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Social ties, fears and bias during the COVID-19 pandemic: Fragile and flexible mindsets

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Fears and social ties have been frequently discussed during the COVID-19 pandemic; however, it is still insufficiently examined how people have developed or mitigated social ties, bias and inter-group conflicts caused by fear. This review examined relevant COVID-19 literature and the psychology of anxiety, distress and aggression to consider how these adverse behaviours might be neutralised by cognitive flexibility. The results showed that social ties function as both risk and protective factors. The importance of social ties was repeatedly described as alleviating loneliness; nevertheless, people also expressed stigma-related anxiety (fear of criticism via empathic distress) associated with peer pressures and hostile vigilantism. Social ties and empathy have strengthened human cohesion and helped reconcile relations, but they also reinforced unfavourable biased bonds, terror and rumours that benefited in-group members while discriminating against out-group individuals. Furthermore, cognitive flexibility may assuage these negative consequences through shifting attention and perspective. Context-adjusted viewpoints and reciprocal dialogues seem crucial. The subsequent mitigation of misunderstandings, fear-induced bias, and maladaptive distress appraisal may lead to more reasonable and flexible recognition of social ties. The significance of this conclusion is in its potential for implementing intervention programmes to reduce pandemic-induced fear, and it could help to address other relevant issues, such as refugee crises and displaced people, a phenomenon that is globally developing discrimination, stigma and polarised blaming. It is worth further investigating how flexibility and inter-group empathy help pursue humanitarianism.

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Introduction

Fears and social connections have received significant attention during the coronavirus disease 2019 (COVID-19); however, limited attention has been directed toward the psychological and societal consequences of the prevailing pandemic. Although social ties are adaptive and crucial for survival, they can act as both risk and protective factors. While recent studies have argued that people who value social ties personally or culturally often gain better mental health outcomes, when socially isolated, excluded, or subjected to rumours, these people might be overly affected by criticism, shame and anxiety (Holt-Lunstad 2018; Jeste et al. 2020).

During the pandemic, observations toward others have increased, and people might have become more susceptible to others' criticism (Biswas et al. 2021; Saeed et al. 2020). When subjected to quarantine or rejection (discrimination), they are frequently afraid of losing respect and value in the eyes of others. Besides such worries about self-worth, people were also worried about the distress they caused to others, which involves other-focused concerns (OFCs) (Hornsey et al. 2021). Namely, in addition to the fear of being infected, fear of infecting or distressing others has also been described (Shanafelt et al. 2020). OFCs are thought to be relatively more common in group-oriented societies where people pay more attention to others' thoughts or feelings in an empathic manner (Mathur et al. 2010; Lewis-Fernández and Kirmayer 2019). In many collectivistic cultures, inter-personal relationships are more strongly valued and public embarrassment (stigma) or error (disturbance) is frequently avoided via OFCs. OFCs might have increased due to COVID-19 as OFC-induced cooperation and collectivistic behaviours can help assuage the outbreak (e.g., wearing masks or receiving vaccinations).

It can be further speculated that OFCs or other-oriented anxiety might have globally arisen in the pandemic (Montemurro 2020; Tei and Wu 2021), but questions remain as to how they might be triggered and experienced. Such nuanced psycho-social investigation on OFC-related anxiety and shame belief (fear-induced bias) has been largely overlooked, but it is vital in the post-pandemic context, as anxiety may persist and grow.

Another question worth asking is whether and how a sense of belonging could also exaggerate conflicts and prejudice between groups during the pandemic. Although people develop a sense of social ties, social identity and empathy through daily life, in practice, these experiences are often biased towards out-group members, prompting social polarisation (Lantos and Molenberghs 2021; Fujino et al. 2020; Tei et al. 2019a; Simas et al. 2020). In other words, global fear and uncertainty can reinforce a sense of social ties oriented toward in-group members, but these experiences might also foster racial and political tensions as well as discrimination against virus-infected groups (Lees and Cikara 2021; Mathur et al. 2010).

These inter-group conflicts and discriminations may be associated with fragile or impulsive behaviours that oppose socially flexible behaviours, e.g., an attitude or ability to change/adjust performances according to occurring situations (Uddin 2021; Fujino et al. 2017). However, this issue is still insufficiently investigated. Thus, it calls for further exploration of relevant cognitive literature, which could help illuminate how people might construct or comprehend inter-personal situations and behave (mal)adaptively. While many COVID-19 related studies report incidents wherein people frequently show socially maladaptive (or inflexible) behaviours, it is informative to search for an overarching cognitive explanation. We were thus motivated to explore possible psychological mechanisms of fear-induced bias and conflicts, and examine how cognitive flexibility might assuage these adverse consequences of the pandemic.

This paper aims to examine how people have developed and mitigated social ties, bias and tensions caused by fear of the COVID-19 pandemic. First, other-focused social anxiety was studied (i.e. OFCs related to social anxiety, such as fear of offending/infecting others). Next, inter-group conflicts that could be associated with fear-induced bias (maladaptive distress) were inspected. Subsequently, the psychology of these unfavourable behaviours and flexibility was briefly illustrated in cognitive and brain-imaging studies to evaluate how a conceptual model could show that cognitive flexibility might weaken these behaviours.

Methods

We searched pertinent COVID-19 literature on social ties, fear, bias and cognitive studies concerning anxiety, conflicts and flexibility. We mainly searched the PubMed and Web of Science databases. In this preliminary review, considering that the COVID-19 pandemic is a relatively novel subject matter, evidence on social ties, fear and bias were also searched using Google Scholar. Based on previous reviews of the literature (Chaimowitz et al. 2021; Trudgill et al. 2020), the following keywords and alternatives were used: 'COVID-19', 'social ties', 'social identity', 'fear', 'anxiety', 'bias', 'offending others', 'stigma', 'group conflicts', 'maladaptive' and 'cognitive flexibility'. Inclusion criteria were broad: we included literature that involved the development or mitigation of social ties, inter-group bias and conflicts associated with pandemic-induced fear, regardless of age, gender, or ethnicity. Moreover, a manual search of the reference sections of these articles was carried out to identify other potentially relevant articles up to March 2020. Exclusion criteria were studies that were not published in English, articles without references or those with only abstracts indexed in a searched database without a full manuscript. In the initial search, 1314 pieces of literature were identified. All retrieved studies were assessed for eligibility according to the above conditions, and to reduce selection biases. A checklist and quality appraisal tools were also used (Moher et al. 2015). Consensus ranking was performed to screen all sourced data for inclusion in the references. A narrative synthesis involving interpretation and representation in a collective form was used to process the results (Campbell et al. 2003; Chaimowitz et al. 2021).

Results

We observed that social ties helped strengthen inter-personal relationships; however, a sense of social ties also appeared disproportionately augmented in the form of an in-group identity (sense of belonging), peer pressures and empathic distress. During the earlier phase of the pandemic, some people overstated worries about their COVID-19-positive status being revealed to others and causing distress for them. Moreover, fear-induced stereotyping and vigilantism were manifested with hostility.

Other-focused social anxiety. Results showed that people globally experienced various OFCs, ranging from (1) altruistic to (2) relatively more biased. Altruistic OFCs involve worries about infecting or offending others, which are frequently expressed among the general population, non-health workers and medical professionals (May et al. 2021; Fisher et al. 2021; Shanafelt et al. 2020). Biased OFC was also observed among the general population and medical professionals and was often complemented by obsessive distress appraisals, rumours and stigma.

Some people reported OFC together with feelings of ostracism. Even after quarantine, they felt judged or feared situations where acquaintances avoided interaction (Ransing et al. 2020; Shelus et al. 2020; Tei and Wu 2021). Moreover, other people indicated

elevated OFCs and distress about the risk of transmitting the virus to their loved ones besides the fear of their own infection (Banerjee et al. 2021). For example, an individual who was found to be positive and the cause of 38 persons' infection expressed that he was preoccupied with feelings of embarrassment, agony and anxiety as to how he might have infected more subjects and what other people in his neighbourhood would be thinking about him. These concerns and feelings of distress seemed to be further aggravated by stigma or peer pressures (Sahoo et al. 2020).

When associated with traumatic/suicidal incidents, OFC was also communicated with much more amplified (biased) empathic distress. The number of COVID-19-related suicides in Asian and Western countries presumably has been provoked by shame or self-blame (guilt). This was accompanied by experienced stigma (i.e., actual discrimination and harassment) and also anticipated (imaginary) stigma (Montemurro 2020; Mamun and Griffiths 2020). Some people with a positive infection result, or even suspected infection, performed suicide to ensure that others were not infected (Griffiths and Mamun 2020; Thakur and Jain 2020; Goyal et al. 2020). Specifically, the reasons for OFC-related suicide have ranged from relatively rational (suicide after learning about COVID-19-positive status) to imaginary fears (misunderstood or not having COVID-19-positive status).

As such, during the earlier phase of the pandemic, a considerable number of people have expressed OFC-related anxiety; worry about their COVID-19-positive status being revealed to family, colleagues or teammates in sports and causing distress or trouble for them (withdrawal of work, lectures and athletic games), thereby avoiding medical examinations or contacting others (Kato et al. 2020; Rubin 2020).

Inter-group conflicts. The importance of social ties and empathy was strongly evidenced as having weakened peoples' loneliness and helped reconcile relations (Marzouki et al. 2021; Banerjee and Rai 2020); however, group conflicts, discrimination and vigilantism also manifested globally, possibly by fear-induced bias and stereotyping.

During the pandemic, some peoples' sense of social ties appeared to be augmented but restricted to in-group identity (sense of belonging). People were frequently judged and treated verbally and physically as members of internal or external groups rather than as individuals. Prejudices, inaccurate negative beliefs and hostility have been observed worldwide. For instance, virus-related categorisations of the desired in-group (uninfected/vaccinated) and out-group (infected/unvaccinated) have developed an inter-group differentiation (Lam 2021), and hatred and violence between ethnic/cultural, religious, or political groups have increased significantly (Jordan et al. 2021; Parker and Mounk 2020).

In addition to the prejudices provoked by fears, people are at risk of developing an impulsive and fragile mentality and emotional turmoil. For example, according to Lam (2021), government's ruling by decree was enacted in Hungary, Kenya and the Philippines indefinitely. Under increased socio-political pressure and curfew, police and military personnel were authorised to shoot violators of the government's orders to prevent violence (Wasike 2020). Violent vigilantism has also been observed in Japan, where the approach to slow down the outbreak heavily depended on peer pressure (such as stay-at-home recommendations and wearing face masks). Meanwhile, peer pressure may have also prompted vigilant practices (McCurry 2020), resulting in highly antagonistic behaviours by harassing potential spreaders through severe internet bullying of rule-breakers. For example, those who did not follow the government's stay-at-home recommendation have been criticised or threatened,

e.g. their pictures were posted on social media (Osaki 2020). Furthermore, long-distance travellers, like truck drivers, considered virus-carrying distressing invaders of communities, have been common targets. Moreover, not only people involved in innocent transportation duty have been severely hunted down. Healthcare staff and their families have also been bothered.

Psychology of social anxiety, conflicts and flexibility. According to recent studies, cognitive flexibility can alleviate COVID-19-related distress, fear-induced bias and conflicts (Shanahan et al. 2020; Dawson and Golijani-Moghaddam 2020; Kroska et al. 2020; Feldman 2020). Cognitive flexibility may buffer fragile impulsivity by adaptive shifting or maintaining attention between conflicting perspectives (Daks et al. 2020). It may support thinking about different perspectives or decision rules simultaneously, highlighting the significance of those points of view, thereby resolving emotional conflicts or easing bias and distress. Meanwhile, social anxiety during the pandemic frequently involved emotional hypersensitivity and inaccurate or maladaptive interpretations of thoughts pertaining to social encounters (Montemurro 2020; Tei and Wu 2021). In particular, inter-personal distress and OFC-related anxiety were associated with excessive empathic concerns and peer pressure (Ellis et al. 2020). Furthermore, COVID-19-related anxiety was also linked with responsibility beliefs and obsessive-compulsive symptom trends in the general population (Meşterelu et al. 2021).

Discussion

The study aimed to examine how people developed and mitigated social ties, bias and inter-group conflict induced by fear during the pandemic. In this endeavour, we outlined related social and cognitive psychology theories into a framework and inspected how flexibility might be counteracted by fear-induced bias and conflicts. Our results support the view that social ties and empathy can function as both risk and protective factors. Social ties and empathy can mitigate solitude and enhance in-group cohesion; however, they can also heighten inter-group conflicts or distort mental well-being, which could be worsened by fear-induced bias or reduced cognitive flexibility.

The dark side of social ties and empathy has long been emphasised in different academic disciplines, but the COVID-19 pandemic has shed additional light on the subject. The above results are in accordance with previous interdisciplinary research (Bloom 2016; Prinz 2011; Throop and Zahavi 2020). In philosophy, for instance, there is copious literature on how the meaning we ascribe to specific concepts and how we use them to justify our judgements and actions uncover, for different reasons, prejudice, marginalisation, and even violence (cf. Throop and Zahavi 2020). Such complex psychological processes underlying violence and prejudice have been an essential question to scholars in philosophy, social psychology and psychiatry.

Social anxiety and empathy bias. Our results suggest that OFC-related anxiety (worries about distressing others) can be aggravated by fear-induced bias and that stigma (both experienced and anticipated) and empathic distress can be its potential precursors. It is possible that OFC-related anxiety can be amplified when feelings of distress (self and others), worries about the loss of social ties (or self-worth), and anticipated stigma become maladaptive. The gaps between self-perceived information and actual information of other people (impression or evaluation of oneself) have long been a hot topic in psychology, especially in the theory of self-conscious emotions, such as guilt, shame or pride (Tangney et al. 2012). The incongruity between self-acquired knowledge and actual knowledge of the pandemic has also been

underlined in recent COVID-19 research (Marzouki et al. 2021). Our results extend these arguments to the case of social emotion. Stigma and empathy (perspective-taking) can be considerably misrepresented or biased by fears (Sahoo et al. 2020; Alvi et al. 2020; Morrison et al. 2016).

Neuroscientific studies have suggested that social anxiety can be characterised by limbic and cognitive alterations, as well as biased interpretation of other peoples' behaviours (Brühl et al. 2014; Miskovic and Schmidt 2012). Altered brain activity within the amygdala, insula, medial prefrontal cortex and temporoparietal junction (TPJ) is commonly reported in participants who viewed experimental stimuli (Brühl et al. 2014; Tei et al. 2014). During such empathic reactions, the affective experience can be augmented by activating the fear circuitry, increasing overlap in self and other perspectives (affective empathy) or decreasing distinction between perspectives of self and others (cognitive empathy). Cognitive empathy differentiates perspective or emotion between oneself and social encounters to enable cognitive understanding of others' viewpoints, thereby mitigating perspective or empathy bias (Alvi et al. 2020; Morrison et al. 2016).

Impacts of cognitive flexibility on inter-group conflicts, fear and bias. Recent studies support the notion that flexibility and cognitive empathy might be essential for alleviating social anxiety (Eslinger et al. 2021; Clarke and Kiropoulos 2021). The brain-imaging study of OFC-related anxiety showed that feelings of distress were maladaptively amplified when people misinterpreted the feelings, perspectives or intentions of others (Tei et al. 2020). More specifically, the study compared OFC-related anxiety ratings with empathic disposition, cognitive flexibility and empathy-associated brain activity induced by viewing video clips of people who sang badly. The results showed that OFC-related anxiety scores were positively correlated with dispositional affective empathy (personal distress through emotion sharing) and amygdala activity; and negatively correlated with cognitive flexibility level and activity in the TPJ believed to support cognitive empathy and flexibility (Crone and Dahl 2012; Tei et al. 2019b; Shamay-Tsoory 2011).

Cognitive flexibility might also prompt a balanced viewing of inter-personal situations, which is subserved by cognitive (executive) functions (Uddin 2021; Robbins and Arnsten 2009). The abovementioned TPJ-related system in the brain can further support the shifting of perspective, thereby moderating self-centredness or egocentric bias (Soutschek et al. 2016). Effectively, cognitive flexibility subserves context-adjusted understanding of inter-group situations by facilitating a change in perspective or decision rules (Uddin 2021; Tei et al. 2017; Binney and Ramsey 2020). Based on the above literature, a conceptual model of fear-induced bias and flexibility is presented in this research (Fig. 1). This model shows that whereas social connections nurture empathy skills and social identity, social anxiety and conflicts can be developed primarily by a catastrophic cycle of miscommunication, fear-induced bias and maladaptive distress appraisals such as blame, guilt and anger. Meanwhile, cognitive flexibility may assuage these negative states by helping to disengage from the cycle.

Indeed, our fear-induced bias can enhance hazardous inter-group behaviours. Although social ties, fears and hypervigilance for one's own health likely serve as innate, adaptive, survival-supporting mechanisms, they can also induce destructive stigmatisation or bias in patients and people belonging to particular groups (Chaimowitz et al. 2021; Gonzalez-Liencrea et al. 2013). This was evident from the resurgence of xenophobia and offensive behaviour toward coronavirus evacuees and against any people who have been released from COVID-19 quarantine

(Bavel et al. 2020; Ransing et al. 2020; The Guardian 2020). Peoples' imaginary fears are easily created by cognitive bias; they can emphasise threats or blame toward out-groups (Lantos and Molenberghs 2021).

Thus, the current study might also be relevant to recent refugee and migration crises, globally developing fear, stigma and racial discrimination (Ellermann 2020; Bajaj and Stanford 2022), which recalls the earlier phase of COVID-19. Rather than polarised blaming, the pursuit of peace and tolerance might be supported by cultivating empathic and flexible mentalities.

The current study adds to previous research by exploring how people expressed feelings, thoughts or beliefs in response to a pandemic that has created a striking psychological and social impact, such as fear-induced bias. The results exposed disturbing and worrisome trends of human behaviour during the pandemic, which are probably linked to complex biopsychosocial factors. They also described the chaotic paths and outcomes that social ties and empathic conduct can produce in connection with out-group members when biased perceptions and beliefs about others are involved. Further empirical studies are required to uncover different layers of meaning that people cognitively disclose positively or mistakenly—beliefs about reality and the reality of others.

Limitations. This study has three main limitations. First, the research method was based on a literature review on the subject with a narrative synthesis because the available evidence on OFC-related anxiety and inter-group conflicts was not yet suitable in the form of a meta-analytic review. Secondly, some studies considered were preprints and articles that have not yet been reviewed and may not be free of certain biases. Although possible bias cannot be discarded, every effort was made to minimise its possibility. Finally, as the pandemic is still emerging, conclusions cannot be drawn concerning the levels of hypothesised exacerbation of stigma-related anxiety and group conflicts worsened by fear-induced bias and reduced flexibility. There are probably still not enough empirical studies to evaluate the effect of different stigmatisations connected with social anxiety and hostility. Despite these limitations, the available materials show that certain vulnerable groups may have been underestimated and deprived of their qualities.

Conclusions

By investigating the psychological and societal consequences of the prevailing pandemic, this study recaptures the paradoxical double effect of social ties and empathic behaviour. In facing pervasive fear and uncertainty during the COVID-19 pandemic, the significance of social ties was globally described as a solid positive resource to reduce different kinds of concerns. However, social ties and empathy have also induced stigma-related anxiety, prejudice, and inter-group confrontation due to elevated in-group identity (sense of belonging), peer pressures or empathic distress. Shifting our attention to highlight context-adjusted perspectives and reciprocal dialogues seem essential to lessen these adverse effects. The subsequent mitigation of misunderstandings, fear-induced bias, and maladaptive distress appraisal may lead to more reasonable and flexible recognition of social ties. To this end, shedding more light on the underlying cognitive mechanisms of inter-group conflicts and exploring forms of flexibility can guide understanding (Lantos and Molenberghs 2021; Binney and Ramsey 2020) and help appease a variety of inter-group aggressions, promoting cooperation instead.

The practical implications of the results in this study are pertinent for scientists and policymakers that have to address and solve problems of escalating inter-group conflict and disruption.

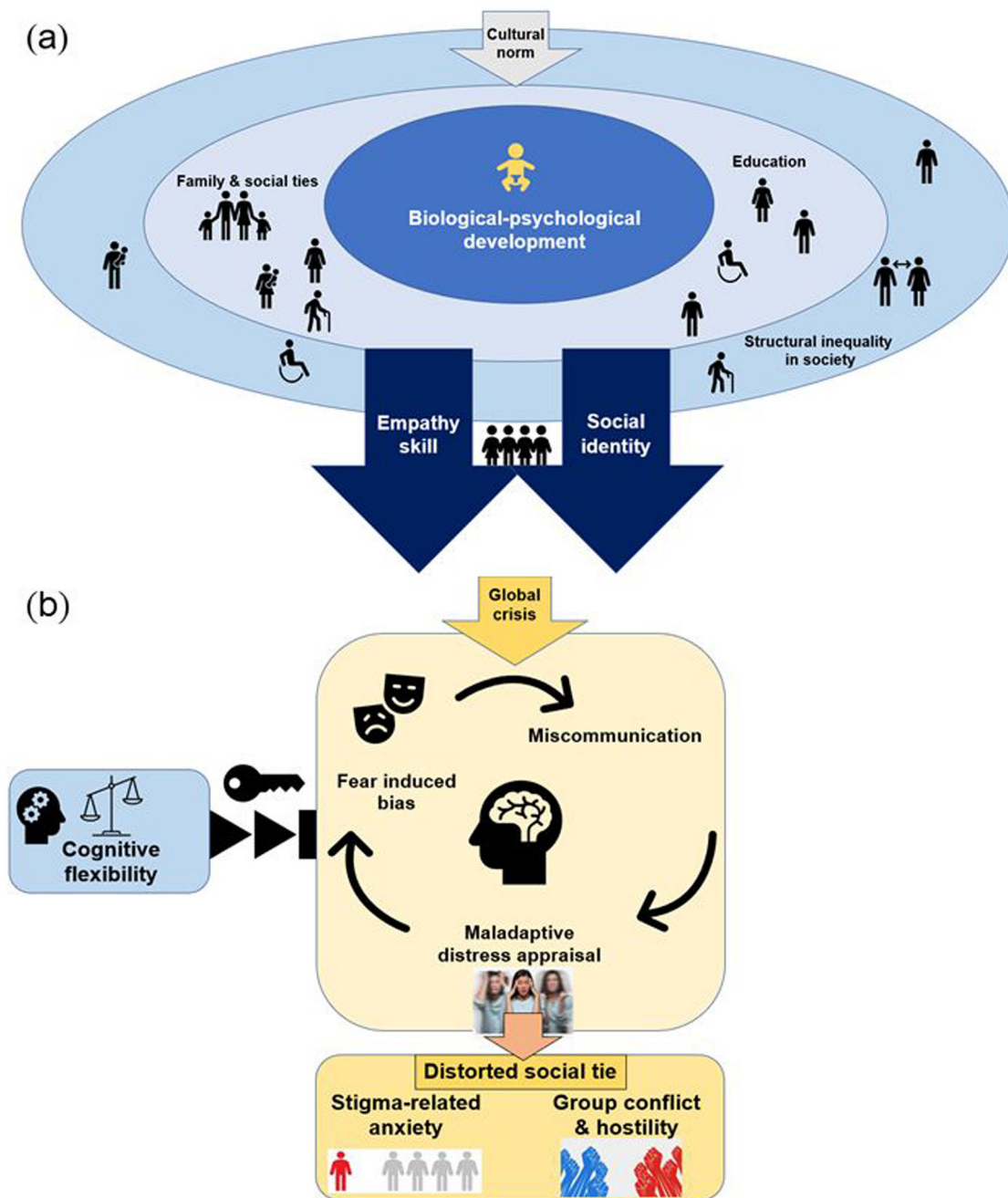


Fig. 1 Theoretical models of social tie, fear-induced bias and flexibility. **a** Cognitive development of empathy skills and social identity and **(b)** Fear-induced bias and flexibility. **a** Empathy skills and social identity may be nurtured by education and family/inter-personal connections, whereas they can also be affected by structural inequality in society. **b** Anxiety and conflict are characterised primarily by the catastrophic cycle of miscommunication, fear-induced bias and maladaptive distress appraisal. Meanwhile, cognitive flexibility may help disengage from the cycle.

They can inform the planning of intervention programmes that seek to curtail the mental health impact of very critical situations, such as a pandemic. Furthermore, they can be useful to manage other global emergencies that also trigger and amplify insensitive behaviours, posing significant challenges for societies, e.g. refugee crises and the problem faced by displaced people. As fear and anxiety seem to be awakened by conditions that people tend to share, encouraging humanitarian bonds is becoming a more vital priority. However, practical ways of cultivating cognitive flexibility and more concrete solutions for what can foster a greater sense of social connectedness to facilitate social reconfiguration remain elusive. We hope this work serves to acknowledge

awareness to search for ways to encourage cognitive flexibility and inter-group empathy, thereby stimulating humanitarian action, especially during these uncertain times of the COVID-19 pandemic.

Data availability

The authors confirm that all data analysed during this study are included in this published article. Furthermore, data sources supporting the findings of this study were all publicly available at the time of submission.

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Competing interests

The authors declare no competing interests.

Ethics statement

The study was granted exemption from requiring ethics approval, because it is a review article about knowledge management and production processes.

Informed consent

This research does not contain any studies with human participants performed by any of the authors.

Additional information

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