A CRITICAL EVALUATION OF BESSEL VAN DER KOLK'S *THE BODY KEEPS THE SCORE*

Francine Tan[1]

WHAT COUNTS AS TRAUMA?

In 1987, Dutch psychiatrist Bessel van der Kolk argued that "psychological trauma affects the entire human organism—body, mind, and brain," even though he and his colleagues presented "reports that are anecdotal [and] there are almost no controlled studies" in their support for this hypothesis in Psychological Trauma.[2] In his recent best-seller The Body Keeps the Score, he continues to promote this same hypothesis that "the memory of trauma is encoded in the viscera, in heart-breaking and gut-wrenching emotions, in autoimmune disorders and skeletal/muscular problems" using three new branches of science: neuroscience, developmental psychopathology, and interpersonal neurobiology.[3] However, his hypothesis 36 years ago is still just that—a hypothesis.

---

[1] Francine Tan is an ACBC-certified counselor from Malaysia and is currently pursuing her PhD in Biblical Counseling at Midwestern Baptist Theological Seminary. Please contact jbsc@biblicalcounseling.com with questions for the author.

[2] Bessel A. van der Kolk, ed., *Psychological Trauma* (Washington, DC: American Psychiatric Press, 1987), 78. Van der Kolk is a clinician, researcher, and teacher in the area of posttraumatic stress. His work integrates developmental, neurobiological, psychodynamic, and interpersonal aspects of the impact of trauma and its treatment. He is considered one of the leading voices on this topic with over 150 peer-reviewed journal articles as well as the author of *Psychological Trauma, Traumatic Stress,* and *The Body Keeps the Score.* He is the founder and medical director of the Trauma Center in Brookline, Massachusetts. He is also a professor of psychiatry at Boston University School of Medicine and director of the National Complex Trauma Treatment Network and the past President of the International Society for Traumatic Stress Studies.

[3] Bessel A. van der Kolk, *The Body Keeps the Score: Brain, Mind and Body in the Healing of Trauma* (New York, NY: Penguin Books, 2015), 88. No evidence was discussed to support the mechanism of this claim and van der Kolk proceeds to expose the non-scientific basis of his claim, when he says, "Somatic symptoms for which no clear physical basis can be found in traumatized children and adults" (99).

Van der Kolk describes trauma as something "unbearable and intolerable," and it includes both direct experiences of traumatic events and an incommunicable inner chaos in an individual's mental state.[4] The language of trauma permeates everyday speech and is present in everything from educational systems to public health policies.[5] According to the Oxford English Dictionary, the word "trauma" was first used to describe an acute physical wound in the field of medicine in the 17th century before the emergence of the effects of accidents (railway spine) and war trauma (soldier's heart) in Anglo-Saxon literature in the mid-19th century.[6] Today, trauma is

[4] Van der Kolk, *The Body Keeps the Score,* 1. Van der Kolk does not provide a definition of trauma, he describes it in terms of signs and symptoms, but there is no clear definition of what it is. This book has been referenced nearly six thousand times within trauma literature as well as clinicians, non-profit organizations, advocacy groups, policy makers and so on nationwide. It has become the Grand Unifying Theory that trauma is the root of all behavioral, interpersonal, health, and social problems.

[5] The notion of trauma is expanded from the catastrophic events of adulthood to the everyday interactions and has essentially become the "lingua franca of suffering," but the supposed prevalence and severity of individuals being diagnosed with PTSD are questionable. For example, by September 11, 2001, posttraumatic stress disorder (PTSD) became a widely accepted cultural phenomenon that almost immediately after the towers fell, an estimated nine thousand trauma counselors flooded lower Manhattan in order to address what was expected to be a tidal wave of post-traumatic stress. The Federal Emergency Management Agency spent 155 million dollars to make psychological counseling available for the quarter of a million people who would need help dealing with their trauma, but to the shock of many, a mere three hundred people turned up. See Figure 1 on page 52 and David J. Morris, *The Evil Hours: A Biography of Post-Traumatic Stress Disorder* (Boston, MA: Houghton Mifflin Harcourt, 2015).

[6] When the industrial revolution was well under way and serious industrial accidents were becoming more frequent, that references to physical trauma started to appear in the middle of the 19th century. Physicians treating the survivors of those accidents occasionally noted odd behaviors or mysterious, unexplainable symptoms, but it was believed that such symptoms were due to an underlying physical cause, even if the physical cause had not yet been detected. A Danish physician, John Eric Erichsen called it "railway spine," because rail travelers who had experienced even minor accidents were reporting to their doctors strange and oddly psychological symptoms, including memory difficulties, lack of appetite, nightmares, and anxiety. Erichsen explained that these patients were suffering from microlesions of the spine, which was causing emotional havoc in their lives, and it could be a striking coincidence, but liability insurance was created during the same period. Some of these survivors of "railway spine" made their way to neurologist Hermann Oppenheim's office in Berlin. Oppenheim came to believe that these strange symptoms were due to more than physical trauma, and that they are attributed to an underlying psychological problem. In 1889, his book titled "The Traumatic Neuroses" became the first medical use of the term "trauma" to describe a purely psychological response. The literature on the development of trauma has always been a search to answer the question—is trauma physical or non-physical? Does trauma affect the brain or the mind or both? For an overview of the historical development of trauma, see Table 1 in Appendix (pp. 53-4), which demonstrates the parallel threads that influence contemporary

simultaneously believed to be a universal disorder based on neurobiological evidence as well as an amorphous and immeasurable diagnosis that is based on an individual's subjective experience, perception, and feelings.[7] By using the validity of a truly traumatic experience for rape victims, prisoners of war, holocaust survivors and the like, this expansion of a catch-all definition of

traumatology. Cf. George A. Bonanno, *The End of Trauma: How the New Science of Resilience Is Changing How We Think about PTSD,* First edition (New York: Basic Books, 2021); Carlos Blanco, "Epidemiology of PTSD," in *Post-Traumatic Stress Disorder,* ed. Dan J. Stein, Matthew J. Friedman, and Carlos Blanco (Chichester, UK: John Wiley & Sons, Ltd, 2011), 49–74, https://doi.org/10.1002/9781119998471.ch2; Patrick Bracken, Celia Petty, and Save the Children Fund, eds., *Rethinking the Trauma of War* (London New York: Free Association Books, 1998); Roy R. Grinker and John P. Spiegel, *War Neuroses, American Military Experience* (New York: Arno Press, 1979); Allan V. Horwitz, *PTSD: A Short History, Johns Hopkins Biographies of Disease* (Baltimore, MD: Johns Hopkins University Press, 2018).

[7] For more on the changing definitions of trauma, see the *Diagnostic and Statistical Manual of Mental Disorders*—Posttraumatic Stress Disorder (PTSD) is first defined in the third edition of the Diagnostic Statistic Manual (DSM-III) in 1980 as "a person who has experienced an event outside the range of usual human experiences" that results in intrusive memories, avoidance, negative changes in thinking and mood, and changes in physical and emotional reactions. In the span of three DSM editions from 1980 to 1994, the definition of PTSD went from direct experiences of a traumatic event to only having to hear about a severe misfortune befalling another person. As a result, the expanded definition of PTSD now includes vicarious traumatization, as demonstrated by Isaac Galatzer-Levy and Richard Bryant who used a binomial equation to elucidate possible symptom combinations in the DSM-V and concluded that there are 636,120 ways to be diagnosed with PTSD. In addition to DSM's official changing definitions, complex PTSD (C-PTSD) was proposed by psychiatrist Judith Herman in 1992 to include psychological trauma that is defined as "an affiliation of the powerless whereby the victim is rendered helpless by an overwhelming force," and this "overwhelming force" includes problems in emotional regulation, self-image, and interpersonal conflicts. Although Herman and her supporters lobbied the DSM committee to formally recognize C-PTSD, the effort was rejected for lack of evidence. About fifteen years passed, and as the fifth edition of the DSM was being assembled, supporters repackaged C-PTSD as a childhood disorder, and once again, this effort was rejected for lack of evidence. Even though it has no scientific validity, C-PTSD has now become one of the most influential notions in the field to the extent that the majority of practicing clinicians and relevant national organizations recognize that C-PTSD is a real disorder. In Judith Herman's admission, "despite [her] best efforts and those of her colleagues in the trauma field, the American Psychiatric Association chose not to designate C-PTSD as a distinct entity because the committee did not like the fact that the description of the condition includes symptoms that overlap with other diagnostic categories without its own diagnostic criterion." See American Psychiatric Association, ed., *Diagnostic and Statistical Manual of Mental Disorders: DSM-IV ;* Includes ICD-9-CM Codes Effective 1. Oct. 96, 4. ed., 7. print (Washington, DC, 1998); *American Psychiatric Association and American Psychiatric Association, eds., Diagnostic and Statistical Manual of Mental Disorders: DSM-5,* 5th ed (Washington, D.C: American Psychiatric Association, 2013); Michael S. Scheeringa, *The Trouble with Trauma: The Search to Discover How Beliefs Become Facts* (Las Vegas, NV: Central Recovery Press, 2021); Judith Lewis Herman, *Trauma and Recovery,* 2015 edition (New York: Basic Books, 2015), 386.

trauma actually minimizes and negates the suffering of such individuals.[8] While this is partly due to the ever-expanding definition of trauma and a culture of ubiquitous pathology that venerates personal narrative over objective truth, the natural man will always exchange the truth of God for the wisdom of the age that gives explanatory power to the experience of human suffering and sin (1 Corinthians 1:18-31).[9]

For this reason, a critical evaluation of van der Kolk's hypothesis that the body keeps the score (hereinafter referred to as, "BKS") will help the present-day reader to understand the philosophical presuppositions for his non-scientific theory.[10] "Contemporary science has, with modern tools and

[8] According to the Oxford English Dictionary, the word "trauma" was first used in the 17th century to describe an acute physical wound in the field of medicine. Even references to physical trauma did not appear with any frequency until the mid-19th century, and by that time, the industrial revolution was in full swing, and with it a marked increase in the frequency of industrial accidents causing serious injury. Physicians treating the survivors of those accidents occasionally noted odd behaviors or mysterious, unexplainable symptoms, but it was believed that such symptoms were due to an underlying physical cause, even if the physical cause had not yet been detected. A Danish physician, John Eric Erichsen called it "railway spine," because rail travelers who had experienced even minor accidents were reporting to their doctors strange and oddly psychological symptoms, including memory difficulties, lack of appetite, nightmares, and anxiety. Erichsen explained that these patients were suffering from microlesions of the spine, which was causing emotional havoc in their lives, and it could be a striking coincidence, but liability insurance was created during the same period. Some of these survivors of "railway spine" made their way to neurologist Hermann Oppenheim's office in Berlin. Oppenheim came to believe that these strange symptoms were due to more than physical trauma, and that they are attributed to an underlying psychological problem. In 1889, his book titled "The Traumatic Neuroses" became the first medical use of the term "trauma" to describe a purely psychological response. In short, this begins the search for the question—is trauma physical or non-physical? Does trauma affect the brain or the mind or both? For more, see George A. Bonanno, *The End of Trauma: How the New Science of Resilience Is Changing How We Think about PTSD,* First edition (New York: Basic Books, 2021); Carlos Blanco, "Epidemiology of PTSD," in *Post-Traumatic Stress Disorder,* ed. Dan J. Stein, Matthew J. Friedman, and Carlos Blanco (Chichester, UK: John Wiley & Sons, Ltd, 2011), 49–74, https://doi.org/10.1002/9781119998471.ch2; Patrick Bracken, Celia Petty, and Save the Children Fund, eds., *Rethinking the Trauma of War* (London New York: Free Association Books, 1998); Roy R. Grinker and John P. Spiegel, *War Neuroses, American Military Experience* (New York: Arno Press, 1979); Allan V. Horwitz, *PTSD: A Short History, Johns Hopkins Biographies of Disease* (Baltimore, MD: Johns Hopkins University Press, 2018).

[9] Unless otherwise specified, all Bible references in this paper are to the New American Standard Bible, 1995 (NASB) (LaHabra, CA: The Lockman Foundation, 1995).

[10] Van der Kolk claimed that Pierre Janet is the "real hero [and his] most important teacher." Van der Kolk, *The Body Keeps the Score,* 180–81. There is a myriad of approaches in trauma-informed care (TIC), but the researcher will be examining the first order presuppositions of van der Kolk's theory (ontological arguments) in this paper, because the ontological incompatibility

in current language, discovered many of the central topics first spelled out for psychiatry by Janet," he concedes, adding the neuroscience research to the theoretical foundation of 19th century French psychiatrist Pierre Janet.[11] So the aim of this essay is to demonstrate that Bessel van der Kolk's theory that trauma is encoded in the brain and body is based upon the theories of traumatic stress and dissociation developed by the Janet rather than verified scientific findings; therefore, pastors ought to expose this particular folly of scientism with the superiority and sufficiency of the Word of God.

PIERRE JANET'S THEORY OF PSYCHOLOGICAL TRAUMA

Pierre Janet (1859-1947) was a philosopher who became a psychiatrist and a psychologist in order to better understand the nature of human consciousness. His quest for the nature of "self" led him to Jean-Martin Charcot's clinical workhouse, La Salpêtrière Hospital in Paris, with over 5000 mentally ill patients.[12] These patients were known to suffer from a condition

of a secular worldview with a biblical worldview will subsequently inform the incompatibility of integrating secular methodology in biblical counseling. See "Word of God and Counseling" by Doug Bookman in Heath Lambert, *Sufficiency: Historical Essays on the Sufficiency of Scripture* (Association of Certified Biblical Counselors, 2016).

[11] "Pierre Janet and the Breakdown of Adaptation in Psychological Trauma," *American Journal of Psychiatry* 146, 12 (December 1989): 1533, https://doi.org/10.1176/ajp.146.12.1530. Van der Kolk acknowledges that the goal of he and his colleagues' work (Judith Herman and Herbert Rosenfeld) is to demonstrate the theoretical validity of early psychiatrists who understand psychological trauma to be the ultimate source of psychopathology. While Herman revived Freud's original, self-repudiated seduction theory, arguing that repressed memories of sexual abuse, often incestuous abuse, caused traumatic symptoms, van der Kolk utilized more of Janet's writings and clinical practice because Janet did not focus on sexual traumas, but instead often described sickness, accidents, and other common experiences as the origin of dissociated states. More specifically, Janet's theory that the natural psychological defense against traumas was for the mind to protect itself by blocking memories of the trauma while retaining them in a hidden part of the psyche that can be recovered through techniques such as hypnosis. See Van der Kolk, *Psychological Trauma,* 1; Herman, *Trauma and Recovery*; Onno Van Der Hart and Rutger Horst, "The Dissociation Theory of Pierre Janet," *Journal of Traumatic Stress* 2, 4 (1989).

[12] Pierre Janet's views are important because they have been accepted by clinical practitioners and psychiatrists as an alternative to Freud's theory of repression in the interpretation of certain cases of shell shock, and modern trauma theorists including Bessel van der Kolk who hailed Janet as a pioneer in traumatology, especially his writings on the nature of trauma, memory, and narration. Cf. Cathy Caruth, ed., *Trauma: Explorations in Memory* (Baltimore, MD: Johns Hopkins University Press, 1995); Onno Hart, Paul Brown, and Bessel A. Kolk, "Pierre Janet's Treatment of Post-Traumatic Stress," *Journal of Traumatic Stress* 2, 4 (October 1989): 379–95, https://doi.org/10.1007/BF00974597; Van Der Hart and Horst, "The Dissociation Theory of

called "hysteria," which would be the present-day equivalent of "borderline personality disorder" (BPD).[13] In 1889, he published the first book-length scientific account of traumatic stress: *Liautomatisme psychologique.*[14] Sharing Charcot's belief in the hereditary nature of hysteria, Janet studied these patients using his termed method "psychological analysis,"[15] and categorized

Pierre Janet." For an overview of the historical development of trauma, see Table 1 in Appendix (p. 57-58), which demonstrates the parallel threads that influence contemporary traumatology.

[13] Russell Meares, *A Dissociation Model of Borderline Personality Disorder,* 1st ed, *Norton Series on Interpersonal Neurobiology* (New York: W.W. Norton, 2012).

[14] Pierre Janet (May 30, 1859 – February 24, 1947) was a well-known French psychiatrist, physician, philosopher and psychotherapist who specialized in the field of dissociation and traumatic memory. Janet was born to an upper middle-class family, and at twenty-two, he became a professor of philosophy in Le Havre, and he devoted his spare time to volunteer work with patients at the hospital and to psychiatric research. Janet's report (1882) of an unusual case of hypnosis and clairvoyance gained him the attention of neurologist Jean-Martin Charcot who was a French neurologist and professor of anatomical pathology. Charcot has been referred to as "the father of French neurology" for his work on hysteria and hypnosis. As a Ph.D. candidate at the University of Paris, Janet studied automatic acts, and in his thesis (1889), which went into many editions, he introduced but did not amplify the concept of the unconscious. This work engendered a later dispute with Sigmund Freud over priority. At Charcot's invitation, Janet became director of the psychological laboratory at the largest Paris mental institution, the Salpêtrière Hospital (1889). There he completed his work for his M.D., which he received for the thesis L'État mental des hystériques (1892; The Mental State of Hystericals, 1901), in which he attempted to classify forms of hysteria. He popularized the concept of dissociation, traumatic stress, hypnosis, and other emotional disorders involving anxiety, phobias, and other abnormal behaviors. Together with well-known psychotherapists such as Wilhelm Wundt and William James, he is known as one of the founders of contemporary psychiatry. See Giuseppe Craparo, Francesco Cocco Ortu, and Onno van der Hart, eds., *Rediscovering Pierre Janet: Trauma, Dissociation, and a New Context for Psychoanalysis* (New York: Routledge, 2019); "Pierre Janet and the Breakdown of Adaptation in Psychological Trauma"; Pierre Janet and Serge Nicolas, *L'automatisme psychologique: essai de psychologie experimentale sur les formes inferieures de l'activite humaine* (1889), Erw reprograph. Nachdr., *Encyclopédie psychologique* (Paris: L'Harmattan, 2005).

[15] Janet and Nicolas, *L'automatisme psychologique,* 484. Janet defines psychological analysis "as an essential method for a psychology of the individual that aims to seek out those characteristic behavioural patterns that distinguish one individual from another," which is different from Freud's "psychoanalysis" that is a set of theories and therapeutic techniques to deal with the unconscious mind. Janet summarized in three arguments the main differences between his "psychological analysis" and Freud's "psychoanalysis": 1) The notion of a narrowed field of consciousness as a direct and passive effect of the vehement emotions experienced during and after a traumatizing event is different from Freud's idea of an active psychological defense mechanism developed to banish from consciousness unacceptable mental contents; 2) Janet's view of the subconscious as an expression of a complex hierarchy of mental functions, whose lower level of automatic operations does not involve any type of consciousness, while the higher levels culminate with fully fledged reflective consciousness markedly diverges from Freud's concept of the dynamic unconscious as a product of defense mechanisms; and 3) Janet hypothesized that human behavior is driven by a variety of psychobiological systems stemming

his observations into two syndromes, namely, hysteria and psychasthenia.[16] He proposed that at the root of what we now call post-traumatic stress disorder (PTSD) is the experience of "vehement emotions," or intense emotional arousal.[17] Hence, he sought to explore the psychological processes involved in the transformation of traumatic experiences into psychopathology (study of mental disorders). He explained that after a person is traumatized, he automatically keeps repeating certain actions, emotions, and sensations related to the trauma.[18]

According to Janet, psychological trauma is a life experience that causes a powerful emotional shock that separates from conscious awareness and voluntary control, leading to fragmentation of unintegrated memories manifesting as pathological automatisms, or in today's language, the body

---

from both evolutionary processes and individual development, thus rejecting what he called "Freud's pansexualism" as a case of unrestrained generalization of hysteria. Janet accused Freud of using concepts that he himself had introduced without quoting the source: "they [i.e., the Freudians] used the term 'psychoanalysis' for what I had called 'psychological analysis', they described as a 'complex' what I had termed a 'psychological system'. . . , they regarded as 'displacement' what I had associated with 'constriction of consciousness...'" In short, Janet disputes the view that all mentally ill persons are impaired by sexual trauma and the emphasis on dreams in treatment is given too much warrant. For more, see Henri F. Ellenberger, *The Discovery of the Unconscious: The History and Evolution of Dynamic Psychiatry* (New York: Basic Books, 1970); Paul Brown and Onno Van Der Hart, "Memories of Sexual Abuse: Janet's Critique of Freud, a Balanced Approach," *Psychological Reports* 82, 3 (June 1998): 1027–43, https://doi.org/10.2466/pr0.1998.82.3.1027; Karl-Ernst Bühler and Gerhard Heim, "General Introduction to the Psychotherapy of Pierre Janet," *American Journal of Psychotherapy* 55, 1 (January 2001): 74–91, https://doi.org/10.1176/appi.psychotherapy.2001.55.1.74.

[16] See Figure 2 on page 55. Hysteria refers to illnesses that impair the personality and cause the appearance of subconscious concepts due to insufficient mental tension (or a weakened mental state), because the primary mode of adaption is the dissociation of feelings or memories related to frightening experiences, which results in a narrowing of consciousness. In contrast, psychasthenia refers to ideas that do not become part of the subconscious and the syndromes do not impair the personality because an individual has a decreased capacity for creative adaption to reality and the mind is deflected into various phobias, anxiety, or obsessional disorders. Outside the psychoanalytic field, a growing number of theoretical and clinical perspectives are explicitly based on Janet's dissociation theory. See these three studies: 1) The polyvagal theory by Stephen Porges; 2) Loss of dendrites in the prefrontal cortex; and 3) Studies of the brain's bioelectrical activity in pathological conditions. Craparo, Cocco Ortu, and Hart, *Rediscovering Pierre Janet,* 99; Stephen W. Porges, *The Polyvagal Theory: Neurophysiological Foundations of Emotions, Attachment, Communication, and Self-Regulation,* 1st ed, *The Norton Series on Interpersonal Neurobiology* (New York: W. W. Norton, 2011).

[17] Van der Kolk, *The Body Keeps the Score,* 182–83.

[18] Ibid.

keeps the score.[19] While Janet's conception of dissociative disorders is part of a larger discussion, this paper will focus on two main ideas, namely, traumatic stress and dissociation.

First, Janet proposed a traumatic stress model of dissociative disorders. While he did mention how congenital tendency (predisposition), physical illness, and exhaustion may result in hysterical symptoms, he primarily emphasized the role of vehement emotions like terror in response to traumatic events.[20] This initial emotional reaction to the traumatic event ("vehement emotion") accounted for subsequent symptoms: "Traumas produce their disintegrating effects in proportion to their intensity, duration and repetition."[21]

[19] This emotion preserves the experience of the trauma. Janet emphasized the need to distinguish the emotional shock from the sentiment or feeling that serves to regulate behavior. Emotional shock is an affective reaction that always reoccurs in the same way and is chronic. In this respect, emotions are the cause of the psychological trauma because they prevent ill-prepared individuals from adapting successfully to specific situations. These individuals are exposed to feelings of fear, rage, or sorrow, or to feelings of incompleteness and disturbed cognitive processes that may generate fixed ideas—a kind of distorted experience, memory, imagination, or appraisal of the traumatic event. Janet proposed that individuals may possess a susceptibility or a predisposition for a type of reaction that manifests itself as a trauma and leads to the progressive loss of psychological energy. See Gerhard Heim and Karl-Ernst Bühler, "Psychological Trauma and Fixed Ideas in Pierre Janet's Conception of Dissociative Disorders," *American Journal of Psychotherapy* 60, 2 (April 2006): 112, https://doi.org/10.1176/appi.psychotherapy.2006.60.2.111; Pierre Janet, *The Major Symptoms of Hysteria: Fifteen Lectures Given in the Medical School of Harvard University* (New York: Hafner Publishing Company, 1965).

[20] He focused on the subjective events of these events rather than on their objective aspects. This means that it is *not the nature* of the event (i.e.: its severity) that causes dissociation and hysteria, it is the emotions that are evoked by the event. He observed that certain patients responded with extreme fear or anger to situations which were trivial for most people and he made a careful distinction between feelings, which he saw as regulators of behavior, and emotions as extreme fear and anger when the subject is not able to adapt. These vehement emotions then exert a disintegrative effect on the mind (sufficient force to cause hysteria). He wrote, "I was led to recognize in many subjects the role of one or several events in their past life. These events, which were accompanied by a vehement emotion and a destruction of the psychological system, had left traces." Janet, *The Major Symptoms of Hysteria: Fifteen Lectures Given in the Medical School of Harvard University*; Van Der Hart and Horst, "The Dissociation Theory of Pierre Janet." Similarly, van der Kolk notes that stress never lies with the stressful events, it lies in one's reaction to them, and patients who are chronically hyper-aroused will have trouble regulating their emotions and behavior (Van der Kolk, *The Body Keeps the Score,* 16).

[21] Janet and Nicolas, *L'automatisme psychologique,* 1558. Janet described how traumatized people become "attached" (Freud would later use the term "fixated") to the trauma: "Unable to integrate the traumatic memories, they seem to have lost their capacity to assimilate new experiences as well. It is ... as if their personality which definitely stopped at a certain point cannot enlarge any more by the personality which definitely stopped at a certain point cannot enlarge any more by the addition or assimilation of new elements."

In other words, traumatic stress is brought about by vehement emotions that results in a pathological phenomenon: a weakening of one's mental tension and force (psychological energies) over time that develops into fixed ideas and dissociation.[22] Janet also believed that a long time may pass between the occurrence of a traumatic event and its full-blown psychopathological expression: "Rarely do the principal disturbances of the emotion appear exactly at the moment of the provoking event."[23] Van der Kolk therefore proposed the theory that long after the actual incident has occurred, the brain may continue sending signals to the body to flee a threat that no longer exists.[24] In fact, today's scientific journals also refer to Janet's writings on the build-up of traumatic stress as being instrumental in the diathesis-stress framework that is proposed to play a central role in etiological theories for functional neurological disorders (FND).[25]

[22] See Figure 2 on page 55.

[23] Janet and Nicolas, *L'automatisme psychologique,* 1556.

[24] Van der Kolk, *The Body Keeps the Score,* 54. Van der Kolk writes, "Fear is the core emotion and primary dysrhythmia in developmental trauma. As long as the trauma is not resolved, the stress hormones that the body secretes to protect itself keep circulating, and the defensive movements and emotional responses keep getting delayed." According to this claim, stress hormones are abnormally elevated to control physical movements, cause emotions to repeat, imbue trauma memories with qualities not found in normal memories. But biblically, what Janet and van der Kolk are describing (not a discovery) is a sinful response to life circumstances. Janet especially noted that it is not the intensity or severity of the traumatic event, it is the emotional shock. What is an emotional shock? It is a whole-person response that flows out of the active interpretation of the heart (Proverbs 4:23).

[25] See Figure 3 on page 56. Functional neurological disorder (FND) is a neuropsychiatric condition whereby individuals present with sensorimotor symptoms that are incompatible with other neurological disorders, and it has been historically conceptualized as the archetypal stress-related condition. While the etiology of FND remains controversial, modern-day conceptual models continue to posit that early-life maltreatment (ELM) is one of the risk factors for developing FND on the basis that ELM is an important predisposing vulnerability within a diathesis-stress model. These scientific journals referenced Janet as one of the "notable clinicians who studied FND, or hysteria as it was then known." Ibai Diez et al., "Early-Life Trauma Endophenotypes and Brain Circuit–Gene Expression Relationships in Functional Neurological (Conversion) Disorder," *Molecular Psychiatry* 26, 8 (August 2021): 3817–28, https://doi.org/10.1038/s41380-020-0665-0; Roxanne C Keynejad et al., "Stress and Functional Neurological Disorders: Mechanistic Insights," *Journal of Neurology, Neurosurgery & Psychiatry* 90, 7 (July 2019): 813–21, https://doi.org/10.1136/jnnp-2018-318297; Susannah Pick et al., "Emotional Processing in Functional Neurological Disorder: A Review, Biopsychosocial Model and Research Agenda," *Journal of Neurology, Neurosurgery & Psychiatry* 90, 6 (June 2019): 704–11, https://doi.org/10.1136/jnnp-2018-319201.

Second, dissociation, which is also known as "diminution of personal synthesis," describes a condition whereby the patients are unable to integrate the various phenomena of mental life into a coherent whole.[26] This is because some terrifying events are so intense that people are unable to incorporate them into their current cognitive frameworks. As a result, these frights caused hysterics to split traumatic memories into "pathogenic secrets" or "mental parasites," which then trapped the person in an endless state of existential horror.[27] Sometimes, even the idea of an event that did not happen could provoke physiological traumatic symptoms, and Janet calls them "subconscious fixed ideas."[28] The remarkable capacity of fixed ideas to endure over long periods and to produce behaviors (automatisms) over which the conscious personality has no control, is explained by their isolation: "They grow, they install themselves in the field of thought like a parasite, and the subject cannot check their development by any effort on his part."[29]

[26] Janet put it this way: "All the psychological phenomena that are produced in the brain are not brought together in one and the same personal perception; a portion remains independent under the form of sensations or elementary images, or else is grouped more or less completely and tends to form a new system." Janet and Nicolas, *L'automatisme psychologique,* 492.

[27] Janet "predicted" that unless the patients became aware of the split-off elements and integrate them into a story that happened in the past, they would experience a slow decline in their personal and professional functioning. For example, his female patients who were afflicted with a paraplegia (paralysis of the legs) were said to development accidental symptoms from the nature of the traumatic event. Janet calls these muscles "the guardians of virginity" because they provide a defense against vaginal penetration and he suggests that these contractures have been brought about by the "memory of rape or by sexual relationships with a husband who had become odious." See Ibid., 358, 592; Janet, *The Major Symptoms of Hysteria: Fifteen Lectures Given in the Medical School of Harvard University.*

[28] Subconscious fixed ideas refer to a system of unconscious traumatic memory recorded like a script, and when an individual is triggered by circumstances in the environment that resemble the trauma, or by some internal trigger, the "script" is activated and played out as fragments. They appear as if direct sensory imprints of aspects of the trauma on the mind-body-brain system. Janet writes, "an idea that disappears from consciousness does not, therefore, cease to exist..." In addition, Janet extended the notion of trauma beyond a single event to include cumulative trauma when "symptoms and fixed ideas that the subject presents in these cases may be determined by a succession of slight forgotten shocks, even though there are no distinct or dangerous memories." See Pierre Janet et al., *Subconscious Acts, Anesthesias and Psychological Disaggregation in Psychological Automatism: Partial Automatism* (London; New York, NY: Routledge, Taylor & Francis Group, 2022), 275; Onno van der Hart and Barbara Friedman, "A Reader's Guide to Pierre Janet on Dissociation: A Neglected Intellectual Heritage," *Dissociation,* 1989; Onno van der Hart, E. R. S. Nijenhuis, and Kathy Steele, *The Haunted Self: Structural Dissociation and the Treatment of Chronic Traumatization,* 1st ed, *The Norton Series on Interpersonal Neurobiology* (New York: W.W. Norton, 2006).

[29] Janet and Nicolas, *L'automatisme psychologique,* 267; Brown and Van Der Hart, "Memories of Sexual Abuse." Janet was not the first person to argue that autonomous groups of ideas might

Subsequently, trauma victims can have two distinct states of consciousness: total automatisms and partial automatisms—total automatisms refer to the entire body being placed outside the control of the conscious personality (i.e., alternating personality), and partial automatisms affect only parts of the body, such as paralyses, anesthesias, and automatic speaking.[30] In other words, memories of past traumatic events remained present in a subconscious, dissociated condition, and manifest themselves through hysterical symptoms, including paralysis of limbs and vomiting. They could also have long-term effects on physiological, neurological, and psychic systems, especially among people with weak central nervous systems, or pre-existing hereditary conditions.[31] This is why treatment of psychological trauma is aimed to recover and integrate the memories of the trauma into the totality of the person's identity since Janet considered the inability to integrate traumatic memories to be the core issue in hysteria.[32] Like many of his contemporaries, Janet used

be fixed in a person's mind by traumatic experiences, as Charcot had made a similar claim about memories of fictitious accidents that are implanted in the mind by suggestion. For instance, Janet described a man who was going through one train car to another just as the train was entering a tunnel and it occurred to him that his left side, which projected, was going to be knocked slantwise, so he quickly moved, and his left side was not even grazed. In spite of this, he had a paralysis on one side of the body. Another example is a woman whose blindness in the left eye was suggested by Janet that she could have been forced during her childhood to sleep in the same bed as a child who had impetigo on the left side of her face.

[30] "Pierre Janet and the Breakdown of Adaptation in Psychological Trauma"; Janet and Nicolas, *L'automatisme psychologique;* Allan Young, *The Harmony of Illusions: Inventing Post-Traumatic Stress Disorder,* 3. print., 1. paperback print, Princeton Paperbacks (Princeton, NJ: Princeton University Press, 1997), 34.

[31] While it is unclear if Janet thought that a pre-existent inherent deficit of higher mental function was necessary in order to let the vehement emotions associated with traumatic experiences and memories narrow the field of consciousness, but Janet's work and reviews of his theory suggest his belief in a multiplicity of factors predisposing to posttraumatic dissociation, such as innate temperamental factors, which are as we know today, genetically determined and early adverse experiences. In other words, Janet regarded the dissociative outcomes of traumatizing events and memories as a passive "mental exhaustion," a pathological narrowing of the field of consciousness that took place in individuals predisposed to it by temperament and by early adverse experiences. For more, see Meares, *A Dissociation Model of Borderline Personality Disorder;* Ellenberger, *The Discovery of the Unconscious;* Hart and Friedman, "A Reader's Guide to Pierre Janet on Dissociation: A Neglected Intellectual Heritage."

[32] Janet distinguishes two kinds of memory—traumatic memory, which unconsciously repeats the past, and narrative memory, which narrates the past as past, and the goal of therapy is to convert traumatic memory into narrative memory by getting the patient to recount his or her history. Janet's goal of treatment can be divided into three stages: 1) stabilization, 2) identification and exploration of traumatic memories, and 3) relapse prevention, personality reintegration, and rehabilitation. Janet and Nicolas, *L'automatisme psychologique,* 410–12.

hypnosis to retrieve the hidden memories of his hysterical patients because remembering traumas, not forgetting them, was the first step of recovery.[33]

Similarly, van der Kolk claims to be "uncovering secrets of traumatic memory [that is] now well-documented in contemporary research,"[34] but the neo-Gnostic lens that he employs is not based upon findings in behavioral neuroscience. Rather, it is founded upon Pierre Janet's premise that traumatic stress (including events that did not occur) plays a crucial part in the development of psychopathology.[35] Van der Kolk himself summarizes Janet's impact on the BKS theory in the following manner:[36]

> [Janet] hypothesized a biologically based trauma response resulting in a fragmentation of mental cohesion, causing biological, cognitive, and emotional residues of past experience to continue to govern current behaviour... [His] understanding that vehement emotions impair the capacity to think, feel, and act in a purposeful, unified way, combined with his realization that this must be reflected in biology, is so basic that it had to be rediscovered. His crucial notion, first formulated in 1889, that traumatic experiences are stored in memory in ways different from ordinary events, is as challenging today as it was to William James almost 100 years ago. One century later, much remains to

[33] In contrast to Charcot, however, Janet recognized that the successful recovery of traumatic memories through hypnosis was highly dependent on the degree of patient's vulnerability to therapeutic suggestions. Janet also noted that hysterical symptoms could arise as a result of patients' desires to please their therapists. Van der Kolk notes that Janet's theory about "the pleasure of completed action" guides his practice of sensorimotor psychotherapy. He writes, "I regularly observe that when I practice sensorimotor psychotherapy and somatic experiencing (which is the exploration of physical sensations of the imprints of past trauma), patients can physically experience what it would have felt like to fight back or run away, I see that they will relax, smile, and express a sense of completion." Van der Kolk, *The Body Keeps the Score,* 220.

[34] Ibid., 182.

[35] Here Janet clearly shows the connection between traumatic memory and the course of illness: "As the uncovering of such traumatic memories is of significance for the understanding and treatment of certain neuroses, one must do everything possible to uncover them if they are present. However, as it's obvious that such memories are often missing in other cases of neurosis, which must therefore be assessed and treated differently, one must be equally careful not to discover such traumatic memories where they do not actually exist." Bühler and Heim, "General Introduction to the Psychotherapy of Pierre Janet."

[36] "Pierre Janet and the Breakdown of Adaptation in Psychological Trauma."

> be learned about how memories are stored and keep on affecting emotions and behaviour (i.e.: affect regulation problems), as well as how they and their permutations can be successfully retrieved and mastered in order to diminish their hold over current experience.

Although the diagnostic labels have changed from hysteria to complex post-traumatic stress disorder (C-PTSD), the description and explanation of trauma between Pierre Janet in the 19th century and van der Kolk in the 21st century are strikingly similar: The body remembers trauma by converting dissociated, non-physical trauma into numerous physical problems.[37] And the way to be healed is the brain and body (outer man) changing the consciousness of the mind (inner man) through neurofeedback.[38] Van der Kolk's hypothesis is, at its core, a belief system. This means that he is not merely following the science behind trauma research. Instead, he is hand-picking the observational data for this age-old theory on trauma.[39] This is why his neurobiological diagnosis of trauma is quickly met with self-help verbiage, empowerment, and human connection, not medical treatment.[40]

[37] According to van der Kolk, "The great advances [in the late nineteenth century] came in the study of hysteria, a mental disorder characterized by emotional outbursts, susceptibility to suggestion, and contractions and paralyses of the muscles that could not be explained by simple anatomy. Hysteria became a window into the mysteries of mind and body. The names of some of the greatest pioneers in neurology and psychiatry, such as Jean-Martin Charcot, Pierre Janet, and Sigmund Freud, are associated with the discovery that trauma is at the root of hysteria. These early researchers referred to traumatic memories as "pathogenic secrets" or "mental parasites" because as much as the sufferers wanted to forget whatever had happened, their memories kept forcing them back into consciousness, they automatically keep repeating certain actions, emotions, and sensations related to the trauma, and they are trapped in an ever-renewing present of existential horror." Van der Kolk, *The Body Keeps the Score,* 179.

[38] Van der Kolk, *The Body Keeps the Score;* Hart, Brown, and Kolk, "Pierre Janet's Treatment of Post-Traumatic Stress"; Young, *The Harmony of Illusions.*

[39] Van der Kolk maintains that the studies conducted by him and his colleagues confirmed the dual memory system that Janet hypothesized at the Salpêtrière more than a hundred years earlier: "Traumatic memories are fundamentally different from the stories we tell about the past. They are dissociated: The different sensations that entered the brain at the time of the trauma are not properly assembled into a story, a piece of autobiography" Van der Kolk, *The Body Keeps the Score,* 196.

[40] Ibid., 314, 387. Neurofeedback is an example of one of the many pseudoscience treatments that van der Kolk advocates for; it suggests that the brain plasticity that resides in the electrical oscillations of the brain can be "changed" through brain wave training. His interest in neurofeedback began with psychotherapist Sebern Fisher who integrates neurofeedback and psychotherapy to "help" her patients with developmental trauma. After examining a 10-year-old patient's drawings, which had transformed from stick figures to more skillfully drawn images of his family portrait, van der Kolk remarked, "I was intrigued because I never encountered

UNFOUNDED FINDINGS IN THE BEHAVIORAL NEUROSCIENCE-INFORMED APPROACH TO TRAUMA

As it is beyond the scope of this paper to assess every scientific study on trauma to date, the researcher will provide three compelling reasons for why the BKS theory is based upon manipulated, not applied neuroscience.[41] There is not a single case report to date of at least one individual who had brain imaging and/or cortisol levels measured before trauma exposure, then suffered trauma exposure, and then was followed over time with serial measurements of brain imaging and/or cortisol to document the most basic elements of the toxic stress theory in real time.[42] This is because even though it is actually a straightforward scientific experiment to determine whether psychological trauma can permanently alter human brains: simply examine human brains before psychological trauma occurs, wait for psychological trauma to happen, and then re-examine the same brains to determine whether any changes have taken place. However, it would be unethical for researchers to enlist participants in a study and then purposefully subject them to traumatic experiences.[43] Nonetheless, the BKS theory gains its credibility, prestige, and

a treatment that could shift [a human being] so dramatically." While one does not need "neurofeedback" when art lessons will also serve the same purpose of improving one's drawing skills, it is important to note that Sebern Fisher herself says that she is not a neuroscientist or researcher and that she is a Buddhist meditator "who understands what it is to be one with everything, because [she is]." After experiencing personal enlightenment and developing a new sense of self, she bought a neurofeedback equipment and started using it in her psychotherapy practice. For more of this kind of Eastern mysticism, see Sebern F. Fisher, *Neurofeedback in the Treatment of Developmental Trauma: Calming the Fear-Driven Brain,* First edition (New York: W.W. Norton & Company, 2014); Allan N. Schore, *Affect Regulation and the Origin of the Self: The Neurobiology of Emotional Development* (Hillsdale, NJ: L. Erlbaum Associates, 1994); Christine A. Courtois, ed., *Treating Complex Traumatic Stress Disorders: Scientific Foundations and Therapeutic Models*, Paperback ed (New York, NY: Guilford Press, 2014).

[41] For a detailed discussion on why the current scientific studies do not support the BKS theory, see the 42 claims provided by Michael S. Scheeringa, *Analysis of the Body Keeps the Score: The Science That Trauma Activists Don't Want You to Know* (Monee, IL: Central Recovery Press, 2023).

[42] Ibid., 60.

[43] The research on trauma can be categorized into two waves: In the first wave of research (1985-2005), purely cross-sectional studies (cross-sectional studies make comparisons at a single point in time, whereas longitudinal studies make comparisons over time) were done with a few observations: Individuals with PTSD appeared to have faster resting heart rates, smaller hippocampus, smaller amygdala, overactive amygdala, underactive cingulate cortex, underactive prefrontal cortex and some kind of dysregulation of cortisol. At the time van der Kolk's book was published in 2014, there were 23 studies of the amygdala and 21 of them were cross-sectional studies, and even the cross-sectional ones did not support his claim. See G A

the appearance of scientific validity due to its theoretical association with the paradigm of neuroendocrinology, complex explanations, and a network of observational data.[44]

The three claims against the BKS theory are: 1) the pre-trauma prospective studies in humans demonstrate that the neurotoxic stress theory (NST) is

Van Wingen et al., "The Neural Consequences of Combat Stress: Long-Term Follow-Up," *Molecular Psychiatry* 17, 2 (February 2012): 116–18, https://doi.org/10.1038/mp.2011.110; Roee Admon et al., "Human Vulnerability to Stress Depends on Amygdala's Predisposition and Hippocampal Plasticity," *Proceedings of the National Academy of Sciences* 106, 33 (August 18, 2009): 14120–25, https://doi.org/10.1073/pnas.0903183106. Meanwhile, the second wave of research (2005 to the present) include pre-trauma prospective studies of neurobiology. In the first of such studies, for instance, Rachel Guthrie and Richard Bryant measured the skin conductance in 87 firefighter recruits before their first year of active duty during a startle-response paradigm. They found that pre-trauma physiological activity was predictive of post-trauma acoustic startle responses, which suggests that diathesis stress theory (DST)—neurobiological differences existed prior to exposure—may be the vulnerable factor for the development of PTSD symptoms. A few qualitative reviews further suggest that the scientific evidence for the BKS theory to be at best, insufficient, if not demonstrably false. See Rachel M. Guthrie and Richard A. Bryant, "Auditory Startle Response in Firefighters Before and After Trauma Exposure," *American Journal of Psychiatry* 162, 2 (February 2005): 283–90, https://doi.org/10.1176/appi.ajp.162.2.283; Michael S. Scheeringa, "Reexamination of Diathesis Stress and Neurotoxic Stress Theories: A Qualitative Review of Pre-trauma Neurobiology in Relation to Posttraumatic Stress Symptoms," *International Journal of Methods in Psychiatric Research* 30, 2 (June 2021), https://doi.org/10.1002/mpr.1864; Julia A. DiGangi et al., "Pretrauma Risk Factors for Posttraumatic Stress Disorder: A Systematic Review of the Literature," *Clinical Psychology Review* 33, 6 (August 2013): 728–44, https://doi.org/10.1016/j.cpr.2013.05.002.

[44] For the purpose of evaluating the scientific basis of the BKS theory, studies on PTSD (not C-PTSD) will be evaluated. This is because PTSD has more longitudinal studies with meta-analyses whereas C-PTSD is rejected by the DSM for lack of evidence. Also, Judith Herman's 1992 paper on Complex PTSD did not provide a single description of a real patient with C-PTSD and absolutely no standardized data. Yet, this paper has been cited 4000 times (Google Scholar, accessed July 10, 2023), and after it was rejected as a new diagnosis by the APA, van der Kolk came up with a new strategy in 2005. He gave C-PTSD a new name, developmental trauma disorder, and claimed that it applied to children and adolescents, but there was little, if any, mention of the old C-PTSD. Like C-PTSD, developmental trauma appeared out of thin air, based on no solid evidence, and was rejected by the APA to be included as an official disorder in the DSM-V due to the lack of evidence. A third separate diagnostic category, acute stress disorder (ASD) was also rejected by the APA for its unreliable evidence. Only about 20 percent of people exposed to a potentially traumatic event meet the criteria for ASD and most of those people do not develop PTSD. For more, see Judith Lewis Herman, "Complex PTSD: A Syndrome in Survivors of Prolonged and Repeated Trauma," *Journal of Traumatic Stress* 5, 3 (July 1992): 377–91, https://doi.org/10.1002/jts.2490050305; Bessel A. Van Der Kolk, "Developmental Trauma Disorder: Toward a Rational Diagnosis for Children with Complex Trauma Histories.," *Psychiatric Annals* 35, 5 (May 2005): 401–8, https://doi.org/10.3928/00485713-20050501-06; Richard A. Bryant, "The Current Evidence for Acute Stress Disorder," *Current Psychiatry Reports* 20, 12 (December 2018): 111, https://doi.org/10.1007/s11920-018-0976-x.

false, 2) biological plausibility and strong association are not the same as direct, single factor causation, and 3) actual medical conditions such as Cushing's disease (CD) demonstrate the reversibility of the hippocampal volume and cortisol level.

First, the two main theories that could potentially explain the origin of neurobiological factors associated with PTSD are the diathesis stress theory (DST) and the neurotoxic stress theory (NST).[45] While NTS contends that trauma results in neurobiological damage and subsequently the formation of PTSD symptoms, DST contends that there are predispositional vulnerabilities, such as genetic and biological factors, that render an individual at a higher risk of developing PTSD symptoms.[46] If DST is true, it is unlikely that NST can also be true, and vice versa.[47] In a qualitative review of pre-trauma prospective research studies, Michael Scheeringa reviewed all of the research studies available in 2020 (a total of 22,175 papers).[48] Out of 22,175 papers, 25 second-wave studies were located that measured neurobiology prior to traumatic experiences, 19 supported the DST (6 were negative), and of the 10 studies out of 22,175 papers that were capable of testing the NST, only 3 were positive and 7 were negative. This means that van der Kolk can continue to cite animal studies and cross-sectional studies (cross-sectional studies have no power to determine cause-and-effect because subjects are examined at only one point in time, instead of before and after trauma),[49] but pre-trauma studies in humans

[45] Marvin Zuckerman, *Vulnerability to Psychopathology: A Biosocial Model*, 1st ed (Washington, DC: American Psychological Association, 1999); Ruth Leys, *Trauma: A Genealogy* (Chicago, IL: University of Chicago Press, 2000); Bonanno, *The End of Trauma.*

[46] Scheeringa, *Analysis of the Body Keeps the Score,* 60.

[47] Scheeringa, *The Trouble with Trauma,* 35.

[48] Scheeringa, "Reexamination of Diathesis Stress and Neurotoxic Stress Theories." Out of the 22,175 papers, only six studies involved brain imaging, seven studies measured cortisol or other indices of the hormonal-stress-response systems, eight studies measured autonomic stress responses such as heart rate and skin conductance, and four studies measured other types of molecular variables.

[49] Van der Kolk and his colleagues hypothesized that just as an increased severity of shock exacerbated a rat's conditioned fear, so should an increased severity of trauma exacerbate a victim's PTSD symptoms. This is because they believed that a laboratory rat's reaction to an inescapable electric shock parallels at least some aspects of the human response to overwhelming trauma. Unlike laboratory stressors that are measurable in purely physical terms entirely independent of the animal's behavior, researchers have to rely on the retrospective self-reports of the survivors themselves as the sole basis for measuring stressor magnitude in the trauma field. This practice presupposes that severely distressed individuals can furnish reliable, objective accounts untarnished by clinical state, and it is this presupposition that led to many

show that his hypothesis of trauma changing physical brain structures and irreversibly destroying hardwired neurocircuitry is *an unproven assertion.*[50] In other words, the studies in the first wave of neurobiological PTSD research were all cross-sectional, but a second wave of research followed which used prospective repeated-measures designs that measured neurobiology prior to trauma exposure experiences overwhelmingly confirm DST, not NST.

Second, biological plausibility and strong association are not the same as direct, single factor causation. This indicates that observations of the physiology-related changes and symptoms in a person cannot be solely attributed to trauma. Van der Kolk and other trauma theorists employ the cortisol hypothesis as a central tenet of the BKS theory.[51] But other syndromes

problems with the repressed memory movement. The controversy concerning repressed and recovered memories of childhood sexual abuse has been deeply divisive in psychology and psychiatry. Some scholars argue that there is no convincing evidence that people can banish and then recover memories of horrific experiences (e.g., Pope et al. 1998), whereas others proclaim, "overwhelming scientific support for the existence of repressed or dissociated memory" (Brown et al. 1998, pp. 538–39). What is most bizarre about this debate is that proponents on both sides appeal to the same scientific studies to support their diametrically opposed positions. How is this possible? Anyone who actually reads the contested studies, however, will immediately realize that the most influential advocates of the traumatic amnesia position misunderstand much of the science they cite. For more, see Richard J. McNally, *Remembering Trauma* (Cambridge, MA: Belknap Press of Harvard University Press, 2003); Elizabeth F. Loftus and Katherine Ketcham, *The Myth of Repressed Memory: False Memories and Allegations of Sexual Abuse,* 1st St. Martin's Griffin ed (New York: St. Martin's Griffin, 1996); Steven J. Lynn and Judith W. Rhue, eds., *Dissociation: Clinical and Theoretical Perspectives* (New York: Guilford Press, 1994); Marilyn Laura Bowman, "Individual Differences in Posttraumatic Distress: Problems with the DSM-IV Model," *The Canadian Journal of Psychiatry* 44, 1 (February 1999): 21–33, https://doi.org/10.1177/070674379904400103.

[50] In fact, another qualitative review of neurobiology in this field by Julia DiGangi and associates also reached the same conclusion: "Many of these categories, long considered aspects of post-trauma psychopathology were actually present before the index trauma." Cf. DiGangi et al., "Pretrauma Risk Factors for Posttraumatic Stress Disorder."

[51] An extraordinary claim necessitates extraordinary evidence. But the evidence has been weak, inconsistent, unreplicable, and meta-analysis reviews concluded that, there was no difference in cortisol levels between trauma-exposed and non-exposed individuals. See John W. Mason et al., "Urinary Free-Cortisol Levels in Posttraumatic Stress Disorder Patients:," *The Journal of Nervous and Mental Disease* 174, 3 (March 1986): 145–49, https://doi.org/10.1097/00005053-198603000-00003; Marie-Louise Meewisse et al., "Cortisol and Post-Traumatic Stress Disorder in Adults: Systematic Review and Meta-Analysis," *British Journal of Psychiatry* 191, 5 (November 2007): 387–92, https://doi.org/10.1192/bjp.bp.106.024877; Ellen R. Klaassens et al., "Adulthood Trauma and HPA-Axis Functioning in Healthy Subjects and PTSD Patients: A Meta-Analysis," *Psychoneuroendocrinology* 37, 3 (March 2012): 317–31, https://doi.org/10.1016/j.psyneuen.2011.07.003; Xiongfeng Pan et al., "Salivary Cortisol in Post-Traumatic

such as fibromyalgia, chronic fatigue syndrome, and children with conduct disorders also report low cortisol levels.[52] Moreover, he does not explain how the cortisol hypothesis is unique to PTSD patients and how the biological processes that account for "ordinary" stress responses also account for the etiology and symptoms of PTSD.[53] Therefore, a physiological finding that impacts a variety of patient groups has no diagnostic value and only relates to a small subset of the population calls into question a specific etiology in the BKS framework.[54]

Third, actual medical conditions such as Cushing's disease (CD) demonstrate the reversibility of the hippocampal volume in the brain and

Stress Disorder: A Systematic Review and Meta-Analysis," *BMC Psychiatry* 18, 1 (December 2018): 324, https://doi.org/10.1186/s12888-018-1910-9.

[52] See Eva Fries et al., "A New View on Hypocortisolism," *Psychoneuroendocrinology* 30, 10 (November 2005): 1010–16, https://doi.org/10.1016/j.psyneuen.2005.04.006; Daniel J.H. Powell et al., "Unstimulated Cortisol Secretory Activity in Everyday Life and Its Relationship with Fatigue and Chronic Fatigue Syndrome: A Systematic Review and Subset Meta-Analysis," *Psychoneuroendocrinology* 38, 11 (November 2013): 2405–22, https://doi.org/10.1016/j.psyneuen.2013.07.004; Jaap Oosterlaan et al., "Low Basal Salivary Cortisol Is Associated with Teacher-Reported Symptoms of Conduct Disorder," *Psychiatry Research* 134, 1 (March 2005): 1–10, https://doi.org/10.1016/j.psychres.2004.12.005; Scheeringa, *Analysis of the Body Keeps the Score: The Science That Trauma Activists Don't Want You to Know,* 60.

[53] Van der Kolk provides plenty of rhetorical assertions without clear explanation (or demonstration by scientific evidence) of how enduring traumatic stress supposedly changes the brain and body. Also, PTSD has a unique burden of proof not shared by other diagnoses because its diagnosis rests on a core assumption—a distinct class of events (Criterion A: "the stressor criterion") is causally linked to a distinct set of reactions (Criteria B through D: the symptom criteria"), which means that an individual could not receive a PTSD diagnosis without the occurrence of a traumatic event. For this reason, PTSD differs from virtually all other diagnoses in the DSM (i.e.: schizophrenia, major depression, panic disorder) in that it assumes a specific etiology. Hence, researchers must prove a clear link between a precipitating stressor and resulting signs and symptoms. See John P. Wilson, "The Historical Evolution of PTSD Diagnostic Criteria: From Freud to DSM-IV," *Journal of Traumatic Stress* 7, 4 (October 1994): 681–98, https://doi.org/10.1002/jts.2490070413; Rosen and Lilienfeld, "Posttraumatic Stress Disorder."

[54] The heart rate variability (HRV) is another study that van der Kolk and colleagues conducted to demonstrate that the sympathetic and parasympathetic nervous systems are out of sync in PTSD patients. But the study had no control group and they only divided PTSD subjects into three subsamples of low, middle, and high respiratory sinus arrhythmia (RSA). Contrast this cross-sectional study with a different pre-trauma prospective study that demonstrates relatively low RSA appears to be a pre-existing vulnerability factor and it is not unique to PTSD nor caused by trauma, see Amy J. Mikolajewski and Michael S. Scheeringa, "Examining the Prospective Relationship between Pre-Disaster Respiratory Sinus Arrhythmia and Post-Disaster Posttraumatic Stress Disorder Symptoms in Children," *Journal of Abnormal Child Psychology* 46, 7 (October 2018): 1535–45, https://doi.org/10.1007/s10802-017-0396-0.

cortisol level.[55] Cushing's disease is a hormonal disorder that results in brain impairment when patients have extremely high levels of cortisol, including explicit memory deficits and hippocampal atrophy.[56] But surgical correction of the tumour normalizes cortisol levels and eliminates memory deficits and enables the hippocampus to rebound to its normal size.[57] Similarly, neuropsychological deficits due to hypopituitarism after traumatic brain injury have also been reversed in patients after medical treatment.[58]

Furthermore, besides substantiating his belief that trauma interferes with declarative memory (i.e.: conscious recall of experience) with Janet's famous case of Irene,[59] van der Kolk provides two hypotheses: 1) the massive release

[55] Symptoms of CD include depression, anxiety, trouble concentrating or remembering, negative emotions (or affect dysregulation), chronic migraines, weight gain, slow wound healing, bone loss, stunted growth in children and so on. Edward R. Laws, ed., *Cushing's Disease: An Often Misdiagnosed and Not so Rare Disorder* (Amsterdam; Boston: Elsevier/Academic Press, 2017).

[56] Ibid.

[57] Cushing's disease involves brain impairment caused by excessive cortisol. See the reversibility of whole-brain changes in remitted CD after transsphenoidal surgery (TSS) in the largest longitudinal study cohort: Bo Hou et al., "Reversibility of Impaired Brain Structures after Transsphenoidal Surgery in Cushing's Disease: A Longitudinal Study Based on an Artificial Intelligence–Assisted Tool," *Journal of Neurosurgery,* January 2020, 1–10, https://doi.org/10.3171/2019.10.JNS191400; Isabelle Bourdeau et al., "Loss of Brain Volume in Endogenous Cushing's Syndrome and Its Reversibility after Correction of Hypercortisolism," *The Journal of Clinical Endocrinology & Metabolism* 87, 5 (May 2002): 1949–54, https://doi.org/10.1210/jcem.87.5.8493; Monica N Starkman et al., "Decrease in Cortisol Reverses Human Hippocampal Atrophy Following Treatment of Cushing's Disease," *Biological Psychiatry* 46, 12 (December 1999): 1595–1602, https://doi.org/10.1016/S0006-3223(99)00203-6.

[58] Joshua R. Dusick et al., "Chapter 1: Pathophysiology of Hypopituitarism in the Setting of Brain Injury," *Pituitary* 15, 1 (March 2012): 2–9, https://doi.org/10.1007/s11102-008-0130-6; Sanjiv Gray et al., "Hypopituitarism After Traumatic Brain Injury," *Cureus,* March 1, 2019, https://doi.org/10.7759/cureus.4163; Marianne Klose and Ulla Feldt-Rasmussen, "Hypopituitarism in Traumatic Brain Injury—A Critical Note," *Journal of Clinical Medicine* 4, 7 (July 14, 2015): 1480–97, https://doi.org/10.3390/jcm4071480; M Keller, "Reversible Neuropsychological Deficits after Mild Traumatic Brain Injury," *Journal of Neurology, Neurosurgery & Psychiatry* 68, 6 (June 1, 2000): 761–64, https://doi.org/10.1136/jnnp.68.6.761. For a more in-depth discussion on why there is no clear physical, irreversible damage on the brain and body in PTSD patients, see Richard J. McNally, "The Ontology of Posttraumatic Stress Disorder: Natural Kind, Social Construction, or Causal System?," *Clinical Psychology: Science and Practice* 19, 3 (September 2012): 220–28, https://doi.org/10.1111/cpsp.12001; Denny Borsboom and Angélique O.J. Cramer, "Network Analysis: An Integrative Approach to the Structure of Psychopathology," *Annual Review of Clinical Psychology* 9, 1 (March 28, 2013): 91–121, https://doi.org/10.1146/annurev-clinpsy-050212-185608; Allan V. Horwitz, *DSM: A History of Psychiatry's Bible* (Baltimore, MD: Johns Hopkins University Press, 2021).

[59] This is different from implicit or nondeclarative memory (i.e.: memory system that controls

of stress hormones impairs memory, and 2) the subcortical activation of the amygdala is responsible for traumatic dissociative amnesia.[60] These hypotheses are not proven with scientific evidence for two reasons. First, a study on only eight Vietnam veterans with PTSD and a control group with exposure to combat-related stimulus showed *no significant hormonal differences* between the two groups.[61] But the researchers responded with two explanations to preserve

conditioned emotional responses, skills and habits, and sensorimotor sensations). This means that the extreme emotion experienced during trauma renders it difficult for people to recall the memory, and dissociative amnesia, then, occurs. See Bessel A. Kolk and Rita Fisler, "Dissociation and the Fragmentary Nature of Traumatic Memories: Overview and Exploratory Study," *Journal of Traumatic Stress* 8, 4 (October 1995): 505–25, https://doi.org/10.1007/BF02102887; Bessel A. Van der Kolk, Alexander C. McFarlane, and Lars Weisæth, eds., *Traumatic Stress: The Effects of Overwhelming Experience on Mind, Body, and Society* (New York: Guilford Press, 1996).

[60] Van der Kolk cited the behavioral neuroscientist Joseph LeDoux's research on Pavlovian fear conditioning that suggests two pathways for activating the amygdala: One pathway rapidly transmits sensory input about fear stimuli to the amygdala via a subcortical route whereas the second pathway passes through the cortex, taking about twice as long to reach the amygdala. Subcortical activation of the amygdala makes it possible for a fight or flight reaction to begin even before the information about the fear-evoking stimulus has reached conscious awareness via the cortical route. LeDoux's animal conditioning model illustrates how sexual abuse survivors might retain implicit, emotional memories of trauma while being incapable of consciously recollecting what happened. Psychotherapists have praised this theory because it authorizes therapists to interpret body memories, flashbacks, fragments, sudden intense feelings, avoidant behaviors, images, sensory processes, and dreams as implicit expressions of dissociated traumatic memories, which in turn, ought to be recovered during therapy and integrated into one's conscious memory. See Joseph E. LeDoux, "Emotion Circuits in the Brain," *Annual Review of Neuroscience* 23, 1 (March 2000): 155–84, https://doi.org/10.1146/annurev.neuro.23.1.155; Joseph LeDoux, "Rethinking the Emotional Brain," Neuron 73, 4 (February 2012): 653–76, https://doi.org/10.1016/j.neuron.2012.02.004; Ruth A. Lanius et al., "Neural Correlates of Traumatic Memories in Posttraumatic Stress Disorder: A Functional MRI Investigation," American Journal of Psychiatry 158, 11 (November 2001): 1920–22, https://doi.org/10.1176/appi.ajp.158.11.1920; R. A. Lanius, R. L. Bluhm, and P. A. Frewen, "How Understanding the Neurobiology of Complex Post-Traumatic Stress Disorder Can Inform Clinical Practice: A Social Cognitive and Affective Neuroscience Approach: Neurobiology of PTSD and Clinical Practice," Acta Psychiatrica Scandinavica 124, 5 (November 2011): 331–48, https://doi.org/10.1111/j.1600-0447.2011.01755.x.

[61] Roger K. Pitman, "Naloxone-Reversible Analgesic Response to Combat-Related Stimuli in Posttraumatic Stress Disorder: A Pilot Study," *Archives of General Psychiatry* 47, 6 (June 1, 1990): 541, https://doi.org/10.1001/archpsyc.1990.01810180041007. The veterans were exposed to a 15-minute neutral videotape, followed by a 15-minute segment of a movie about Vietnam, and then another 15-minute neutral video. The hypothesis behind the experiment was that the exposure of the PTSD patients to a combat-related stimulus would provoke a release of endorphins with consequent analgesia, an analgesia that might be reversed by naxalone, a drug known to block interaction between neural receptors and the opiate class of endorphins, but that would not be affected by the saline placebo. Even though the neural-hormonal theory predicts that exposure to combat videotape would produce a marked hormonal response in combat veterans with PTSD, the results did not substantiate the theory.

the hypothesis: 1) The predicted hormonal response was not detected because of certain technical problems, and 2) The findings are correct, but they could be explained by appealing to more untested hypotheses. This is an example of rescuing a null hypothesis with an auxiliary explanation.[62]

Second, Van der Kolk's recent attempt to prove the BKS theory includes experiments with brain-imaging (positron emission tomography PET), which is claimed to demonstrate an increased activation of the visual area and decreased activation of Broca's area during the provocation of traumatic memories or flashbacks in PTSD subjects.[63] However, the experiments were carried out on a total of eight PTSD patients (six men and two women) *without* any controlled groups.[64] Simply put, there are no longitudinal studies to demonstrate the causal evidence of trauma permanently damaging human

[62] According to the French philosopher of science Pierre Duhem, when researchers predict that a particular outcome will occur under specified circumstances, but the outcome does not occur, they will usually rescue their original hypothesis with an auxiliary hypothesis that finds fault with their methods: "If the starts are not where theory predicts, blame the telescope, not the heavens." Ian Hacking, *Rewriting the Soul: Multiple Personality and the Sciences of Memory,* 2. print., and 1. paperback print., with corr, Princeton Paperbacks (Princeton, NJ: Princeton Univ. Press, 1998).

[63] Broca's area is the part of the central nervous system most centrally connected to speech and according to van der Kolk's hypothesis, with narrative memory.

[64] Bessel van der Kolk, "Posttraumatic Stress Disorder and the Nature of Trauma," *Dialogues in Clinical Neuroscience* 2, 1 (March 31, 2000): 7–22, https://doi.org/10.31887/DCNS.2000.2.1/bvdkolk. In their PET scanning experiments, the investigators used radioactively labelled oxygen inhaled into the blood stream of the patient to scan changes in the regional flow of blood in the brain; the changes indirectly reflected alterations in cerebral neuronal activity. The method required the employment of a thermoplastic mask to minimize the patient's head movements during the delicate brain-scanning process as well as the use of cannula inserted into the nose for the gas inflow and an overlying face mask, which made it difficult, if not impossible for the patient to speak during the experiment. No wonder Van der Kolk and his associates found that Broca's area was turned off. More erroneously, this claim that "effects of trauma are not necessarily different from the effects of physical lesions in an ischemic stroke" is not scientifically true. Even if there was a temporary reduced level of activity in the Broca's area due to flashbacks or strong memories, it is not the same as neuron death from a stroke. For more details, see Scott L. Rauch, "A Symptom Provocation Study of Posttraumatic Stress Disorder Using Positron Emission Tomography and Script-Driven Imagery," *Archives of General Psychiatry* 53, 5 (May 1, 1996): 380, https://doi.org/10.1001/archpsyc.1996.01830050014003. For a recent assessment and concerns about the use of neuroimaging in PTSD (and a discussion of Rauch, van der Kolk et. al's study), see Rachel Yehuda and New York Academy of Sciences, eds., *Psychobiology of Posttraumatic Stress Disorder: A Decade of Progress, Annals of the New York Academy of Sciences,* v. 1071 (Boston, MA: Blackwell Publishing on behalf of the New York Academy of Sciences, 2006); Scheeringa, *Analysis of the Body Keeps the Score: The Science That Trauma Activists Don't Want You to Know.*

brains and causing scores of physical diseases for many generations because it changes the expression of genes through a process known as epigenetics.[65] This is why van der Kolk's oversimplification of hard science about the brain and body is unsettling. For example, he claims that "when our emotional and rational brains are in conflict, a tug of war is played out in the theatre of visceral experiences—your gut, your heart, and your lungs—and will lead to many physical manifestations of trauma."[66]

[65] This particular branch of study is highly debated with only cross-sectional studies (not longitudinal studies), few replicated findings, and research on animals (not humans), particularly rats born to "stressed mothers show that environmental factors such as endocrine disruptors promote transgenerational phenotypes." The archetypal example of the folk wisdom of epigenetic modification is the agouti mouse experiments by Jirtle and Waterland. The study of epigenetics was popularized by Jean-Baptiste Lamarck in the early 1800s, and then a form of neo-Lamarckism was propagated by experimental biologists and geneticists, and the field is now increasingly attracting social and population scientists because this theory provides a powerful explanatory mechanism for the influence of social and economic circumstances on differential health attainment. Notably, van der Kolk did not describe or cite any studies with humans who experienced trauma that examined how the mechanism of DNA methylation might work and there is no evidence in humans that demonstrate the methylation patterns triggered by the diathesis-stress framework. For studies on epigenetics, see A. Hoffmann and D. Spengler, "DNA Memories of Early Social Life," *Neuroscience* 264 (April 2014): 64–75, https://doi.org/10.1016/j.neuroscience.2012.04.003; Robert A. Waterland and Randy L. Jirtle, "Transposable Elements: Targets for Early Nutritional Effects on Epigenetic Gene Regulation," *Molecular and Cellular Biology* 23, 15 (August 1, 2003): 5293–5300, https://doi.org/10.1128/MCB.23.15.5293-5300.2003; Michael K. Skinner, Mohan Manikkam, and Carlos Guerrero-Bosagna, "Epigenetic Transgenerational Actions of Endocrine Disruptors," *Reproductive Toxicology* 31, 3 (April 2011): 337–43, https://doi.org/10.1016/j.reprotox.2010.10.012. In contrast, for studies that identify the fallacious modes of reasoning in the field of epigenetics, see Maurizio Meloni and Giuseppe Testa, "Scrutinizing the Epigenetics Revolution," *BioSocieties* 9, 4 (November 2014): 431–56, https://doi.org/10.1057/biosoc.2014.22; Miranda R. Waggoner and Tobias Uller, "Epigenetic Determinism in Science and Society," *New Genetics and Society* 34, 2 (April 3, 2015): 177–95, https://doi.org/10.1080/14636778.2015.1033052; Jonathan Y Huang and Nicholas B King, "Epigenetics Changes Nothing: What a New Scientific Field Does and Does Not Mean for Ethics and Social Justice," *Public Health Ethics* 11, 1 (April 1, 2018): 69–81, https://doi.org/10.1093/phe/phx013.

[66] Bessel van der Kolk, "The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma," YouTube, May 22, 2015, 65, https://www.youtube.com/watch?v=53RX2ESIqsM. The BKS theory is far too simplistic because the brain is far more complicated than that—every brain region is highly interconnected with many other brain regions with thousands of neuronal connections, and a human brain has about 100 billion neurons; each neuron has direct connections to other neurons, and the total number of synapses is somewhere between 100 to 500 trillion. According to Dr. Scheeringa, "To claim that a brain center, such as the amygdala, can be rewired by one (or even dozens) experience of trauma is to discuss the hard structure of the brain at a comic book level of simplicity. If the amygdala gets rewired, why doesn't the cerebellum get rewired and you forget how to walk or read or talk?" To say that only region of the brain is radically damaged while other stay intact is akin to saying that one star amongst the

The BKS theory has an inherent contradiction: The neurophysiological assumption of this theory necessitates trauma to be a matter of an objective biological science, free of subjective interpretation, yet van der Kolk contradicts himself by saying that trauma is a matter of socially and contextually determined meaning.[67] He expansively describes trauma with pseudoscientific jargon, such as "secretion of stress hormones wreaks havoc with their health," and "maltreatment is a chisel that shapes a brain,"[68] but his theory remains inadequately formulated and weakly supported by speculative scientific findings.[69] Finally, van der Kolk's own admission in a lecture in 2015 demonstrates that he is promoting an ideology rather than science: "My colleagues and I sort of invented this trauma stuff in the late 1970s, early 1980s, and then we thought the world would become a better place... We are part of each other, the way you behave affects the way I am, and that most mental illnesses are the result of the environment and the individual being at odds with each other."[70]

THE SUPERIORITY OF GOD'S REVELATION OVER THE FOLLY OF SCIENTISM

Comparable to the Chernobyl disaster in 1986 that resulted in long-lasting health impacts, many of which are still affecting the victims today,[71] the BKS

hundreds of billions of stars in the universe can suddenly start operating on different physics than the rest of the universe. See Scheeringa, *Analysis of the Body Keeps the Score: The Science That Trauma Activists Don't Want You to Know,* 9, 58.

[67] Van der Kolk, McFarlane, and Weisæth, *Traumatic Stress,* 26–27; Van der Kolk, *The Body Keeps the Score,* 17.

[68] Van der Kolk, *The Body Keeps the Score,* 30, 151.

[69] In *Traumatic Stress,* Van der Kolk concludes with the admission that "the question of whether the brain is able to take pictures, and whether some smells, images, sounds, or physical sensations may be etched onto the mind and remain unaltered by subsequent experience and by the passage of time still remains to be answered," yet his entire theory that traumatic memory is real and it is encoded into one's physical brain and body rests on the assumption that the question can be answered in the affirmative. Van der Kolk, McFarlane, and Weisæth, *Traumatic Stress,* 297.

[70] Van Der Kolk, "The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma."

[71] Besides 2 immediate deaths and 29 deaths from acute radiation sickness, the Chernobyl explosion resulted in long-lasting health impacts of radioactive pollution, such as thyroid cancer and birth defects, and the area around the nuclear plant will not be safe for human habitation for at least another 20,000 years. See Serhii Plokhy, *Chernobyl: The History of a Nuclear*

theory claims that direct experience or exposure to trauma permanently damages the brain and body for many generations. In actuality, this form of scientism is not the result of science; rather, it is a doctrine of philosophy. Scientism is the view that science and the scientific method are the superior epistemological sources of truth and knowledge.[72] In other words, scientism is an epistemological framework with philosophical assertions about human nature.[73] This is evidenced in van der Kolk's revelatory claim on a moral issue when he says, "[Their] behaviours are not the result of moral failings or signs of lack of willpower or bad character—they are caused by actual changes in the brain."[74]

Here is another irony: scientism distorts science. This is because the immaterial nature of consciousness (biblically, this refers to the mind which is a faculty of the soul) is not a physical state that can be studied with scientific methods. Thus, neuroscience can be a wonderful, common grace tool, but believers need to be cognizant of what it can tell us and its limitations.[75] When it functions as a totalizing theory, intruding into the domain of other

Catastrophe, First edition (New York: Basic Books, 2018).

[72] What is crucial to scientism is not the identification of something as scientific or unscientific, but the thought that the scientific is much more valuable than the non-scientific. Ethics and religion may be acceptable, but only if they are understood to be inherently subjective and regarded as private matters of opinion. J.P. Moreland, *Scientism and Secularism: Learning to Respond to a Dangerous Ideology* (Wheaton, IL: Crossway, 2018), 23.

[73] Epistemology can broadly be defined as "the origin, nature, methods, and limits of [human] knowledge, discovering what we know and how we come to know it." John MacArthur, ed., *Biblical Doctrine: A Systematic Summary of Bible Truth* (Wheaton, Illinois: Crossway, 2017), 69.

[74] Van Der Kolk, "The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma," 3, 21, 143. Not only are there no citations provided to support this claim, this statement is logically fallacious: trauma cannot serve as both the cause and remedy (i.e.: remembrance of an unknown, dissociated traumatic memory) physical and behavioral issues. For example, the statement "Only what is testable by science can be true" will never itself be testable by science; a skeptic cannot respond by saying, "There may be no current evidence for this truth, but someday science will advance to the point of proving that it is true after all." No further scientific discoveries could make the statement true.

[75] For example, neuroscience attempts to study mirror neurons in monkeys, but the following three views underscore the presuppositions about mirror neurons: 1) Strict physicalism states that empathy is identical to something physical (e.g.: the firings of mirror neurons), 2) Mere property dualism states that empathy is an irreducible state of consciousness in the brain, whose obtaining depends on the firing of mirror neurons, and 3) Substance dualism states that empathy is an irreducible state of consciousness in the soul, whose obtaining depends (while embodied) on the firing of mirror neurons. Ibid., 94; Gregory Hickok, "Eight Problems for the Mirror Neuron Theory of Action Understanding in Monkeys and Humans," *Journal of Cognitive Neuroscience* 21, 7 (July 1, 2009): 1229–43, https://doi.org/10.1162/jocn.2009.21189.

areas of knowledge, it has a distorting effect not only to the foundation of science itself, but also to the domains of God's authoritative and inerrant revelation (i.e.: the problems of man and the solution for sin).[76] This is seen when van der Kolk describes the emotional brain as being the heart of the central nervous system. The "emotional brain" is a made-up term, and thereby distorts the hard science of the central nervous system.[77]

Certainly, real physiological changes and suffering that an individual experiences in a sin-cursed world should not be dismissed (Job 5:6-7), or common sense wisdom that helps individuals to better care for their physical bodies (Matthew 5:44-45; Luke 6:35-36).[78] This is because every person is an embodied soul (spiritual beings in a physical body), and so, there is a relationship between the body and the soul, but the physical factor is never deterministic of spiritual issues (2 Corinthians 4:14-16; 12:7-10).[79] When any human discovery seeks to encroach the jurisdictional domain of God,

[76] It is not wrong to closely study scientific, empirical studies, but those who elevate this secondary priority over the first priority of regulating one's orthodoxy and orthopraxy with Scripture will find themselves overtly psychologized, and even anesthetized to the God-centered realities played out in the human motives, reasoning, behavior, and so on. See David A. Powlison, "Which Presuppositions? Secular Psychology and the Categories of Biblical Thought," *Journal of Psychology and Theology* 12, 4 (December 1984): 270–78, https://doi.org/10.1177/009164718401200402; David Powlison, "Cure of Souls and the Modern Psychotherapies," *Journal of Biblical Counseling* 25, 2 (2007); Jay E. Adams, *A Theology of Christian Counseling: More than Redemption, The Jay Adams Library* (Grand Rapids, MI: Ministry Resource Library, 1986).

[77] The emotional brain is part of what van der Kolk calls the "triune brain," which is a made-up term for the combination of the "reptilian brain and limbic system." Van Der Kolk, "The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma," 57.

[78] The doctrine of common grace refers to God's universal goodness and kindness to all people without exception, but this doctrine also needs to be held in tension with the whole counsel of Scripture to avoid contradicting total depravity. It may appear that believers and unbelievers are making the same observations, but their substantive interpretation is completely different, and the unbeliever's observation will always be skewed in the end. See Henry Vander Kam, "Some Comments on Kuyper and Common Grace," *Mid-America Journal of Theology* 2, 1 (1986): 60; Louis Berkhof, *Systematic Theology* (Edinburgh: Banner of Truth Trust, 2017).

[79] For this reason, it is important to not mistreat bodily issues and physical suffering as sinful or mistreat sin as bodily issues. So pastors, biblical counselors, and believers must take the time to distinguish between physical and spiritual issues and allow the physical to deal with the outer man issues, and the believer is only responsible to deal with the inner man issues with the Word of God. Take anxiety as an example, heart issues have much influence on the person's body, numerous physical symptoms, physiological responses that are powerful, but the heart issues will also be most important issues to deal with. John W. Cooper, *Body, Soul, and Life Everlasting: Biblical Anthropology and the Monism-Dualism Debate* (Grand Rapids, MI: Eerdmans, 2000).

however, then believers must discern the appearance of wisdom that the spirit of the age is promoting and competing against the sufficiency of Scripture for issues of the human soul (Colossians 2:23). The secular world does not have a biblical view of the soul, and a category for sin, or how sin has fully corrupted both the nature of man and creation itself (Genesis 3:17; Romans 8:20-21; 1 John 1:8).[80] Consequently, the noetic effects of sin will skew the natural man's interpretation of the observational data—one that is devoid of God and His truth (Romans 1:18-32). And the scheme of the evil one has always been to shift the blame to something else and to doubt the veracity of God's Word (Genesis 3:1-13). When the problem is not sin, then the solution will never be the gospel of Jesus Christ (1 Timothy 1:15). Hence, this widespread lie that the body causes an individual to sin must be completely rejected. There is no such thing as dissociated, traumatic memory that can cause a person to sin or that he is now permanently trapped in the new original sin of trauma because "once it enters the body, it stays there forever".[81] Each person is tempted when he is lured and enticed by his own desire, then desire when it has conceived gives birth to sin, and sin when it is fully grown brings forth death (James 1:14-15; Genesis 4:7; Ezekiel 18:4).

The Bible unequivocally states that the control center of a person, is the heart (Matthew 12:34; Mark 7:21-23; Proverbs 4:23). And the human heart has everything to do with God (Matthew 22:37). Even though external factors such as suffering, physical illness, sins of others, and past traumatic experiences can influence a person's inner man or weaken one's resolve to

[80] Karl Menninger in his classic book "Whatever Happened to Sin?" observes that the language of sin has been replaced by language of either crime or sickness, and the norm of sin is displaced by a new social philosophy and a new code of morality, as reflected by talk therapy, behaviorism, psychopharmacology, and scientific methodology to bring about improved functioning, adaptive behavior, and personal well-being. See Karl A. Menninger, *Whatever Became of Sin?, Ecclesia Books* (London: Hodder and Stoughton, 1975).

[81] Yehuda and New York Academy of Sciences, *Psychobiology of Posttraumatic Stress Disorder.* One of the differences between the occupation of intellectuals and that of the engineer is that engineers find themselves constantly accountable to the real world if they make mistakes. An engineer whose designs and work prove to be a repeated failure will not long be in the trade, yet if an intellectual grand idea fails, the thinker is frequently seen as a brave pioneer or prophet out of time, or the blame is placed on society and others or faulty interpretation or application of the idea. The history of every era is littered with the false prophecy of the intelligentsia of that time, and this is seen in gender theory, feminist theory, and other forms of deconstructionist fad. See Joe Boot, "The Cult of the Expert," Ezra Institute, April 25, 2020, https://www.ezrainstitute.com/resource-library/articles/the-cult-of-the-expert/.

respond biblically, they are not deterministic. In contrast, a biblical view of man and his problems actually provides a more robust, realistic, and hopeful prescription for suffering—the reality, consequence, and dominion of sin necessitated the God-Man to accomplish salvation (Ephesians 2:1-9; Romans 7:24-25; Isaiah 53:3-5).[82] This salvation radically changes a spiritually dead sinner into a new creation and progressively conforms the believer into the image of Christ, which supernaturally enables a person to exercise faith, hope in God, and respond biblically in the midst of deep affliction (2 Corinthians 5:17; Lamentations 3:1-24; Habakkuk 3:16-19).

> Consider the alternative that van der Kolk proposes:
> In order to change, people need to become viscerally familiar with realities that directly contradict the panicked self of trauma, replacing them with new emotional scenarios that are intense and real enough to defuse and counter some of the old ones... [To] re-establish ownership of your body and your mind—of yourself.[83]

An amalgamation of therapies and New Age practices is thus prescribed in the second half of *The Body Keeps the Score*—Cognitive Behavioural Therapy (CBT), Dialectic Behavioural Therapy (DBT), Eye Movement Desensitization and Reprocessing (EMDR), yoga, mindfulness, theatre/performing arts, self-leadership, rewiring the mind with computer interface technology, and so on.[84] Even though the BKS theory assumes a neurobiological causality, an assortment of eclectic treatments are aimed to make a person subjectively feel and function better. Biblically, the helplessness, hopelessness, and despair

[82] Christians do not minimize suffering, instead, we are pointing the sufferer to real hope and change in the power of God. Joni Eareckson Tada, *Place of Healing: Wrestling with the Mysteries of Suffering, Pain, and God's Sovereignty* (Colorado Springs, CO: David C Cook, 2010); Stuart Scott and Heath Lambert, eds., *Counseling the Hard Cases: True Stories Illustrating the Sufficiency of God's Resources in Scripture* (Nashville, TN: B&H Academic, 2012).

[83] Van Der Kolk, "The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma," 205, 310.

[84] Van der Kolk, *The Body Keeps the Score,* 205–349. Judith Herman also prescribes a similar assortment of treatments: "In addition to hypnosis, many other techniques can be used to produce an altered state of consciousness in which dissociated traumatic memories are more readily assessable. These ranges from social methods, such as intensive group therapy or psychodrama to biological methods, such as the use of sodium amytal. Whatever the technique, the same basic rules apply: the locus of control remains with the patient, and the timing, pacing, and design of the sessions must be carefully planned so that the uncovering technique is integrated into the architecture of psychotherapy." Herman, *Trauma and Recovery,* 271.

experienced by an individual under the weight of the effects of the fallen world and his own sinful responses that perpetuate a cycle of a deeper enslavement to sin ought to drive one to see his need for a Saviour (John 6:68-69). It is not only foolish to believe that one can "re-establish ownership" over his life when God owns all of His creation and He alone is able to redeem sin and suffering unto His tapestry of glory through the gospel of Jesus Christ, but to promote any solution apart from the true physician Jesus Christ is to offer tranquilizers to the noisy soul (Jeremiah 2:13).

CONCLUSION

As the scientific findings behind the BKS theory are presented to the masses as proven facts and hard science, some believers and Christian counselors have embraced its ideology and regard it as a vital external contribution to the care and counsel of souls.[85] What is at stake when an individual buys into the belief system of the BKS theory is not merely an intellectual exchange, it is a spiritual one. It results in the substitution and wholesale rejection of the wisdom, power, and lordship of Jesus Christ over the souls of men. Van der Kolk's hypothesis does not need to be rejected based on "new scientific evidence" to prove it otherwise when believers already have the authoritative, inerrant, and all-sufficient Word of God as our grid in which we evaluate and discern every form of "human discovery" (2 Timothy 3:15-17).

If the claim that trauma is encoded in the brain and body according to scientific findings is true, then trauma would be the new original sin. And the gospel of Jesus Christ, which is the power of God to transform sinners, would not be sufficient (Rom 1:16). Consequently, the souls of men would be at the mercy of their experience in a sin-cursed world. But we know such assertions are antithetical to the wisdom of God in the pages of Scripture (1 Corinthians

[85] See Heather Davediuk Gingrich, ed., *Treating Trauma in Christian Counseling, Christian Association for Psychological Studies* (CAPS) (Downers Grove: IVP Academic / InterVarsity Press, 2017); some biblical counselors have also espoused how helpful the BKS theory is in their counseling practice; see Alasdair Groves, "Trauma," n.d., https://www.ccef.org/podcast/trauma/; Darby Strickland, "Foundations of Trauma Care for Biblical Counselors," Journal of Biblical Counseling 36, 2 (2022); "CCEF 2023 National Conference," (Conference Sessions, October 2023, especially Mike Emlet's session "Trauma and the Body"), https://store.ccef.org/conference/2023-national-conference-sessions/.

1:18-2:16). The wisdom and rulers of this age are doomed to pass away, but the Word of the Lord remains forever, and the fear of the Lord is the beginning of wisdom (1 Peter 1:25; Proverbs 9:10). Therefore, to place our ultimate trust in the thinking of the unregenerate men is to be like the unwise man who built his house upon the sand (Matthew 7:24-27). This is why it is important for pastors, biblical counselors, and believers to expose the folly and deceit of the scientism behind the BKS theory that is built upon the faulty theoretical edifice of the 19th century French psychiatrist Pierre Janet. Then, they are to boldly proclaim the power and grace of Jesus Christ to the sinner, saint, and sufferer, and stand on the superiority and sufficiency of God's Word. Believers can and must demonstrate confidence upon the Bible as their epistemological foundation in order to evaluate the lofty arguments and knowledge raised against the knowledge of God (2 Corinthians 10:5).

APPENDIX

Figure 1
An Increased Diagnosis of PTSD post September 11, 2001
(Bonanno, *The End of Trauma*, 62.)

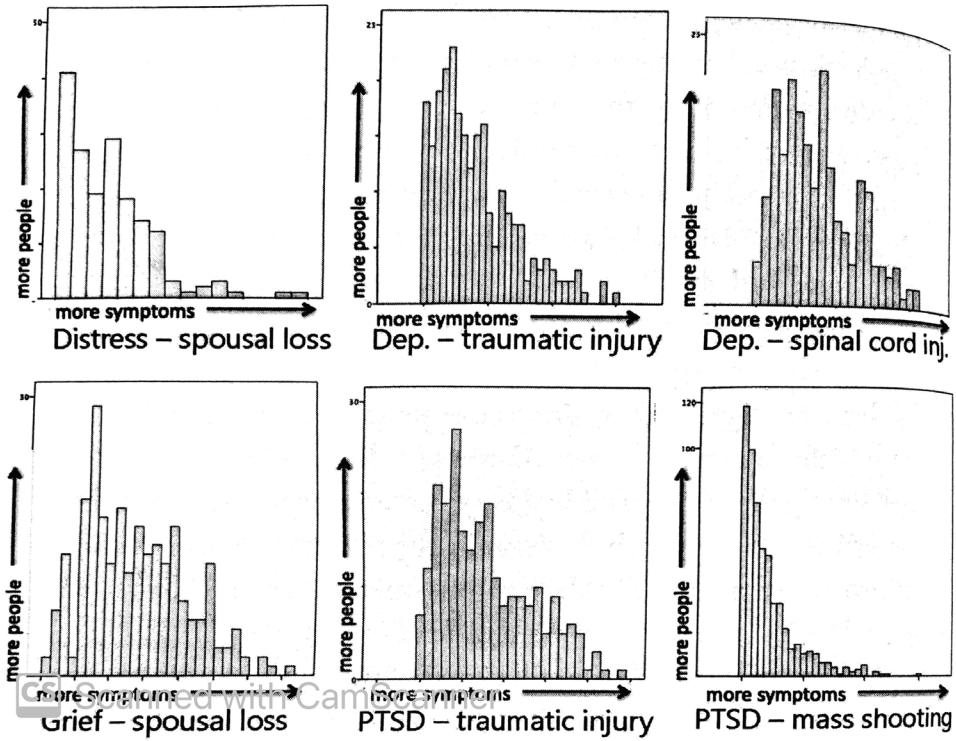


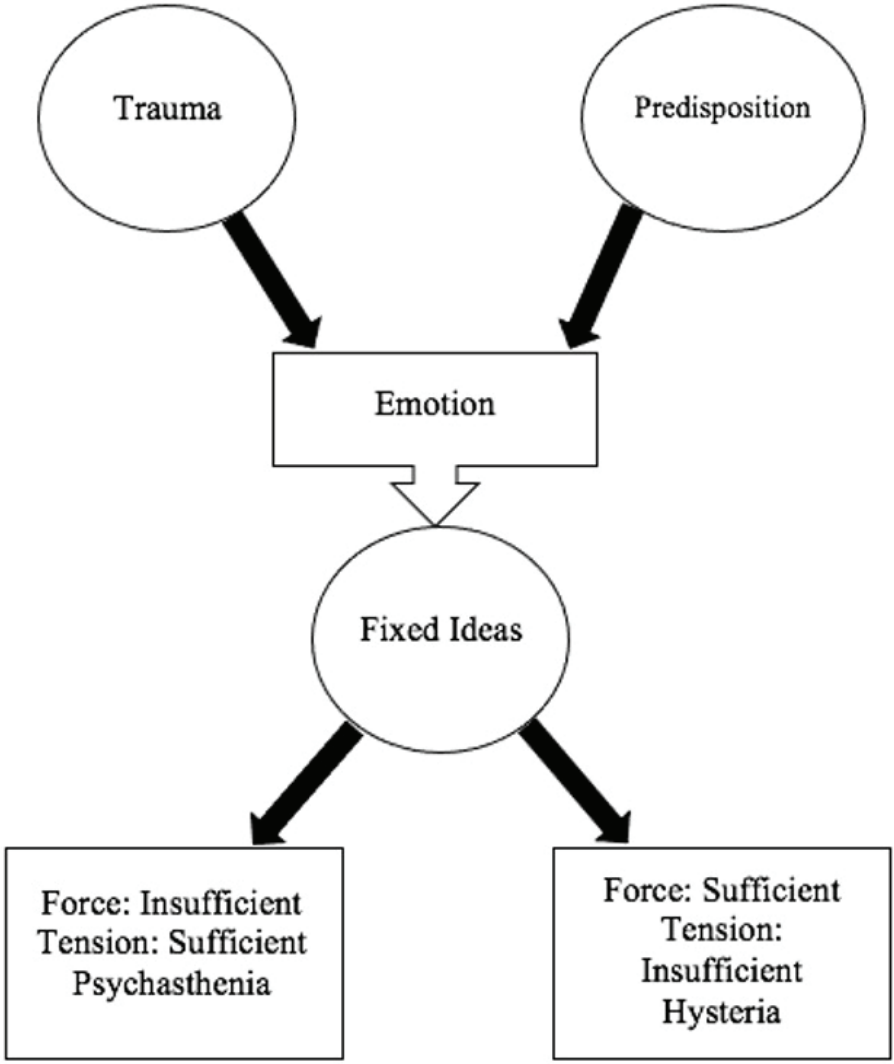
Table 1
A Broad Overview of the Development of Trauma from the Nineteenth Century to the Twenty-First Century[86]

	Hysteria in the Nineteenth Century		Combat Trauma in World War I
Key Figures	Jean-Martin Charcot and Pierre Janet	Jean-Martin Charcot, Pierre Janet, Sigmund Freud, and Josef Breuer.	Charles Myers, Hermann Oppenheim, William Brown, and James Jackson Putnam.
Syndrome	Hysteria or Neuroses. Hysterical symptoms include paralysis of limbs, vomiting, and long-term effects on physiological, neurological, and psychic systems.		"Shell Shock" or battle neuroses in male soldiers.
Cause	External trauma triggers hysteria in predisposed patients (Hereditarian thinking)	Sexual trauma, real events to unconscious psychic	Physical injury appears to cause physical effects.
Theory	The intensity of (unrecognized) traumatic memories result in the psychological process of dissociation	Double consciousness	Early conceptualizations of trauma changing the brain
Treatment	Hypnosis	Psychoanalysis or "talking cure"	PIE treatment, medication, psychotherapy
Patient Clientele	Mainly female patients who experienced repressed traumas		Male combatants.

[86] For more, see Horwitz, PTSD; Young, *The Harmony of Illusions*; J M S Pearce, "Hermann Oppenheim (1858-1919)," *Journal of Neurology, Neurosurgery & Psychiatry* 74, 5 (May 1, 2003): 569–569, https://doi.org/10.1136/jnnp.74.5.569; Bracken, Petty, and Save the Children Fund, *Rethinking the Trauma of War;* Herman, *Trauma and Recovery;* Van Der Kolk, "The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma."

	Holocaust Survivors, World War II, & PTSD in DSM-III	Recovered Memory and C-PTSD	Body Keeps the Score in the 21st Century
Key Figures	Abram Kardiner's "neurosis of war;" refuted by Karl Abraham and Sandor Ferenczi	Judith Herman	Bessel van der Kolk
Syndrome	Flashbacks, night terrors, and various maladaptive behaviors	C-PTSD: Affective dysregulation, detachment from people, alternations in consciousness etc.	All kinds of biological and social issues.
Cause	Physio-neurosis refers to the somatic component of a psychosomatic ailment.	The normal regulation of bodily states is disrupted by chronic hyperarousal that is due to repressed memories	The body remembers trauma through converting repressed psychic trauma into numerous physical problems
Theory	The patient's memory, not the original event itself is the missing link between the original trauma and long-standing psychic symptoms	Recovered Freud's theory of repression and the power of consciousness to change the brain and body	Traumatic stress changes brain and body
Treatment	PIE treatment, medication, psychotherapy	Psychotherapies, Psychiatric medication	CBT, DBT, EMDR, Yoga, Self-leadership, neurofeedback etc.
Patient Clientele	Male combatants	Mainly female sexual abuse survivors	From children to adult C-PTSD patients

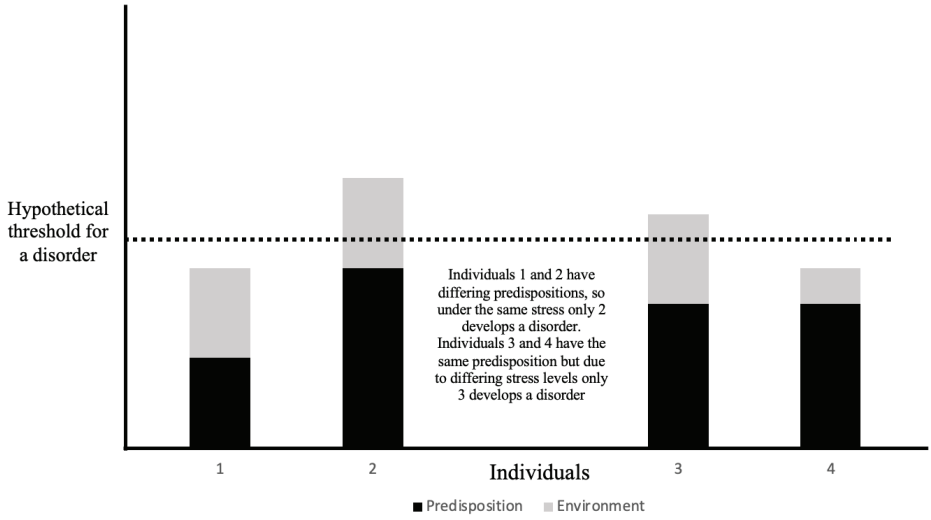
Figure 2:
Pierre Janet's Pathogenesis of Neuroses.[87] See the explanation of Pierre Janet's Theory of Psychological Trauma in the body of the paper.



[87] Karl-Ernst Bühler and Gerhard Heim, "Etiology, Pathogenesis, and Therapy According to Pierre Janet Concerning Conversion Disorders and Dissociative Disorders," *American Journal of Psychotherapy* 65, 4 (October 2011): 281–309, https://doi.org/10.1176/appi.psychotherapy.2011.65.4.281; Bühler and Heim, "General Introduction to the Psychotherapy of Pierre Janet."

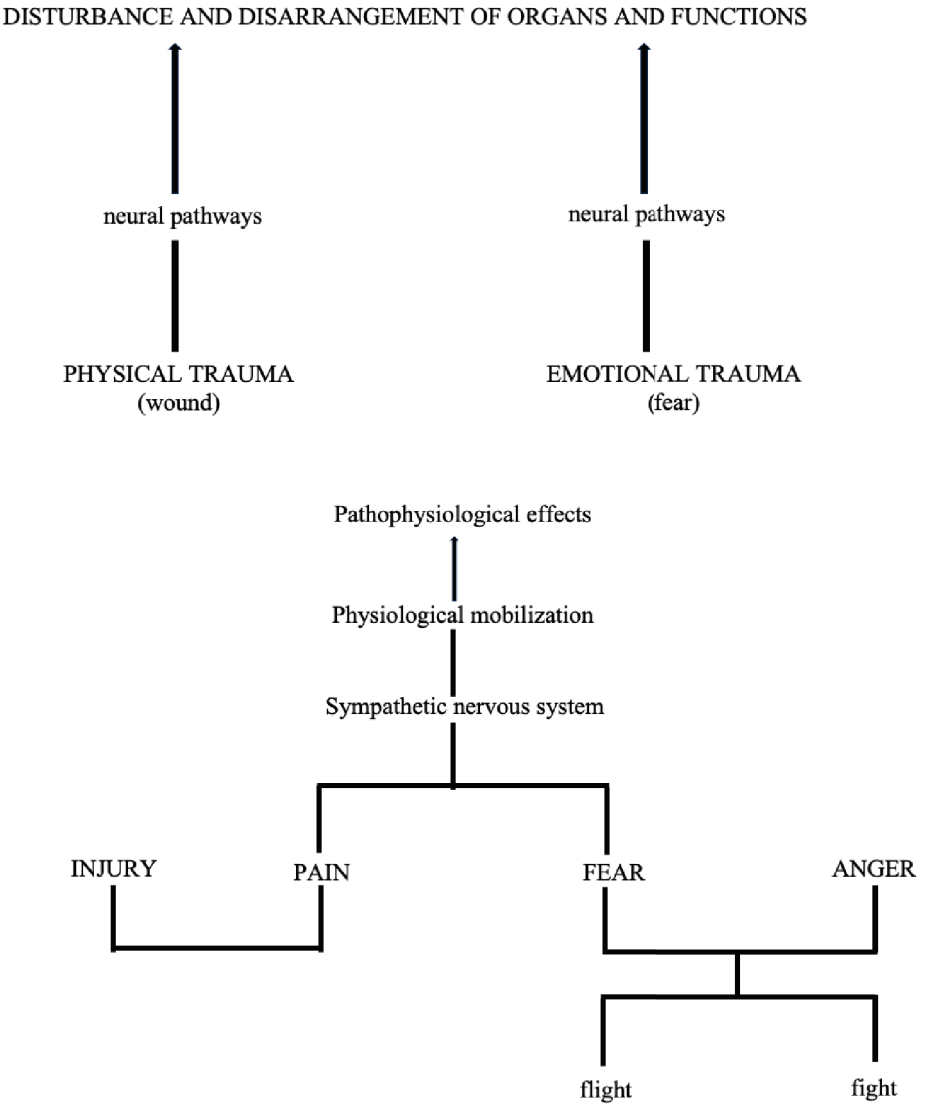
Figure 3

The Diathesis Stress Model - The term "diathesis" comes from the Greek word for disposition ("diathesis"). In the context of the diathesis-stress model, this disposition is a factor that makes it more likely that an individual will develop a disorder following a stressful life event. For example, the glucocorticoid cascade hypothesis proposes that excess cortisol secretion in response to stress causes hippocampal damage, which in turn reduces negative feedback on CRH, resulting in uncontrolled secretion and further damage. Hypercortisolemia is associated with altered synaptic plasticity, reduced neurogenesis, neuronal atrophy and excess secretion of excitatory neurotransmitters such as glutamate, triggering hippocampal changes. This mechanism underlies many stress-related disorders, including FND and PTSD.[88]



[88] Keynejad et al., "Stress and Functional Neurological Disorders."

Figure 4
The Structure of Traumatic Events.[89] These diagrams are attempts to explain the mechanism behind the BKS theory, as the theory equates both physical injury and emotional trauma as causal factors to supposedly change the neural pathways that posit physiological changes.



[89] Young, *The Harmony of Illusions,* 23.