



COVID-19: Psychological and Psychosocial Impact, Fear, and Passion

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In December 2019, the novel coronavirus disease (COVID-19) emerged in Wuhan, Hubei Province of China. Unlike common cold and flu, COVID-19 is much more contagious, and its spread rate is exponential. More than 8,999,659 cases of COVID-19 and 469,587 deaths have now been reported to the World Health Organization (as of June 23, 2020) [1].

As soon as the World Health Organization declared an emergency, the movement of one-third of world's population (~2.6 billion people) has been restricted and controlled by their respective governments [2], aiming to prevent further spread and to minimize the risk of COVID-19 infection. As an example, the Indian government enforced a nationwide 21-day lockdown on March 25, 2020, which now has been extended to 40 days. That means 1.3 billion citizens are banned from leaving their homes under the coronavirus lockdown [3]. In China, 760 million people (when the outbreak reached its peak), 60 million in Italy, 165 million in Bangladesh, and 142 million in Russia were forced to undergo lockdown due to the pandemic [4] (as of April 9, 2020). The United States is no exception, as it has become an epicenter now in terms of COVID-19 confirmed and death cases. In the work of Brooks et al. [5], the psychological impact of quarantine using three electronic databases is reported.

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Most of the reviewed studies confirmed negative psychological impact, such as post-traumatic stress symptoms, confusion, and anger. Note that limited to psychological impacts, psychosocial impacts prominently exist [6]. Before COVID-19, a new Lancet Commission report on mental health stated that mental illness/disorder will cost the world \$16 trillion by 2030 [7]. With COVID-19, negative psychological impact could, in a long run, be more taxing.

Prolonged quarantine duration instills infection fears, frustration, and boredom. Followed by inadequate supplies, confusing and/or misinterpreted news/data/information, financial loss, and mental stigma, the later stage of quarantine gives rise to a wide range of symptoms of psychological stress and disorder. Thousands of people shared their peculiar *#pandemicdreams* on Twitter. Many of them involve disease, fear, or strange surroundings [7]. It is also reported [8] that 22% of adults (a survey among 1,000 people) have been experiencing worse sleep patterns during this pandemic, which may increase the risk of cardiovascular events [9]. In this situation of adversity, yoga, meditation, and video chat with relatives and friends induce mental relaxation, to some extent. In contrast, self-isolation gives us opportunities to connect with our passions and inner identity. During the “me-time,” committing to hobbies could be a positive mental intervention for people experiencing high levels of stress [10]. However, especially for the young generation, social media is one of the main attractions, and it causes their separation from books and other educational materials. Once a bookworm, always a bookworm. Hobbyists always will find time for hobbies subconsciously—no matter how busy they are. Guardian Australia staff nominated the best books to escape into when the world is in despair—or when one is in quarantine [11]. Because of the environment (at home most of the time, isolated), people are enjoying greater freedom to choose what they want to do. Those who love to study will be more committed to study online than when they used to study offline. COVID-19 has forced schools and universities around the world to adopt online learning from in-person learning [12]. Our open source online learning platform (Learning Management System) shows a trend that the studious students have become more studious (because of less distraction), and the non-committed students have become even more non-committed when they were given the freedom of choice. Under self-isolation, those who like to study will be more committed to study online. Good students tend to be online more often and longer, showing good self-discipline. The poor students become more slacking without the presence of teachers and a peer group around them. We are pondering whether this isolation due to COVID-19 lockdown segregates students into bipolar groups or not. It is known that one’s mindset, behavior, time management, and chosen actions collectively evolve to habits and character over time. It is speculated that the COVID-19 lockdown might have been a catalyst to speed up this process. However, to verify/validate/confirm this hypothesis, we have to wait at least for completion of a full teaching semester until students’ final grades are known.

Passion drives people to do something extraordinary from inner force. The rewarding experience in doing what they enjoy would motivate them to go further. Passion and desire go hand in hand, and stimuli trigger different parts of the brain and motivate us toward productivity in different ways. For example, when the great plague hit London and Sir Isaac Newton was under social isolation and distancing, he propounded the theories of gravity and motion, as reported in the *Washington Post* [13, 14]. It shows a remarkable phenomenon that an idle brain is really a devil’s workshop! COVID-19 might have physically isolated us apart, but it has brought us together as well: closer to our values, our humanity, and our inner-self. “Me-time” quarantine helps us finish up that never-ending book or start reading up on new things that we were always too busy to do. Let us analyze by taking two different events: with and without lockdown during the COVID-19 pandemic (to be precise, *quarantine* refers to lockdown):

- *With lockdown*: Considering a complete lockdown time period, we collected and analyzed 23,858 tweets (*#lockdown* or *#stayhome* or *#selfquarantine*; place ID: *India*) from the previous 7 days (April 7 to 15, see supplementary data), among which 2,851 tweets were related to people’s passion and hobbies, such as reading, music, dance, cooking, workout, arts (drawing), and photography. With these collected data (source: tweets), we developed an AI-driven tool that was based on support vector machine to classify

their emotions. We observed that 1,946 tweets were neutral, 874 were expressed worry, and the remaining 31 tweets were about happiness. Inclusion of passion-related tweets improved the degree of happiness by 9.4%. The major contributors in terms of prominent passions that led to this increase in contentedness were cooking (31.8%), music (22.72%), and working out (13.64 %). Furthermore, people also enjoyed reading (9.09%) and gardening (9.09%) equally as a favorable activity to pass time.

- *Without lockdown:* Further, to understand how “me-time” changes over time during the COVID-19 pandemic, we collected and analyzed 321 tweets based on the exact same set of keywords (*#lockdown* or *#stayhome* or *#selfquarantine*; place ID: India) from August 16 to 24 (see supplementary data). The reason behind the selection of these dates is that people started to get back to their daily routines (including jobs) even though the COVID-19 pandemic was not over. The only difference between the two different studies was with and without *#lockdown*. It made sense to use the exact same keywords, among which 10 tweets were related to people’s passion and hobbies, such as reading, music, dance, cooking, workout, arts (drawing), and photography. With these collected data (source: tweets), we developed an AI-driven tool that was based on support vector machine to classify their emotions. We observed that 5 tweets were neutral, 3 expressed worry, and the remaining 2 tweets were about fun. Inclusion of passion-related tweets did not change the degree of happiness.

Furthermore, to confirm this hypothesis statistically or to predict consequences, more data is required. Fulfilling passion is one of the finest ways to ease anxiety or stress that could help save people from COVID-19-related depression.

Long-term social isolation has shown an exhaustive effect on the mental health of mammals. Prolonged deprivation of any social contact often leads to depression and post-traumatic stress disorder in humans. A team of Caltech researchers reported in their study that negative effects caused as a result of social isolation is the outcome of a buildup of a particular chemical in the brain. The team suggested that the traumatic effects of isolation could be minimized if the chemical buildup in the brain were restricted. The study indicates that there is potential application for treating psychiatric disorders in humans [15].

Earlier on, an experiment [16] was conducted to separate a group of mice into individual cells. Two weeks later, the mice showed changes in their behavior as some chemicals were found in their brains. The changed behaviors included aggressive responses upon threats, being oversensitive to visual stimuli, and becoming easily stressed. In another experiment where the social isolation period for the mice was prolonged to 2 months [17], the white matter called *myelin* in the brains of the mice showed signs of disorder. Myelin is well known to be related to an animal’s complex emotions. In general, it has been agreed among researchers that prolonged isolation has an impact on behavioral changes. The emotional symptoms were feeling bored, lonely, paranoid, panicked, frustrated, and scared; the physiological symptoms were sweating, shortness of breath, and muscle tension in the chest. Some people may suffer from depersonalization—a sensation that their bodies and minds no longer belong to them. In light of these serious consequences, if people are isolated from social interaction for too long, COVID-19 may have a profound impact on the mind and body much more intensely than we anticipated. Since it requires large amount of time-series data, the study has not been statistically determined yet. However, in this article, we report a bipolar change in behavioral traits as the result of moderate self-isolation.

“Me-time” enables people to pursue further and become more indulged in doing what they usually like to do. Passion boosts brain health. However, the isolated environment offers a personal shelter for people to relinquish (or escape) from what they were reluctant to do prior to lockdown. Lockdown shields us from the virus so that we can have some quiet time for self-reflection and introspection.

APPENDIX A SUPPLEMENTARY DATA

Supplementary data to this article can be found online (attached, XLS file).

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