

## Covid-19 and cognitive bias

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*Cognitive biases can shape our understanding, often at an unconscious level, of events such as the covid-19 pandemic. An awareness of these biases can lead to more effective messages and measures to mitigate the effects of the pandemic, argues Narinder Kapur*

Our success in dealing with the covid-19 pandemic is partly determined by decisions and behaviour, whether that is on the part of politicians, scientists, and clinical leaders, or the general public. Such decisions and behaviour are in part determined by data and evidence, but are also determined by thinking processes. In the absence of key empirical evidence about a novel virus, thinking processes such as conjecture and speculation may play a more prominent part in decision making, and there may also be an over-reliance on models, which come with their own assumptions and implicit biases. Thinking may be biased in certain directions, and these directions may be helpful or unhelpful.<sup>1</sup> Awareness of such biases may help to formulate more effective messages and measures to alleviate the effects of the pandemic.

Cognitive bias has frequently been discussed in general healthcare environments where it may affect both patient care and staff wellbeing,<sup>2-4</sup> and also in science settings.<sup>5-7</sup> Biases in public health medicine have been well recognised.<sup>8-12</sup> There are a number of ways in which cognitive bias can be seen to play out in the covid-19 pandemic.

**Confirmation bias** – *seeking information that supports an initial conjecture and ignoring or playing down evidence that would be contradictory.* This can be seen if, for example, evidence is selected where countries have introduced strict lockdowns, physical distancing, face mask use, etc, and improvements in the trajectory of the pandemic have occurred, with evidence from countries which have been more lax, but have had similar trajectories, being given less weight. It may also lead to contextual variables in certain countries being ignored, but which may turn out to be as important as measures such as lockdown (e.g. environmental factors, population density, history of vaccination).

**Stereotype bias** – *attaching a blanket categorising label to an individual or event.* This can be seen in the use of the terms “Chinese Virus” or “Kung Flu” to describe the pandemic.

**Sunk cost bias** – *once organisations or individuals have committed resources and reputations to a line of action, they may be reluctant to make different choices or admit to error, in spite of those lines of action now being considered as possibly mistaken.* This can be seen in the reluctance of some government and expert figures to take courses of action in the pandemic which may be different from those to which they have committed significant resources or adopted major positions, even though the original commitments may now appear to be open to question. One way out of sunk cost bias is to encourage positive mood states and cognitive flexibility on the part of the key organisations and individuals.

**Common practice bias** – *reasoning that because something is common, it therefore has validity.* This was evident when the US government trade adviser Peter Navarro stated that because (as he claimed) all New York Hospitals were giving coronavirus patients the anti-malaria drug hydroxychloroquine on admission, therefore the drug was likely to be an effective remedy for the condition.

**Optimism bias** – *the view that adverse events are more likely to happen to others than to oneself.* This could be seen in the early stages of the pandemic, both in countries and in people within a country – with some western countries thinking that the pandemic would be confined to Asia, and people within a country underestimating the likelihood that they will catch the virus, and therefore ignoring public health warnings and physical distancing guidance. The key effective measures would have been greater awareness and preventative actions in those early stages, with realism replacing optimism.

**Loss aversion bias** – *the pain of suffering a loss has more impact than the gain from an equivalent benefit.* This has been evident when the consequences of the fear of catching a virus appear to outweigh the benefits from taking alternative measures. Thus, suffering chest pains and refusing to attend hospital due to fear of catching a virus at the hospital may override consideration of the benefits of having investigations for a possible cardiac illness.

**Anchoring bias** – *excess focus on information which happens to be prominent.* This can be seen when a reduction in cases of covid-19 or deaths is automatically associated with salient measures such as lockdown, when it could also be due to other factors, such as the natural evolution of the virus over time, changes in environmental variables such as temperature, etc. In clinical decision making settings during the current pandemic, such bias may be evident where shortness of breath and a high temperature are immediately diagnosed as likely being due to covid-19, while other possible important diagnoses such as sepsis may be ignored<sup>13</sup> (although such a diagnosis of covid-19 may be understandable in the current testing climate).

**Zero-sum bias** – *A loss to another person is erroneously seen as a gain to you, and vice versa.* In the case of the coronavirus pandemic, fewer resources for some

countries may mean more resources for other countries, but this may result in more infections in the former countries, which may then be more likely to spread to the latter countries.

**Status quo bias** – *people prefer a sense of familiarity and for things to stay as they are, with inertia taking priority over action.* This may in part explain why some governments were more willing to accept the status quo and ignore warnings of the devastating consequences of pandemics, even though the need for pandemic preparedness had been clearly and repeatedly stated.<sup>14</sup> Related to this is a clinging to old habits, especially those driven by self-interest, where members of the public, and even senior figures in public life, have given in to the temptation to ignore social distancing guidance and have ventured out.

**Framing bias** – *reactions to information may depend on how it is presented.* In the case of the covid-19 pandemic, there is an abundance of some data (while certain important data are not available), and the way data are presented may well influence thinking and behaviour. In general, data which are framed so as to highlight benefits as opposed to risks will appeal to people. Thus, stating that X action will save 90/100 lives will make it more likely to be adopted compared to saying that Y action will result in the loss of 10/100 lives.

The biases listed above are of necessity provisional and tentative. As we improve our understanding of the science of covid-19, its prevention, transmission, and treatment, we may then also have a better understanding of the biases that influenced our thinking and actions about the virus, and thus which actions might be more effective in the future. One clear lesson is that government advice in the future should as much as possible be based on relevant empirical evidence,<sup>15</sup> rather than assumptions, biases, or fears, which could be regarded as adding “noise” to a system. Where such evidence does not exist, this should be openly acknowledged, so as to avoid over-confidence in decisions which may prove erroneous, or the promulgation of fear in a way that can be harmful and contagious.<sup>16</sup>

Although my main message is that awareness of cognitive biases can lead to more effective messages and measures to mitigate the effects of the pandemic,<sup>17,18</sup> where cognitive bias is regarded as harmful, it may be helpful to take steps to reduce such bias. Education and awareness of cognitive biases are key, so that individuals and organisations question flawed or traditional thinking habits and try to promote evidence based thinking. At an individual level, the additional advice is to slow down in your thinking, pause and reflect, and seek external views.

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