

PANDEMIC FATIGUE & MENTAL HEALTH PROBLEMS

**Moral Obligation to Follow Anti-COVID-19 Measures Strengthens the Mental Health
Cost of Pandemic Fatigue**

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Abstract

Background: It has been observed that people became gradually exhausted about the COVID-19-related information and preventive measures as the pandemic unfolds. This phenomenon is known as *pandemic fatigue*. Not only is pandemic fatigue averse to the prevention of COVID-19, a small but increasing number of studies have also found that it is related to poor mental health. This study extended this line of research by examining a novel yet understudied idea that moral obligation, a crucial motivation that drives people to follow the preventive measures, would amplify the association between pandemic fatigue and mental health problems.

Methods: Participants were 937 Hong Kong parents (88% mothers, 62.4% aged 31–40 years). They participated in an online survey reporting on pandemic fatigue, moral obligation, and mental health problems (i.e., depressive symptoms, anxiety, and stress).

Results: Findings of moderation model analyses showed that higher levels of pandemic fatigues and moral obligation were related to more mental health problems. Importantly, these links were moderated by moral obligation, with those who felt more morally obliged to follow the preventive measures reporting poorer mental health than those who felt less morally obliged to do so.

Limitations: The study was cross-sectional, which constrains the deduction of causality. Participants were only recruited from Hong Kong and females were over representative, thus limiting the generalizability of the findings.

Conclusions: People who experience pandemic fatigue while feeling more morally obliged to follow the anti-COVID-19 measures are at greater risk of mental health problems. These populations need more support from practitioners.

Keywords: mental fatigue; mental distress; morality; COVID-19; self-determination theory

Moral Obligation to Follow Anti-COVID-19 Measures Strengthens the Mental Health

Cost of Pandemic Fatigue

At the beginning of the COVID-19 pandemic, people generally comply with the preventive measures (Nivette et al., 2021; Shanka & Kotecho, 2021), not only because they hope to enhance the chance for survival but also because they feel morally obliged to do so. As the pandemic evolves, however, the World Health Organization (WHO, 2020) reported that many people gradually decreased their effort to keep themselves informed about the pandemic and became not sufficiently following the measures. The WHO coined these phenomena as *pandemic fatigue* and defined it as distressful reactions to sustained and unresolved adversity that may lead to complacency, alienation, and hopelessness, emerging gradually over time and affected by personal and environmental factors. Not only is pandemic fatigue averse to the prevention of COVID-19 (Lilleholt et al., 2022; Morgul et al., 2021), a small but increasing number of studies have also found that it is related to poor mental health (Kim et al., 2022; Wang et al., 2022). This study aims to contribute to this trendy topic by testing a novel yet underexplored idea that pandemic fatigue is related to heightened mental health problems, especially for those who feel more morally obliged to follow the preventive measures.

Mental fatigue with the COVID-19-related information and preventive measures is the core feature of pandemic fatigue (WHO, 2020). Research has found that mental fatigue occupies an individual's cognitive resources and further undermines his/her self-regulation capacity to handle negative emotions (Grillon et al., 2015). Since failed self-regulation has long been considered a core etiology of many emotional and behavioral problems (American Psychiatric Association, 2013), people who experience pandemic fatigue tend to have poor mental health (at least partially) because their self-regulation is impaired. Moreover, pandemic fatigue is a distressful situation, and study has found that prolonged exposure to distressful situations alters the brain's sensitivity to pleasure, rendering the brain more susceptible to negative affect that may accumulate into mental health problems (Baik, 2020). This suggests that pandemic fatigue may be related to poor mental health (at least) partially due to the changed brain network. So far, a very small but increasing number of studies have examined the association between pandemic fatigue and mental health. For instance, Wang et al. (2022) found that *mental fatigue* in times of COVID-19 (i.e., a concept relevant to pandemic fatigue but not specifically tapping on pandemic) was positively related to mental health problems (e.g., depression, anxiety, and stress). Kim et al. (2022) found that pandemic fatigue (defined the same as in this study) was related to more posttraumatic

stress symptoms. Since this line of research is picked up only recently, more investigations are needed. We extend this topic by examining moral obligation as a boundary factor.

Moral obligation refers to “a personal decision to participate in a specific collective action based on the belief that this is what should be done” (Vilas & Sabucedo, 2012), and it is positively related to compliance with the preventive measures against COVID-19 (Nivette et al., 2021; Shanka & Kotecho, 2021). In this study, moral obligation is operationalized as the extent to which people feel they are morally obliged to follow the preventive measures. As noncompliance brings sanctions (e.g., fine/prosecution) and has interpersonal consequences (e.g., protect/infect others), it is inevitable that adherence to preventive measures is morally charged, that is, people follow the measures (at least partially) to avoid guilt, shame, social disapproval, and punishment (Ekberg et al., 2021; Morbée et al., 2021). As such, moral obligation has been considered a proxy of *introjected motivation* which describes that people’s behavior is driven by social approval concerns and avoidance of punishment both in ordinary days and in times of pandemic (Assor, 2012; Johnson et al., 2016; Morbée et al., 2021). According to the self-determination theory, people engaging in a particular behavior out of introjected motivation (a type of controlled motivation) tend to have poor mental health and insufficient self-regulation because it opposes people’s basic psychological needs (i.e.,

autonomy, relatedness, and competence) which are the foundation of well-being and persistence (Deci & Ryan, 2008). Hence, we postulate that moral obligation not only directly links to poor mental health, but it may also dovetail with pandemic fatigue to further constrain one's basic psychological needs, thus amplifying the link between pandemic fatigue and mental health problems. These ideas, albeit possible, awaits further empirical research.

This study examines two questions: (1) what is the association between pandemic fatigue and mental health? and (2) to what extent does moral obligation moderate the said association? We hypothesized that: (H1) high levels of pandemic fatigue would be related to more mental health problems, and (H2) the said link would be more pronounced for people with higher than those with lower levels of moral obligation.

Method

Participants and Procedure

Participants of this study were a sub-sample from another large-scale survey which examined Hong Kong parents' intention to vaccinate their young children against COVID-19 (for details, see Li et al., 2022). In particular, 11,141 parents of young children aged 5-12 years participated in the large-scale survey, and 2,500 randomly selected parents who expressed interest in the follow-up study were contacted three months later. The final sample consisted of 937 parents who completed an online survey of the psychological

variables (in addition to the previous large-scale survey) unique to our current investigation before the survey deadline. Among them, 88% were females, 62.4% of them were aged 31–40 years, 46.3% had a bachelor's degree or above, and about 55% had a family monthly income of HK\$40,000 (~ US\$5,128) or above. This study was approved by the Human Research Ethics Committee at the authors' university and participants provided electronic consent prior to participating in the survey.

Measures

Pandemic fatigue was measured with 6 items developed by Lilleholt et al. (2022). All items are rated on a 7-point scale (from 1=*strongly disagree* to 7=*strongly agree*), with a higher score indicating higher levels of pandemic fatigue. Sample items are “I am sick of hearing about COVID-19” and “I feel strained from following all of the behavioral regulations and recommendations around COVID-19”. Cronbach's α was .87.

Moral obligation regarding COVID-19 was measured with three items developed by Lilleholt et al. (2022). These items are “I would feel bad about myself if I did not comply with the COVID-19 measures”, “I would consider myself an immoral human being if I did not try to follow the COVID-19 measures”, and “I believe that I am morally obliged to do my best to follow the COVID-19 measures”. All items are rated on a 7-point scale (from 1=*strongly disagree* to 7=*strongly agree*), with a higher score indicating higher levels of moral obligation. Cronbach's α was .74. *Mental health* was measured with the Depression Anxiety Stress Scale (DASS-21; Lovibond & Lovibond, 1995). The scale has 21 items assessing depressive symptoms, anxiety symptoms, and stress over the past week. All items were rated on a 5-point scale (from 1=*never* to 5=*always*), with a higher score indicating

more mental health problems. Cronbach's α was .90, .86, and .90 for depression, anxiety, and stress, respectively. Besides, we have also measured participants' sex, age, educational levels, and family monthly income. We standardized and averaged educational levels and family monthly income to calculate a composite score to represent family socioeconomic status (SES), with a higher score indicating higher SES.

Results

Results of descriptive statistics showed that participants reported low-to-medium levels of depressive symptoms ($M=2.10$, $SD=0.74$), anxiety symptoms ($M=1.99$, $SD=0.65$), and stress ($M=2.53$, $SD=0.80$), and medium levels of pandemic fatigue ($M=4.30$, $SD=1.28$), and moral obligation ($M=4.34$, $SD=1.27$). Results of correlation analysis showed that pandemic fatigue was significantly related to depressive symptoms ($r=.40$, $p<.001$), anxiety symptoms ($r=.28$, $p<.001$), and stress ($r=.34$, $p<.001$) at medium to medium-to-large effect sizes, while moral obligation was also (marginally) significantly related to depressive symptoms ($r=.06$, $p=.053$), anxiety symptoms ($r=.12$, $p<.001$), and stress ($r=.16$, $p<.001$) at trivial or small effect sizes.

We conducted moderation analysis with Hayes' PROCESS (version 4.0) to examine the associations between pandemic fatigue and mental health problems (H1), and the moderation effect of moral obligation (H2). The results are summarized in Table 1. In support of H1, both pandemic fatigue and moral obligation were positively and significantly related to depressive symptoms, anxiety symptoms, and stress after controlling for participants' sex, age, and family SES. In support of H2, the interaction effects between pandemic fatigue and moral obligation on the three mental health problems indicators were

all significant.

[INSERT TABLE 1 ABOUT HERE]

Breaking down each interaction effect, we found that the association between pandemic fatigue and each mental health problem was unanimously stronger for participants who reported higher levels of moral obligation (M+1SD) compared to those who reported lower levels of moral obligation (M-1SD), as shown in Figure 1.

[INSERT FIGURE 1 ABOUT HERE]

Discussion

The COVID-19 pandemic has been lasting for more than two and a half years. Although most people support the preventive measures initially, many of them adopt a different coping style and (mental) fatigue emerge as the pandemic drags on (WHO, 2020). Research has recently started investigating the association between pandemic fatigue and mental health problems (Kim et al., 2022; Wang et al., 2022). Consistent with the existing yet limited evidence, we found that pandemic fatigue is related to poor mental health.

We also found that moral obligation amplified the relations between pandemic fatigue and mental health problems. According to the dual-risk model (Sameroff, 1983), pandemic fatigue (a distressful state) and moral obligation (a type of controlled motivation opposed to basic psychological needs) may represent two accumulative risks, together fueling the manifestation of mental health problems. These findings inform practitioners that more assistance should be provided to people who experience pandemic fatigue while

feeling more morally obliged to follow the preventive measures, as these populations are at greater risk of mental health problems.

Of note is that people's fatigued reactions toward the pandemic were diverse. This may be because we collected the current data in May 2022 when Hong Kong was close to the end of the fifth resurgence of outbreak, the biggest one causing millions of cases and more than 9,000 deaths. Under prolonged dire circumstances, it is not surprising that many people kept themselves informed and strictly complied with the preventive measures while many of them might have also been exhausted by the excessive COVID-19-related information and restrictions. Since people's reactions may differ as the pandemic evolves (WHO, 2020), future research should follow people's pandemic fatigue over time (e.g., from pre- to post-outbreak) so that a more complete picture about the formation of pandemic fatigue and its relation to mental health can be revealed.

Relatedly, people in Hong Kong have been following many anti-COVID-19 measures and restrictions for a long time since the Government adopts a *dynamic zero* approach to deal with the pandemic. People who violate the measures will be prosecuted and fined. This situation may be different from many Western countries where most (or even all) restrictions related to COVID-19 have been removed so that people have more autonomy to choose whether to follow the measures. Given this, it would be promising for future research to conduct cross-national comparisons.

We acknowledge this study has several limitations. First, the data

were self-reported and cross-sectional, thus limiting the deduction of causality. Second, the study was conducted in Hong Kong amid the fifth resurgence of outbreak and female participants were over-representative. Therefore, the findings may not be entirely generalized to other populations. Third, although moral obligation is considered a proxy of introjected motivation, we did not assess participants' introjected or other types of motivation directly, limiting the opportunity to reveal more nuanced findings.

Despite the aforementioned limitations, this study adds to the emerging literature about the mental health cost of pandemic fatigue and is among the first to examine its boundary condition. Our findings show that pandemic fatigue is related to poor mental health, especially for those who feel more morally obliged to follow the preventive measures. These findings contribute to the understanding of people's mental health at a later period of the COVID-19 pandemic.

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Table 1

Moderation Analysis of the Moral Obligation in the Association between Pandemic Fatigue and Mental Health Problems

Predictors	<i>Depressive symptoms</i> ($R^2=19.4\%$)		<i>Anxiety symptoms</i> ($R^2=13.5\%$)		<i>Stress</i> ($R^2=17.9\%$)	
	<i>B (SE)</i>	<i>p</i>	<i>B (SE)</i>	<i>p</i>	<i>B (SE)</i>	<i>p</i>
Sex (1 = female, 2 = male)	0.05 (0.07)	.425	-0.07 (0.06)	.252	-0.04 (0.07)	.598
Age	0.03 (0.04)	.451	0.02 (0.04)	.506	0.02 (0.04)	.667
Family SES	-0.06 (0.02)	.001	-0.06 (0.02)	< .001	-0.02 (0.02)	.260
Pandemic fatigue	0.25 (0.02)	< .001	0.16 (0.02)	< .001	0.24 (0.02)	< .001
Moral obligations	0.08 (0.02)	< .001	0.09 (0.02)	< .001	0.14 (0.02)	< .001
Pandemic * moral obligation	0.03 (0.01)	.008	0.03 (0.01)	.020	0.04 (0.01)	.005

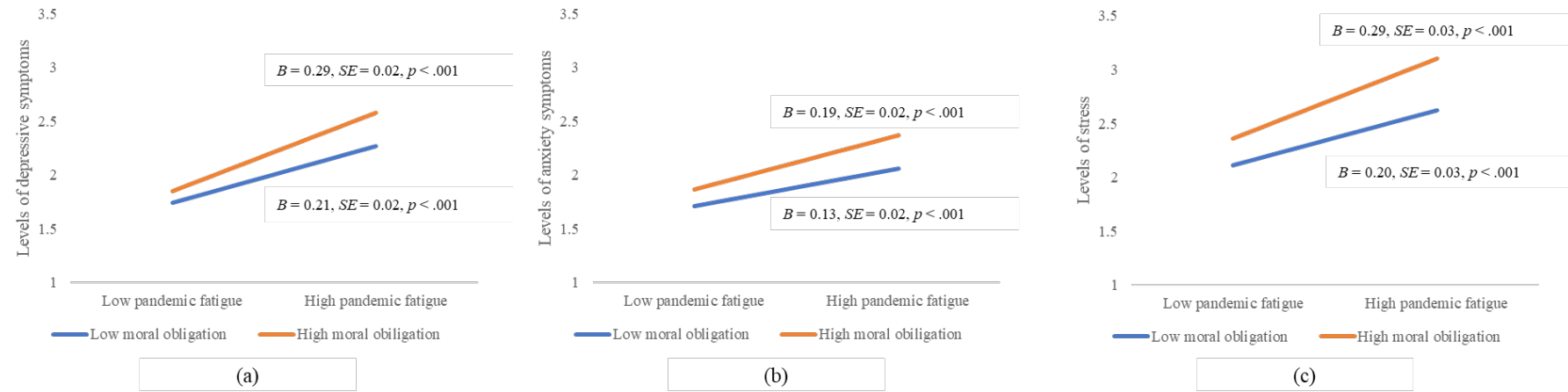


Figure 1. *Simple Slope for the Associations between Pandemic Fatigue and Mental Health Problems by the Levels of Moral Obligation*