

From the Editor's desk

By Kamaldeep Bhui

A fine balance in the science of risk and resilience

The origins of the term resilience lie in the fields of mechanics and engineering, but its usage has moved into the fields of ecology, psychology, psychiatry, public health, social sciences, and even to the environmental and sustainability discourse.^{1–3} Ayyub³ considers how to construct resilience metrics and proposes a framework based on the mechanical sciences; thus, there are 'brittle, ductile, and graceful' events, followed by 'better than new', 'good as old', 'better than old', 'as good as old', 'worse than old' outcomes. Applying these notions of resilience to human populations raises contradictions between restitution as a goal and inexorable movement and events requiring adaptation. The intergovernmental panel on climate change's report in March 2014 warns of major impacts of climate change on human health and security.⁴ The report defines resilience as: 'The capacity of social, economic, and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity, and structure, while also maintaining the capacity for adaptation, learning, and transformation.' The IPCC's definition encompasses changing in function, identity and structure, as well as adaptation and transformation. After all, who is not changed by disasters and trauma?

Environmental, natural and man-made disasters seem to be increasing in number and impact; for example, flooding and coastal disasters are linked to global warming. As a consequence there is a growing urgency to find ways of bolstering individual and population psychological resilience and to maintain societal functions (social or population resilience) in the face of adversity. The same applies to the prevention of new-onset mental illness and disability due to harmful events that can have life-long consequences, for example, early childhood traumatic events as well as contemporary disasters and even war and terrorism.^{5,6} However, the way we perceive disasters, the historical narrative we sustain, and the story we tell ourselves about new and similar events, shape our ability to survive them.⁷ The evidence suggests that social support and practical aid are the most powerful interventions (see editorial by Bisson, pp.329–330), however, there are some intriguing new findings about the place of epigenetics^{4,8,9} and neurobiology¹⁰ and the impact on resilience.

This issue of BJPsych brings two broad approaches to understanding individual resilience, although not all studies foreground these aspects of their data. A number of studies examine man-made disasters like war, interpersonal violence and terrorism. Dyb *et al* (pp.361–367) show post-traumatic stress levels were higher in survivors of the '2011 massacre' in Norway; women, ethnic minorities, those with high levels of trauma, pain or loss fared worse. A meta-analysis of trauma-exposed young people found interpersonal violence was predictive of PTSD reactions, especially among girls. However, in both studies not everyone received a diagnosis of PTSD, which raises questions about which characteristics confer resistance or resilience to psychological distress. Elbogen *et al*'s study of veterans (pp.368–375) showed that aggression was sustained in non-conflict zones if they reported PTSD and alcohol misuse. Again, early-life influences were important; younger age, financial instability and a history of violence before service were predictive of later violence. Cullen *et al*'s (pp.354–360) study of children at risk of schizophrenia

(either by family history or by presence of antecedents) found they experienced more stressors and adverse life events, and they were more stressed by them, suggesting that reactions to stress are useful treatment targets. Morgan *et al*'s elegant study (pp.346–353) shows a complex multiplicative relationship between the effects of child abuse and the number of life events on the risk of future psychotic experiences. In combination, abuse and adverse experiences rapidly escalate future risks of psychosis, more so than their individual contributions. As hinted in these studies, psychological processes and the meaning given to events seem instrumental in determining outcomes. A fascinating study by Ando and colleagues (pp.341–345) of comedians and actors shows comedians to suffer from 'cyclothymic' traits, hypothesising that the opposite emotional poles buffer each other to provide a different sort of personality performance and mode of resilience than that, for example, found in actors. Mindfulness for psychosis (Chadwick, pp.333–334), tackling self-stigma as a source for negative cognitions and poor self-esteem (Rüsch *et al*, pp.391–397), and group problem-solving (McAuliffe *et al*, pp.383–390) seem to carry much evidence of their effectiveness and are slowly entering practice, in contrast to the speed with which pharmacological agents are adopted and then dropped (see editorial by Shorter, pp.331–332).

Studies of resilience and its history seem to suggest that individually resilient minds are not a product of only the individual but of multiple interpersonal, societal, historical, as well as genetic and epigenetic expressions and interplays. We are vulnerable to external environmental threats, man-made disasters including war and conflict, interpersonal violence as well as our genetically influenced destinies (see Balan *et al*, pp.398–399). Yet we adapt and survive. Studies of resilience are needed alongside studies of illness. Some studies suggest vulnerability may be found in genetic risks and resilience in environmental and social influences,¹¹ others suggest resilience may also be in part or mostly influenced by genetic polymorphisms.^{12–14} There is a dynamic impact of stressors on brain anatomy with greater reductions of hippocampal volume in boys compared with girls exposed to emotional abuse, making gender responses to disasters another fruitful research focus.¹⁵ Notwithstanding the ethical debates that must take place, research into inflammatory processes¹⁶ and resilience-conferring proteins involved in cell signaling and synaptic transmission all offer hope for future understanding and possible interventions to promote resilience and reduce vulnerability.¹⁰ In the short term, shaping our contexts, securing social support, and changing patterns of cognitive coping can improve resilience.¹⁷ Social relationships, support and practical assistance, adaptation and the ability to transform our environments and our selves are our most powerful and effective interventions.

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