

EDITORIAL

Causal Mechanisms and Multidirectional Pathways Between Trauma, Dissociation, and Health

KATHLEEN KENDALL-TACKETT, PhD

Department of Pediatrics, Texas Tech University School of Medicine, Amarillo, Texas, USA

BRIDGET KLEST, MA

Department of Psychology, University of Oregon, Eugene, Oregon, USA

Do traumatic events increase the risk of health problems? Over the past decade, researchers in a number of fields—health psychology, medicine, nursing, epidemiology, and public health—have found that they do. In the early stages of this work, researchers worked independently and did not communicate with one another, which limited the application of their findings. For example, researchers in nursing and several fields of medicine—gynecology, gastroenterology, rheumatology—began to notice, quite independently, that patients with pain often had a history of child or domestic abuse (Kendall-Tackett, Marshall & Ness, 2003; Sachs-Ericsson, Cromer, Hernandez, & Kendall-Tackett, this issue). Unfortunately, for many years these findings were discounted because the pain syndromes were usually so-called functional conditions (such as irritable bowel syndrome or fibromyalgia), meaning that lab or radiologic findings rarely matched a patient's level of pain or impairment from that pain. Because these findings were not placed in a broader context, symptoms were viewed as idiosyncratic, written off as primarily psychological in origin, and were generally not of interest to health care providers.

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Address correspondence to Kathleen Kendall-Tackett, PhD, Department of Pediatrics, Texas Tech University School of Medicine, Amarillo, 1712 North Forest Street, Amarillo, TX 79106. E-mail: kathleen.kendall-tackett@ttuhsc.edu

In the late 1990s, the first major paper from the Adverse Childhood Experiences Study was to galvanize the issue of trauma and health. The Adverse Childhood Experiences Study included more than 17,000 patients in the Kaiser Permanente Health Maintenance Organization in San Diego, California (Felitti et al., 1998). It was the first large-scale project to conclusively demonstrate that patients who had experienced traumatic events as children had increased risk of developing a number of serious organic diseases, such as cancer, heart disease, diabetes, and chronic obstructive pulmonary disease. The more types of adverse childhood experiences patients experienced, the higher the risk of disease. These findings were too compelling for even the most skeptical health care provider to ignore.

The health of trauma survivors has also been of interest to professionals who work with military populations. Military personnel returning from combat often face a complex combination of physical and psychological injuries. Care providers must understand these relationships as they seek to address the health issues of soldiers returning from Iraq, Afghanistan, and other areas of active deployment (Kinder et al., 2008; Schnurr & Spiro, 1999).

Military research often focuses on the role of posttraumatic stress disorder (PTSD) as a mediator between trauma and health. But PTSD is associated with increased health problems in civilian populations as well. For example, analyzing data from the Canadian Community Health Survey ($N = 36,984$), researchers found that 1% ($n = 478$) had a formal diagnosis of PTSD (Sareen et al., 2007). Participants with PTSD had significantly higher levels of hypertension and heart disease; asthma and chronic obstructive pulmonary disease, such as emphysema; chronic pain, including fibromyalgia, arthritis, and migraine; ulcerative colitis and ulcers; and cancer. PTSD was also associated with suicide attempts, poor quality of life, and short- and long-term disability. The authors concluded that these health effects were above and beyond the effects of depression or other mental disorders and were the unique contribution of PTSD.

PTSD following a man-made disaster has shown similar health effects (Dirkzwager, van der Velden, Grievink, & Yzermans, 2007). In this study, 896 survivors of a man-made disaster were surveyed at 3 weeks and 18 months after the disaster. The authors found that PTSD was associated with physician-reported vascular, musculoskeletal, and dermatological problems. PTSD also increased the risk of new vascular problems. These problems appeared even after previous health problems, smoking, and demographic characteristics were controlled.

POSSIBLE PATHWAYS AND CAUSAL MECHANISMS

As we described above, the health effects of trauma are increasingly well documented. But the intriguing question still remains about possible

mechanisms for these effects. The presence of health problems in trauma survivors has been well documented. Research on the causal mechanisms connecting traumatic events with health outcomes is more limited. In health psychology research, five possible pathways have been identified, and these are particularly relevant to understanding relationships between trauma and health (Kendall-Tackett, 2003). These pathways are physiological, behavioral, social, emotional, and cognitive. Each pathway alone could lead to poor health. More typically, these pathways co-occur and combine to increase their negative effects. These relationships may also be multidirectional: Trauma influences health along these five pathways, and health can also influence trauma symptoms, with poor health or pain triggering symptoms such as flashbacks, dissociation, anxiety, depression, and intrusive thoughts. We suggest that in a cyclic way, trauma may impact health, further increasing trauma symptoms, which exacerbates health problems.

Pathway Types

The first potential pathway is the physiological changes that can occur in the wake of traumatic events. Indeed, researchers have documented that traumatic events—particularly those that occur in childhood—can alter responsivity of the catecholamine system; the hypothalamic–pituitary–adrenal axis, which regulates the stress hormone cortisol; and the immune system by increasing systemic inflammation and decreasing lymphocyte counts (Kendall-Tackett, 2007; Kibler, this issue; Sachs-Ericsson et al., this issue).

Some trauma-related changes may also include alterations in sleep, including sleep architecture, which can further exacerbate physiological symptoms such as pain. Sachs-Ericsson and colleagues (this issue) discuss chronic pain as another common sequela to trauma. They recognize that the relationship between trauma and pain is not entirely straightforward and likely results from a number of physiological changes caused by trauma exposure, including lowering of the pain threshold, that can increase pain.

Of all of the pathways related to health, behavioral pathways have been studied the most. It has been well documented that trauma survivors often behave in ways that can compromise their health (Davis, Combs-Lane, & Smith, 2004; Kendall-Tackett, 2003; Sachs-Ericsson et al., this issue). Behaviors engaged in include substance abuse, smoking, high-risk sexual behaviors, and suicide attempts. These effects may even be intergenerational. Cavanaugh and Classen (this issue) examine whether women who have experienced childhood sexual abuse have daughters at increased risk for contracting HIV. They explore this possible relationship by examining whether childhood sexual abuse impacts these women's ability to parent, with special focus on the types of parenting behaviors that decrease the incidence of risky sex among their daughters.

Trauma can also influence survivors by impacting the quality of their social relationships. Without intervention, trauma survivors have higher rates of divorce, more dissatisfaction with adult partners, and greater risk of experiencing revictimization at the hands of a partner or peer. Poor-quality social relationships can impact health in a number of important ways, including by decreasing resilience to stress. In contrast, men and women who have good social support are frequently healthier and live longer than their more isolated counterparts or those in high-strife relationships (Kendall-Tackett, 2003, 2008; Sachs-Ericsson et al., this issue). The model that Cavanaugh and Classen present also suggests that a poor mother–daughter relationship may mediate intergenerational transmission of trauma *and* risky health behavior.

Emotional health is another pathway by which trauma can impair physical health. For many years, researchers studying the impact of traumatic events viewed depression, PTSD, and anxiety as primarily outcomes—endpoints in the study. More recently, they have recognized that negative mental states are also mechanisms that can lead to poor health, even increasing the risk of premature mortality (Kendall-Tackett, 2003, 2007; Kibler, this issue). For example, in a study of with a large sample of veterans, prior depression (but not PTSD) was associated with increased risk of death 2 years later. This was true even after demographic characteristics, health behaviors, and medical comorbidity were controlled (Kinder et al., 2008).

Another important aspect of trauma and health involves medical settings themselves. Beck (this issue) explores how medical settings can actually cause trauma; in this case, when women are giving birth. These effects can last for years, and the impact of these events is rarely acknowledged or treated.

Finally, cognitive pathways can also impact health. What trauma survivors think about themselves and others can dramatically increase their risk of disease. For example, hostility—or framing the world as a dangerous place—is a belief that makes sense in terms of trauma survivors' life experiences. However, hostility has a well-documented negative impact on both cardiovascular symptoms and the development of diabetes. Similarly, negative beliefs about the self can also lead to poor health (Kendall-Tackett, 2007, in press; Suarez, Lewis, Krishnan, & Young, 2004). For example, shame, a belief common among trauma survivors, can alter the immune system and increase systemic inflammation (Rohleder, Chen, Wolf, & Miller, 2008). These findings are similar to previous studies that have found a link between negative affect states (such as depression and hostility) and inflammation. Prolonged systemic inflammation increases the risk of several chronic diseases, including heart disease and diabetes. The link between negative affect, inflammation, and chronic disease is another possible mechanism by which traumatic events can impact health, even years after the traumatic event (Kendall-Tackett, in press).

Dissociation and Health

Another issue that has not received much attention—but should—is the link between trauma, dissociation, and health. Dissociative symptoms are, of course, associated with trauma, and they can occur because of medical interventions. For example, Beck (this issue) describes how a woman's birth experience may be so overwhelming that she dissociates either during labor or postpartum, impacting her ability to function during labor and/or form an attachment with her new baby.

Haven (this issue) also discusses the interplay between trauma, dissociation, and health. In her article, Haven describes her work with a client who suffered a brutal attack and then experienced part of his body as "gone." This article chronicles his journey back to where he could feel once again. Haven's description of the therapeutic process for this client makes for interesting reading, and we believe it will help move the dialogue forward on this important issue.

In summary, the articles in this special issue will help researchers and clinicians address both the physical and mental health aspects of traumatic events. By introducing a wide range of perspectives, we hope to offer the reader new ways of looking at the complex, multidirectional relationships between trauma, dissociation, and health. It is our belief that integrating these aspects of trauma survivors' experiences will dramatically improve patient care and more fully address the long-term outcomes of trauma.

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