix of positive emotions lead to further advocacy and support of the behaviour in question.

On the other hand, pride, a self-focused positive moral emotion, is postulated to be a product of public appraisal of personal behaviour as being socially valued, which also extends to appraising oneself to be a socially valued person (Mascolo & Fischer, 1995). Consistently, pride has been shown to be evoked most strongly when one's accomplishment is publicly praised (Webster et al., 2003). In the context of COVID-19, maintaining PHBs is a more public feat than a personal one, meaning wearing

a mask and PHBs are performed in public view. This pride, stemming from a specific source, is labelled authentic pride – pride for a specific socially desirable behaviour (Williams & DeSteno, 2008). Therefore, the interconnectedness of this authentic pride and PHBs is in the expected direction. Similarly, the motivational hypothesis of pride stipulates intrinsic reinforcement of the specific behaviour (in this case, wearing a mask) and associated behaviours (other PHBs). Here, the associated behaviours vary within and between people (Williams & DeSteno, 2008). Therefore, in the current study, the discrepancy in elicited PHBs (prediction of policy support but not reduced physical contact) may be a function of this variability.

As opposed to the cognitive functions involved in policy support, reduced physical contact requires greater effort, and the present study had items based on staying at home – something that might not be possible for everyone. Research has also indicated that wearing a mask results in reduction of interpersonal social distancing as masking is associated with trustworthiness (Cartaud et al., 2020). As opposed to this, supporting policies such as closing of parks and schools has comparatively avoidable consequences.

Another perspective is that reduced physical contact is predicted by negative, but not positive moral emotions. This may indicate that punishment (built into negative evaluation of not wearing a mask) is better than reinforcement (built into positive evaluation of wearing a mask) in eliciting behavioural change during the pandemic. Further, negative messages also provide a direct-action point in terms of how to behave in a moral manner. Therefore, these also communicate how one can correct one's previously immoral behaviour.

As with negative moral emotions, in the context of COVID-19, there is no disparity in how positive moral emotions are ascribed to oneself and others. Equivalent evaluation of masking behaviour is observed. Collectively, these predict policy support, but not reduced physical contact.

Message frames

In the present study, none of the message frames elicited COVID-19 related PHBs. This is divergent from the aforementioned past literature, which has made a strong case for message framing.

One possibility is that the COVID-19 situation is menacing enough to elicit PHBs irrespective of how health behaviours are communicated. However, studies in the same context have shown otherwise (for example, Gantiva et al., 2021; Steffen & Cheng, 2021). This could indicate low mundane realism of the message frames employed in the present study. Another possibility is that cultural differences in how messages are perceived could lead to discrepancy in the findings of the present study and similar other studies. However, making any such conclusion falls outside the purview of the present study, as no such comparisons were attempted.

Limitations and Future Research

Though the present study used an otherwise underrepresented sample and has important implications with respect to health communication, it has some limitations. It lacks a control group for message frames, and the generalizability of the findings of the study are impacted owing to it being conducted online, via social media. However, considering the nature of the pandemic, this was necessary.

Additionally, temporally speaking, this data was collected between September 15 and November 3, 2020, i.e., the time when nation- and state-wide policies for physical distancing and public gatherings were being rethought in India. This may have caused some ambiguity for participants regarding their own stance on health behaviours. However, most participants in this study acknowledged limiting physical contact and supporting social distancing norms. Next, the present study utilized self-report measures, including a one-item measure of risk perception. This was necessary considering the exploratory nature and overall duration of the study.

Based on these limitations, future research can attempt to collect behavioural or observational data, with a control group. The present study also did not collect data from ample participants to reach the preregistered power, due to feasibility concerns. Future research should attempt to collect data from a larger sample.

An important aspect is the timing in which the data was collected. Specifically, it was done during the plateau phase of the pandemic in India. Since November 2020, India observed a brutal second wave, and a longitudinal study would allow comparison across waves. The question that gets

highlighted is whether moral emotions are still as powerful during the active versus plateau stages of the pandemic, and also whether prolonged exposure to the pandemic undermines moral emotions in the long run.

In sum, the present study points to the need to customize health messages, such that they elicit moral emotions (examples are given in Appendix B). Moreover, it also points to a need to contextualize such studies (given the factor structure of moral emotions; and as message frames have been shown to significantly impact PHBs in different cultural contexts, but not in India).

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Table 1a.
Descriptive statistics

	<i>n</i>	<i>M</i>	<i>Range</i>	<i>SD</i>
Age	404	30.56	-	12.28
Living status	307	3.20	-	1.93
Living with people over 50 years old	309	1.21	-	1.10
Living with people below 13 years old	309	0.36	-	0.82
Ladder	305	6.37	1-10	1.64
COVID-19 diagnosis (self)	307	1.91	-	0.28
COVID-19 diagnosis (acquaintance)	307	1.27	-	0.44
Risk perception of wearing a mask	333	2.60	0-10	2.49
Likelihood of wearing a mask	333	9.18	0-10	1.79
Negative moral emotions	332	42.74	6-60	14.57
Positive moral emotions	324	26.69	4-40	10.23
(Reduced) physical contact	335	353.72	0-500	121.74
Policy support	406	324.52	0-500	138.03
Risk perceived of contracting COVID-19 (self)	406	59.42	0-100	26.16
Risk perceived of contracting COVID-19 (others)	406	47.80	0-100	29.93

Table 1b.

Zero-order correlations

		1. Age	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
2. Risk perception of contracting COVID-19 (self)	<i>r</i>	-0.10															
	N	425															
3. Risk perception of contracting COVID-19 (others)	<i>r</i>	-0.09	.59**														
	N	425	426														
4. Valence of messages	<i>r</i>	0.00	0.04	-0.02													
	N	404	405	405													
5. Target of messages	<i>r</i>	-0.04	-0.06	0.03	0.00												
	N	404	405	405	405												
6. Valence x Target of messages	<i>r</i>	-0.02	-0.06	0.03	-.90**	.45**											
	N	404	405	405	405	405											
7. Negative moral emotions	<i>r</i>	0.05	.12*	0.00	0.02	-0.04	-0.03										
	N	455	426	426	405	405	405										
8. Positive moral emotions	<i>r</i>	0.04	-0.02	-0.06	0.06	-0.01	-0.06	.83**									
	N	455	426	426	405	405	405	480									
9. Policy support	<i>r</i>	0.03	0.00	-0.07	0.03	-0.02	-0.04	.75**	.77**								
	N	455	426	426	405	405	405	480	480								
10. (Reduced) physical contact	<i>r</i>	0.03	0.02	-0.04	0.02	0.00	-0.02	.77**	.80**	.80**							
	N	455	426	426	405	405	405	480	480	480							
11. Risk perception of wearing a mask	<i>r</i>	0.02	0.04	.11*	0.06	-0.02	-0.06	-.12*	0.00	-0.02	-.24**						
	N	332	332	332	332	332	332	332	332	332	332						
12. Likelihood of wearing a mask	<i>r</i>	0.05	.25**	.14*	-0.05	-0.02	0.04	.38**	.11*	.32**	.42**	-.27**					
	N	332	332	332	332	332	332	332	332	332	332	332					
	<i>r</i>	0.03	0.05	0.03	0.04	-0.03	-0.05	.73**	.82**	.73**	.74**	.77**	.40**				

13. Risk perception + Likelihood of wearing a mask	N	455	426	426	405	405	405	480	480	480	480	332	332				
14. Gender	<i>r</i>	-0.06	.19**	0.11	0.02	-0.06	-0.05	0.10	0.03	0.11	0.01	0.04	0.04	0.05			
	N	307	308	308	308	308	308	308	308	308	308	307	307	308			
15. Sexual orientation	<i>r</i>	.11*	0.07	0.04	0.02	-0.08	-0.05	0.03	0.03	0.05	-0.04	.12*	-0.07	0.07	.33**		
	N	307	308	308	308	308	308	308	308	308	308	307	307	308	308		
16. Relationship status	<i>r</i>	.73**	0.08	0.04	0.02	-0.04	-0.04	.17**	0.10	-0.02	0.05	0.02	0.03	0.03	0.06	.12*	
	N	307	308	308	308	308	308	308	308	308	308	307	307	308	308	308	
17. Living situation	<i>r</i>	-0.09	.21**	.12*	0.03	-0.04	-0.04	.20**	.12*	.13*	-0.07	.12*	0.11	.19**	.17**	.15**	.15*
	N	307	307	307	307	307	307	307	307	307	307	307	307	307	307	307	307
18. Living with people over 50 years	<i>r</i>	-.25**	.26**	.17**	-0.06	-0.07	0.02	.15**	0.02	.13*	0.03	-0.03	.15*	0.06	.23**	0.11	-.15**
	N	307	308	308	308	308	308	308	308	308	308	307	307	308	308	308	308
19. Living with people below 13 years	<i>r</i>	.14*	0.04	0.03	0.02	-0.01	-0.02	0.03	.15*	0.07	-0.07	.17**	-0.04	.14*	.11*	.20**	.20**
	N	307	308	308	308	308	308	308	308	308	308	307	307	308	308	308	308
20. Employment status	<i>r</i>	-.36**	.15**	0.02	0.02	-0.09	-0.06	0.03	-0.06	-0.02	0.00	0.05	-0.01	0.02	.21**	.12*	-.30**
	N	307	308	308	308	308	308	308	308	308	308	307	307	308	308	308	308
21. Ladder	<i>r</i>	0.07	0.03	0.05	-0.05	0.07	0.08	0.00	-.16**	-0.01	0.05	-0.10	.12*	-0.01	-0.01	-0.05	0.03
	N	305	305	305	305	305	305	305	305	305	305	305	305	305	305	305	305
22. Area	<i>r</i>	-0.02	.15**	.17**	0.00	-0.02	-0.01	-0.07	0.10	-0.06	-.21**	.21**	-.15*	0.10	-0.09	0.02	0.04
	N	301	302	302	302	302	302	302	302	302	302	301	301	302	302	302	302
23. Positive diagnosis (self)	<i>r</i>	0.00	-0.03	.13*	0.03	0.02	-0.02	-0.09	-0.02	-0.11	-.17**	-0.02	-.21**	-.15**	0.02	0.05	-0.05
	N	305	306	306	306	306	306	306	306	306	306	305	305	306	306	306	306
24. Positive diagnosis (acquaintance)	<i>r</i>	-0.03	.25**	.22**	0.06	-0.09	-0.09	.21**	-0.08	-0.06	-0.03	0.03	0.08	0.07	0.08	-0.02	0.02
	N	305	306	306	306	306	306	306	306	306	306	305	305	306	306	306	306

$p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Table 1b. (*cont.*)*Zero-order correlations*

		17. Living situation	18	19	20	21	22
18. Living with people over 50 years	<i>r</i>	.51**					
	N	307					
19. Living with people below 13 years	<i>r</i>	.42**	0.08				
	N	307	308				
20. Employment status	<i>r</i>	.16**	.26**	-0.09			
	N	307	308	308			
21. Ladder	<i>r</i>	-0.01	-0.05	-0.05	-0.07		
	N	305	305	305	305		
22. Area	<i>r</i>	0.10	0.01	.26**	-0.02	-.24**	
	N	301	302	302	302	301	
23. Positive diagnosis (self)	<i>r</i>	-0.10	0.02	-0.03	-0.08	-0.01	0.10
	N	305	306	306	306	305	302
24. Positive diagnosis (acquaintance)	<i>r</i>	0.10	0.10	-.11*	.15**	0.08	-0.05
	N	305	306	306	306	305	302

$p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Table 2.

Factor loadings: moral emotions

	Component	
	Negative moral emotions ($\alpha = .88$)	Positive moral emotions ($\alpha = .82$)
Contempt	0.714	-0.204
Anger	0.783	-0.199
Disgust	0.783	-0.299
Shame	0.812	-0.247
Embarrassment	0.773	-0.217
Guilt	0.728	-0.334
Gratitude	-0.242	0.737
Awe	-0.152	0.779
Compassion	-0.332	0.762
Pride	-0.284	0.786
Extraction Method: Principal Component Analysis.		
Rotation Method: Varimax with Kaiser Normalization ^a		
^a Rotation converged in 3 iterations.		

Table 3.

Hierarchical testing the impact of negative moral emotions on policy support and (reduced) physical contact, while controlling for correlated demographics, message frames, and correlated risk perceptions.

	Policy support		(Reduced) physical contact	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
1. Intercept	98.5	48.43	196.14***	35.65
2. Gender	0.07	11.63	N/A	N/A
3. Area	-0.01	12.86	-0.13	9.11
4. Living situation	0	4.06	N/A	N/A
5. Living with people over 50 years	0.08	7.29	N/A	N/A
6. Positive diagnosis	N/A	N/A	-0.08	16.83
7. Valence of message	0.02	13.14	-0.02	9.23
8. Target of message	-0.03	13.09	0.01	9.18
9. Likelihood of wearing a mask	0.24***	4.2	0.31***	3.06
10. Risk perception of wearing a mask	N/A	N/A	-0.08	2.02
11. Negative moral emotions	0.22***	0.5	0.18***	0.34
R ²	0.18		0.26	
F	14.6		11.35	

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Table 4.

Hierarchical testing the impact of positive moral emotions on policy support and (reduced) physical contact, while controlling for correlated demographics, message frames, and correlated risk perceptions.

	Policy support		(Reduced) physical contact	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
1. Intercept	8.62	65.45	162.16***	47.10
2. Gender	0.08	11.76	N/A	N/A
3. Area	-0.03	13.09	-0.14**	9.28
4. Living situation	0.02	4.10	N/A	N/A
5. Living with people over 50 years	0.09	7.39	N/A	N/A
6. Positive diagnosis	N/A	N/A	-0.08	17.07
7. Valence of message	0.01	13.31	-0.03	9.37
8. Target of message	-0.03	13.25	0.01	9.31
9. Likelihood of wearing a mask	0.31***	3.99	0.37***	2.91
10. Risk perception of wearing a mask	N/A	N/A	-0.1	2.05
11. Positive moral emotions	0.14***	1.35	0.09	0.95
R ²	0.16		0.24	
F	6.62		2.88	

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Table 5.

Hierarchical testing the impact of message frames (interaction) on policy support and (reduced) physical contact, while controlling for correlated demographics, correlated risk perceptions, and moral emotions

	Policy support		(Reduced) physical contact	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
1. Intercept	19.64	58.64	115.94***	43.14
2. Gender	0.07	11.56	N/A	N/A
3. Area	-0.02	12.85	-0.14**	9.14
4. Living situation	-0.01	4.04	N/A	N/A
5. Living with people over 50 years	0.08	7.23	N/A	N/A
6. Positive diagnosis	N/A	N/A	-0.08	16.80
7. Likelihood of wearing a mask	0.24***	4.18	0.31***	3.05
8. Risk perception of wearing a mask	N/A	N/A	-0.09	2.02
9. Negative moral emotions	0.20***	0.50	0.17**	0.35
10. Positive moral emotions	0.10	1.36	0.05	0.96
11. Message frames	-0.03	5.82	0.03	4.11
R^2	.19		.27	
F	.23		.31	

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Fig 1.
Endorsement of COVID-19 policy support and (reduced) physical contact per group

Fig 2a.
Policy support (example, closing parks) is predicted by negative moral emotions

Fig 2b.
Reduction in physical contact is predicted by negative moral emotions

Figure 2.
Prediction of COVID-19 preventative health behaviours, owing to negative moral emotions (example, guilt)

Fig 3a.
Policy support (example, closing parks) is predicted by positive moral emotions

Fig 3b.
Reduction in physical contact is not predicted by positive moral emotions

Figure 3.
Prediction of COVID-19 preventative health behaviours, owing to positive moral emotions (example, pride)

Appendix A Materials Used

Items	Response Options
How old are you? (in years; e.g., 20)	Open Ended
Risk Perception (General Questions)	
Please indicate from 0 (impossible) to 100 (certain), the likelihood of the following:	
By April 30, 2021: How likely do you think it is that the average person in India will get infected by the Coronavirus (Covid-19)?	0 (impossible) to 100 (certain)
By April 30, 2021: How likely do you think it is that you will get infected by the Coronavirus (Covid-19)?	

Health Message Frames

Group 1 (valence = negative, target = self)

Many health professionals have indicated that you not wearing a mask could be harmful for your health. Those who do not wear a mask could get infected by other people in their vicinity. For example, if someone sneezes or coughs, it is likely that they could spread their germs to you. Thus, it increases the likelihood that you would be infected by the virus.

Q: According to you, what can happen to you in the long run if you do not wear a mask or cover your face? (select all that apply)

1. Get infected by COVID-19
2. Lung damage
3. Brain damage
4. Damaging blood clots
5. Cardiovascular issues
6. Paralysis
7. Diabetes/ High blood sugar
8. Clinical depression
9. Obsessive-Compulsive disorder
10. Generalized Anxiety

So what can actually happen in the long run, if you don't wear a mask and get infected?

Even if you do recover and test negative after the initial period of treatment, so far, research has not shown that long-term consequences include paralysis, diabetes, clinical depression, OCD, or generalized anxiety.

However, if you do not wear a mask or face covering, you can get infected by COVID-19. The infection could affect your throat, airways, and lungs. This means that not wearing a mask could increase the long-term consequences for you, such as feeling a shortness of breath, having weak lungs for the rest of your life, and in some cases, severe damage to your lungs, even if you recover and test negative after the initial treatment. Other COVID-19 related long-term consequences include having strokes, heart attacks, and other cardiovascular complications. You may also suffer from blood clots due to the virus and recent research has shown that brain damage can be another long-term consequence. The chances of you facing these consequences increase if you don't wear masks.

Group 2 (valence = negative, target = others)

Many health professionals have indicated that you not wearing a mask could be harmful for other people's health. By not wearing a mask, you could infect other people in your vicinity, including your close friends and family. For example, if you sneeze or cough, it is likely that you

could spread your germs to them. Thus, it increases the likelihood that they would also be infected by the virus.

Q: According to you, what can happen to others in the long run if you do not wear a mask or cover your face? (select all that apply)

1. Get infected by COVID-19
2. Lung damage
3. Brain damage
4. Damaging blood clots
5. Cardiovascular issues
6. Paralysis
7. Diabetes/ High blood sugar
8. Clinical depression
9. Obsessive-Compulsive disorder
10. Generalized Anxiety

So what can actually happen in the long run to others, if you don't wear a mask and they get infected?

Even if they do recover and test negative after the initial period of treatment, so far, research has not shown that long-term consequences include paralysis, diabetes, clinical depression, OCD, or generalized anxiety.

However, if you do not wear a mask or face covering, other people, including your close friends and family, can get infected by COVID-19. The infection could affect their throat, airways, and lungs. This means that not wearing a mask could increase the long-term consequences for them, such as feeling a shortness of breath, having weak lungs for the rest of their lives, and in some cases, severe damage to their lungs, even if they do recover and test negative after the initial treatment. Other COVID-19 related long-term consequences include having strokes, heart attacks, and other cardiovascular complications. They may also suffer from blood clots due to the virus and recent research has shown that brain damage can be another long-term consequence. The chances of them facing these consequences increase if you don't wear masks.

Group 3 (valence = positive, target = self)

Many health professionals have indicated that you wearing a mask could be beneficial for your health. Those who wear a mask could significantly reduce the chances of being infected by other people in their vicinity. For example, even if someone sneezes or coughs, it is unlikely that they could spread their germs to you. Thus, it reduces the likelihood that you would also be infected by the virus.

Q: According to you, what can you be prevented from in the long run if you do wear a mask or cover your face? (select all that apply)

1. Get infected by COVID-19
2. Lung damage
3. Brain damage
4. Damaging blood clots
5. Cardiovascular issues
6. Paralysis
7. Diabetes/ High blood sugar
8. Clinical depression
9. Obsessive-Compulsive disorder
10. Generalized Anxiety

So what can you be prevented from in the long run, if you do wear a mask, therefore, not get infected?

Even if you do recover and test negative after the initial period of treatment, so far, research has not shown that long-term consequences include paralysis, diabetes, clinical depression, OCD, or generalized anxiety.

However, if you do wear a mask or face covering, you reduce the likelihood of being infected by COVID-19. Without the infection, you will preserve the pre-existing health of your throat, airways, and lungs. This means that by wearing a mask you can reduce the long-term consequences for you, such as feeling a shortness of breath, having weak lungs for the rest of your life, and in some cases, severe damage to your lungs, even if you recover and test negative after the initial treatment. It is also possible to reduce the chances of other COVID-19-related long-term consequences, such as having strokes, heart attacks, and other cardiovascular complications. You may also reduce the possibility of suffering from damaging blood clots due to the virus and recent research has shown that brain damage can be another long-term consequence. All of these can be prevented by you wearing masks.

Group 4 (valence = positive, target = others)

Many health professionals have indicated that you wearing a mask could be beneficial for other people's health. By wearing a mask, you could significantly reduce the chances of infecting other people in your vicinity, including your close friends and family. For example, if you sneeze or cough, it would be unlikely that you spread your germs to them. Thus, it reduces the likelihood that they would also be infected by the virus.

Q: According to you, what can you prevent for others in the long run if you do wear a mask or cover your face? (select all that apply)

1. Get infected by COVID-19
2. Lung damage
3. Brain damage
4. Damaging blood clots
5. Cardiovascular issues
6. Paralysis
7. Diabetes/ High blood sugar
8. Clinical depression
9. Obsessive-Compulsive disorder
10. Generalized Anxiety

So what can be prevented for others, if you do wear a mask, therefore, not infecting your closed ones?

Even if they do recover and test negative after the initial period of treatment, so far, research has not shown that long-term consequences include paralysis, diabetes, clinical depression, OCD, or generalized anxiety.

However, if you do wear a mask or face covering, you reduce the likelihood of others getting infected by COVID-19. Without the infection, you will help them to preserve the pre-existing health of their throat, airways, and lungs. This means that by wearing a mask you can reduce the long-term consequences for others, such as feeling a shortness of breath, having weak lungs for the rest of their lives, and in some cases, severe damage to their lungs, even if they do recover and test negative after the initial treatment. It is also possible to reduce the chances of other COVID-19 related long-term consequences, such as having strokes, heart attacks, and other cardiovascular complications. You may also help reduce the possibility of them suffering from damaging blood clots due to the virus and recent research has shown that brain damage can be another long-term consequence. All of these can be prevented for them by you wearing masks.

Visualization	
On a scale of 1 (not at all) to 10 (extremely well), please indicate, how well could you visualize the scenario in the previous screen.	
How well could you visualize the scenario in the previous screen?	1 (not at all) to 10 (extremely well)
Moral Emotions	
On a scale of 1 (not at all) to 10 (extremely), rate the extent to which you feel the following emotions after reading this scenario:	
Contempt towards others who don't wear masks	1 (not at all) to 10 (extremely)
Anger towards others who don't wear masks	
Disgust towards others who don't wear masks	
Shame if you did not wear a mask	
Embarrassment if you did not wear a mask	
Guilt if you did not wear a mask	
Gratitude towards others who wear masks	
Awe towards others who wear masks	
Compassion towards others who wear masks	
Pride for wearing a mask	

Social Distancing Policy Support	
Indicate from 0 (strongly disagree) to 100 (strongly agree), the degree to which, for as long it is unsafe in my community due to the coronavirus (COVID-19) pandemic, I will be:	
In favor of forbidding all public gatherings where many people are gathered at one place (sports and culture)	0 (strongly disagree) to 100 (strongly agree)
In favor of closing all parks	
In favor of closing all bars and restaurants	
In favor of closing all schools and universities	
In favor of forbidding all non-necessary travel	
(Reduced) Physical Contact	
Indicate from 0 (strongly disagree) to 100 (strongly agree), the degree to which, for as long it is unsafe in my community due to the coronavirus (COVID-19) pandemic, I will be	
Keeping the number of grocery store visits at an absolute minimum	0 (strongly disagree) to 100 (strongly agree)
Visiting friends, family, or colleagues outside my home (R)	
Keeping physical distance from all other people outside my home	
Staying at home as much as practically possible	
Avoiding shaking hands with people outside my home	
Risk of Not Wearing a Mask	
How risky do you think wearing a mask is? (R)	1 (not at all) to 10 (extremely)
How likely is it that you would wear a mask?	
Demographics	
Which of the following gender(s) do you identify as?	Male; Female; Non-binary; Genderqueer; Transgender; Other; Prefer not to answer

Which of these do you consider yourself to be?	Heterosexual or straight; Lesbian or gay; Bisexual; Other; Prefer not to answer
Relationship Status: - Selected Choice	Single; In a relationship; Married; Other
How many people do you live with?	1, 2, 3... to 10; More than 10
How many people above the age of 50 do you live with?	1, 2, 3, 4, 5; More than 5
How many people below the age of 13 do you live with?	1, 2, 3, 4, 5; More than 5
How would you describe your current employment status?	Employed full-time Employed part-time Unemployed looking for work Unemployed not looking for work Student Retired Other Self-employed
Where would you place yourself on this ladder to represent where you think you stand at this time in your life, compared to other people in India?	1=Lowest rung of the ladder (pictorial depiction) 10=Highest rung
Which of the following best describes the area you live in?	Rural; Urban; Semi-Urban; I don't know
Have you tested positive for the Coronavirus (COVID-19), meaning that you (now or earlier) have had a medically confirmed case of this disease?	Yes; No
Has anyone you know well (friend, partner, family, colleague etc.) tested positive for the Coronavirus (COVID-19)?	

Appendix B

Distribution of Scores

Figure 4

Distribution of (reduced) physical contact scores

Note. There was a ceiling effect on each item measuring reduced physical contact.