



Where is the mind in COVID-19 causality?

Jean-Luc Mommaerts, MD, MSc, PhD

Vrije Universiteit Brussel, Belgium



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ABSTRACT

Two years into the pandemic, hardly any studies have been done regarding the influence of the mind on COVID-19. However, there is much circumstantial evidence. The mind influences the body in ways relevant to COVID-19. Unfortunately, of the scientifically proven mental factors influencing immunology, many have been intensified by lockdowns. Relevant research might help us see COVID-19 not as a disease straightforwardly caused by a virus but by a whirlpool of factors in which the virus and mind play essential roles. Social nocebo (mass psychogenic illness) may be a significant mind-related factor in the whirlpool through heightening the suggestive idea that worse will come. This insight might bring a more profound view of the human social condition, transcending the present disaster. Meanwhile, the whirlpool metaphor may help acute COVID-19 patients and long-haulers, letting them understand that their mind is one element in the whole, no more and no less.

It is not in the mind of most laypeople, clinicians, and researchers. Two years into the pandemic, hardly any studies have been done regarding the influence of the mind on COVID-19. The domain does not look causally mind-related because no one mentions it; therefore, no one mentions it. However, few researchers deny that the immune system plays a significant role in the complex causal story of individual morbidity and mortality through COVID-19. Also, the mind plays a substantial role in immune reactions and other defense mechanisms. The link is straightforward. This does not mean it is 'all in the mind.' We need research to find out the correct place of the mind in COVID-19 causality.

There is much circumstantial evidence. The mind influences the body in illness and healing in ways relevant to COVID-19. For example, mental stress can lead to acute or chronic inflammation and even provoke instant death, as in the case of 'takotsubo,' an increasingly recognized condition mimicking acute myocardial infarction (Dawson, 2018). Mental stress influencing lung tissue inflammation has also been described. Some intriguing quotes:

- "The studies summarized in this review indicate that there are important linkages between anxiety and depression and viral diseases such as influenza A (H1N1) and other influenza viruses, varicella-zoster virus, herpes simplex virus ..." (Coughlin, 2012)
- "The present report meta-analyzes more than 300 empirical articles describing a relationship between psychological stress and parameters of the immune system in human participants." (Segerstrom and Miller, 2004)

- "Cortisol also showed a continuous association with duration of viral shedding." (Janicki-Deverts et al., 2016)
- "Stress-induced immune dysregulation has been shown to be significant enough to result in health consequences, including reducing the immune response to vaccines, slowing wound healing, reactivating latent herpesviruses, such as Epstein-Barr virus (EBV)" (Godbout and Glaser, 2006)
- "Stress is an external factor known to be a potent exacerbator of respiratory infections." (Stover, 2016)

Stress signals and cytokine feedback loops significantly co-regulate immune responses, including central inflammation and effects on neuroplasticity in the brain. The renowned COVID cytokine storm is probably related through such mechanisms to the substantial psychological effects on many patients during and after the acute phase. Scientifically proven mental factors influencing immunology include chronic stress, depression, social deprivation, a feeling of powerlessness, anxiety, aggression, mourning, and uncertainty—all of which have been intensified by lockdowns. Altogether, this might help us see COVID-19 not as a disease straightforwardly caused by a virus but by a whirlpool of factors in which the virus and mind play essential roles.

Mind-related influences within such a whirlpool may be especially pertinent in mass psychogenic illness, resulting from nocebo effects in a social context. The new term 'social nocebo' highlights the commonalities, thus bringing to bear the vast knowledge about the placebo. Together with physical factors, social nocebo may form a phenomenon of mutually enhancing elements, a whirlpool with a pathogenic power

E-mail address: jean-luc.mommaerts@vub.be.

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exceeding the sum of the individual elements. This is typical of complex systems, such as an individual human or a society. Social nocebo—frequently named pejoratively in the past as ‘mass hysteria’—is common, having been documented for centuries in many cultural settings (Marchetti et al., 2020). One study found 200 published accounts (Kharabsheh et al., 2001), still considerably underappreciated and underreported. No individual nor group is immune (Weir, 2005). A positive correlation exists with a lifetime history of trauma and depression (Broderick et al., 2011).

In COVID-19, elements are present that may provoke social nocebo effects, engendering a social whirlpool (social media, news, individuals making each other anxious) and an individual whirlpool (social elements together with symptoms heightening the suggestive idea that worse will come). Of course, the virus is indispensable in a COVID-19 whirlpool. So is, in many cases, an overreaction of the immune system. In acute-upon-chronic stress, the immune system is specifically vulnerable to such.

The SARS-CoV-2 virus has evolved in bat communities, which are societies of mammals subject to a high degree of lifelong stress. In this way, such viruses have ample opportunity to adapt to stressed-out immune systems. Subsequently, they find these in us, humans. Epidemiology shows that human distress and its consequences—burnout and psychosomatic illness—are increasingly rampant, especially in technologically highly developed parts of the world. Distress-adapted microorganisms can here find a window of opportunity.

So, why isn't the mind more visible in the causal storytelling of COVID-19? To forward the idea is daring because of two culturally underlying premises. Both can be easily tackled, although provoking problematic anxiety and possible backlash:

1. The premise that body and mind are fundamentally separate, whether or not as parts of a bigger whole. So, how could the ephemeral mind influence the material body? Answer: mind and body are just two ways of looking at the same entity. Anxiety-provoking: this means that the mind's survival after the body's death is definitely an illusion.
2. The premise that the mind only exists in conscious awareness. So, how could the *conscious* mind influence the body? Answer: conscious thoughts, feelings, and motivations result from non-conscious yet meaningful mental processing. Anxiety-provoking: this means that conscious free will is yet another illusion.

Both culturally sanctioned core illusions may be surmounted for the sake of many patients' health. Not to explicitly answer these problematic

questions is to answer them implicitly. In the case of COVID-19, many do not get severely ill directly from viral overload but rather by immune overreactions that occur after the most infectious period of the disease. Stress-adapted micro-organisms such as SARS-CoV-2 may thrive on the speedy abuse of stress-deformed immune reactions. Thus, the mind plays a substantial role in the whole. This insight may bring a more profound view of the human social condition. People are not machines but are in-depth treated too much as such.

Meanwhile, clinicians may help acute COVID-19 patients and long-haulers by most profoundly valuing the direct influence of their clinicians' empathy as well as by trying to diminish social nocebo and heighten confidence. The whirlpool metaphor may help here, letting patients understand that their mind is one element in the whole, no more and no less. This transcends the present disaster.

Declaration of competing interest

There is no conflict of interest.

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