

Science & Society

Targeting Mindsets, Not Just Tumors

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Mindsets – core assumptions about the nature and workings of things in the world – are a critical but relatively understudied variable that can influence mental and physical health in patients with cancer. Precise, targeted psychological interventions aimed at instilling adaptive mindsets have the potential to transform supportive care in oncology.

The hallmark of the cell is its remarkable capacity for division and growth. Cancer thrives on hijacking and unleashing this power, driving the uncontrolled growth and spread of abnormal cells throughout the body. Halting the spread of these malignant cells has been the focus of oncology for decades. Recent years have witnessed a dramatic shift in the landscape of anticancer therapies, from largely toxic and only moderately effective chemotherapeutic agents towards more precise and targeted therapeutics like kinase inhibitors, monoclonal antibodies, and immunotherapy [1]. Thanks in large part to these advances, today two-thirds of all patients with cancer will live for at least 5 years after their diagnosis [2].

However, cancer is more than just a physical disease. The psychological and social impact can be relentless, presenting challenges not just at diagnosis but throughout treatment and even well into recovery [3]. Unfortunately, this can often spiral negatively and lead to catastrophic thinking processes that can drive depression and anxiety, which are 2–3 times more common in patients with cancer than in the general population [4]. However, these negative psy-

chological ramifications are not an inevitable response to the diseased state of the body. Two patients with the same type and stage of cancer may look very different psychologically: while one patient's catastrophic thoughts propel them into depression and anxiety, another clinically indistinguishable patient may view it as an opportunity for positive change.

There are a number of factors that influence how a patient responds to a diagnosis of cancer, manages the ongoing challenges of treatment, and navigates their post-treatment life, including interactions with their care team, social support, coping style, personality, and socioeconomic status [5]. However, key, but often overlooked, factors is the mindsets that patients hold. Mindsets are core assumptions about the nature and working of things and processes in the world that orient us to distinct ways of thinking and behaving (Figure 1). Not necessarily true or false, mindsets are simplified understandings of what is possible or likely. People have mindsets about many things in life (e.g., 'intelligence is malleable', 'healthy foods are disgusting', 'statins are effective'). When it comes to cancer, mindsets about the meaning of illness and the capability of their bodies are particularly important.

Is Cancer a Catastrophe or an Opportunity?

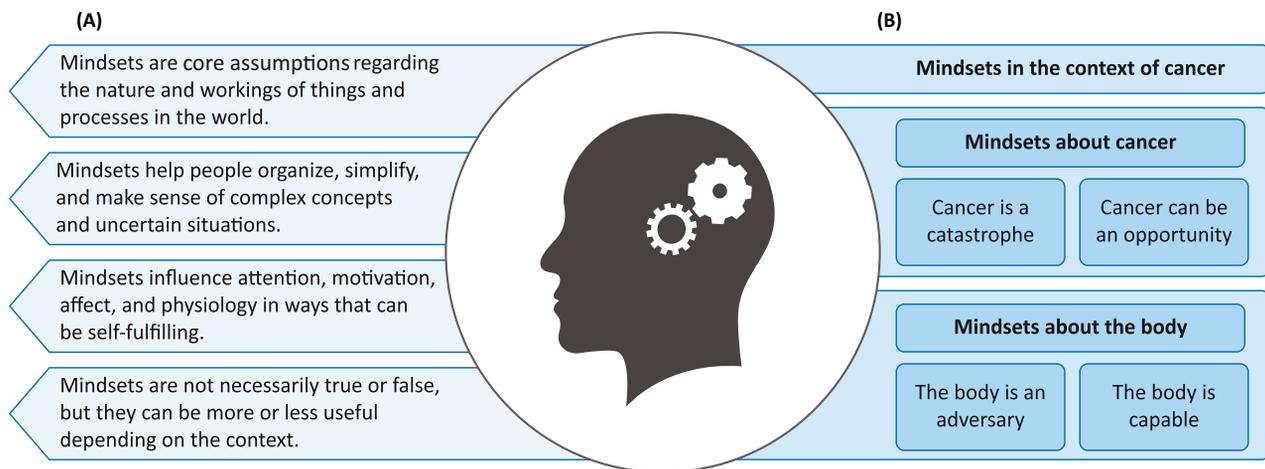
In the face of a cancer diagnosis, some people might assume 'this is a catastrophe'. This view is not entirely unfounded as both cancer and cancer treatment can present considerable challenges. However, like the cancer itself, the mindset that 'cancer is a catastrophe' can take hold and spread, permeating all aspects of a patient's life. A patient who has the mindset that cancer is a catastrophe may find themselves stuck in an exhausting cycle of rumination and worry. They may

retreat from social roles and activities they previously enjoyed. Burdened by the frustrations and uncertainty that this mindset directs the patient's attention to, they may not be motivated to take an active role in managing their own medical care.

More adaptive mindsets are possible. Some people adopt the mindset that 'cancer is manageable' and some may even view cancer as an opportunity. These mindsets will also permeate a patient's life, operating in ways that can become self-fulfilling. The mindset that 'cancer can be an opportunity' can shift a patient's perspective towards meaning making, foster a renewed appreciation for life, inspire personal growth, or motivate important lifestyle changes like eating well and getting exercise. Viewing cancer as an opportunity does not mean that cancer itself is a good thing or that battling it is easy, but rather that the experience of cancer can be a catalyst for positive change that would not have been possible otherwise.

Is My Body Working for or against Me?

A cancer diagnosis may also evoke concerns about one's own body. Patients may ask themselves: is my body working against me? Some patients initially adopt the mindset that their 'body is an adversary' and their own cells have turned against them. This selective interpretation shifts attention towards physical symptoms and side effects, which are interpreted as a signal of the body's adversarial nature. These patients may seek unneeded treatments or request unnecessarily strong medications because they perceive their body as inherently incapable. This impact of this mindset may spread far beyond the boundaries of treatment, increasing fear of cancer recurrence months or years down the road.



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Figure 1. What Are Mindsets and How Do They Work?

(A) Facts about mindsets.

(B) Key mindsets that matter in the context of cancer.

However, there are other, more useful mindsets for patients to have about their body after a diagnosis of cancer. Patients can adopt the mindset that their ‘body is capable’ and is both strong and naturally resilient. This mindset orients patients towards signals that their body is handling cancer well rather than towards the symptoms of illness and side effects of treatment. It may motivate patients to engage in health-promoting physical activities during their treatment rather than avoid them out of fear that their body is unable to handle any undue stress. Adopting and maintaining this mindset may help patients manage the fear of cancer recurrence that can emerge after the end of active treatment – a time during which some patients may feel that their body is particularly vulnerable to a recurrence of cancer [6].

Targeting Mindsets through Psychologically Wise Interventions

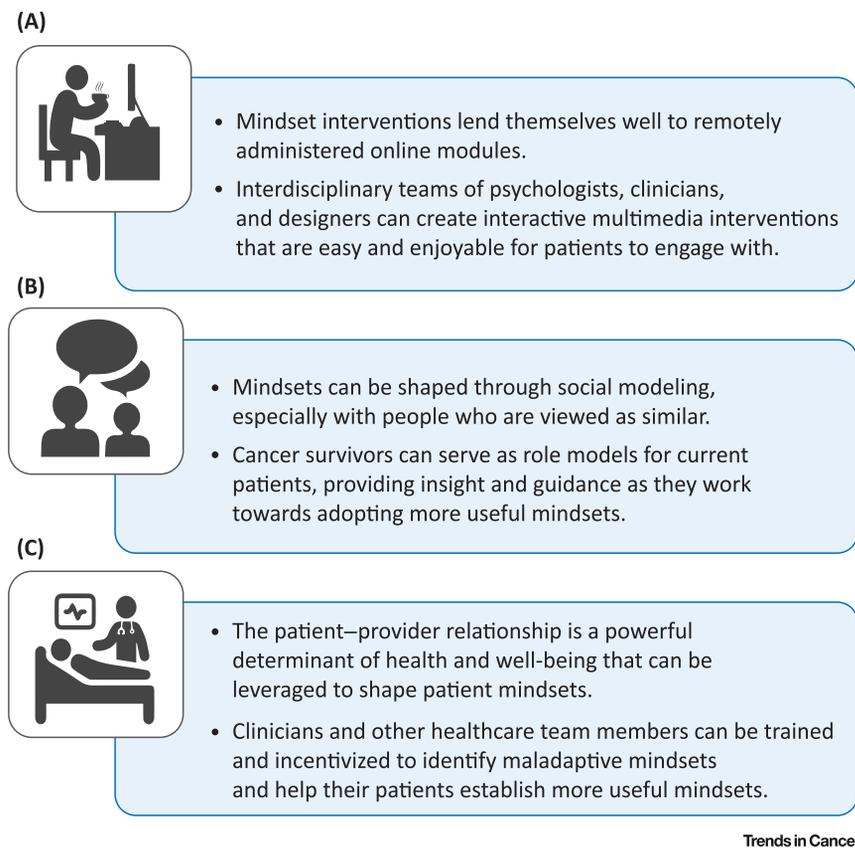
A patient’s mindset is not contingent on the objective clinical reality of their cancer. Above and beyond disease status,

these mindsets relate to physical functioning, social functioning, perceived health, and quality of life [7]. Even more importantly, mindsets can be changed. Just as more precise, targeted, and tolerable treatments for cancer have emerged in the field of oncology, similarly advanced interventions are emerging in psychology. Encouraging research on the psychological sciences of ‘wise intervention’ has found that mindsets are an especially useful target for interventions because they can be changed, and these changes confer significant downstream impacts [8].

Although these interventions have not yet been investigated in patients with cancer, encouraging evidence of their efficacy has been demonstrated in other disciplines. For example, short film clips presenting research on how stress can be useful (versus detrimental) to employees evokes a ‘stress is enhancing’ mindset that, in turn, leads to positive changes in motivation, mood, and physiology (e.g., regulation of cortisol, increased DHEAS) in the face of a stressor [9,10]. Brief classroom

workshops aimed at establishing the mindset that ‘intelligence is malleable’ (versus ‘fixed’) in students leads to sustained motivation and improved academic performance in mathematics over time [11]. In a randomized controlled trial of oral immunotherapy for children with life-threatening peanut allergies, framing information about symptoms and side effects as ‘a sign of treatment efficacy’ (as opposed to an ‘unfortunate byproduct’) made patients less anxious, reduced serious adverse events, and heightened treatment efficacy (as measured by higher levels of IgG4) [12].

Just as more precise cancer treatments have become widely available, it is time for wise psychosocial interventions to become the standard of supportive care in oncology. More diffuse psychosocial interventions including mindfulness-based stress reduction (MBSR), cognitive behavioral therapy (CBT), and psychoeducation, among others, have been applied in the context of cancer. These interventions provide proof of principle that focusing on the psychological and social elements of



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Figure 2. Strategies for Implementing Mindset Interventions in Oncology.

(A) Use remotely administered online modules. (B) Utilize the experience and insight of cancer survivors. (C) Leverage the patient–provider relationship.

the cancer experience can alter both functional and disease-specific outcomes [13]. However, these interventions can be burdensome, requiring in-person access to a team of specialized care providers, like psychologists or social workers, thereby restricting access and increasing costs. By contrast, precisely targeted, well-timed, and relatively brief mindset interventions are both time- and cost-effective, amenable to remote administration or other means of dissemination that do not add a burden to an already strapped patient or healthcare team.

A Call to Action

There are a number of ways that mindsets could be more effectively leveraged to

benefit patients with cancer (Figure 2). First, by packaging these interventions into digital toolkits or online modules, patients can access effective psychological interventions from the comfort of their own homes where they may be most receptive to them [14,15]. Second, we can empower current and former cancer patients to help to shift the cultural conversation around cancer. In sharing their own experiences, these potential role models can provide insight into the importance of adopting useful mindsets during the cancer experience. Finally, we can leverage the power of the patient–provider relationship and train patient care teams to identify patients who hold maladaptive mindsets – like the mindset that cancer is a catastrophe

or that the body is an adversary – and help these patients establish more adaptive mindsets.

Much like the growth and spread of malignant cells in the body, similarly malignant mindsets can cast a shadow over the lived experience of the patient. As we strive to target these malignant cells with the latest cutting-edge treatments, we should simultaneously strive to provide equally precise treatments for the psychological and social ramifications of the illness. We hope this Science & Society article serves as an inspiring call to action for granting agencies, medical institutions, and the healthcare establishment to recognize the potential of precise psychological interventions, like those that target mindsets, to better support patients as they navigate their cancer experience.

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