Re-conceptualizing Post-Traumatic Stress Disorder as a Neuropsychological Condition

اضطراب ما بعد الصدمة كحالة نفسية-عصبية: نظرية بديلة

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Abstract

This study aims at re-conceptualizing PTSD as a neuropsychological construct and reconsidering the understanding of both the perpetrator and victim of the trauma from a neuropsychological perspective. Post Traumatic Stress Disorder (PTSD) is considered a modern mental disorder secondary to an individual's experience of emotional trauma. Further such trauma should disappear or be adjusted to as a function of the passage of time and as a function of psychotherapeutic interventions. The findings of this study reveal that PTSD produces changes that are neurocognitive in nature. Furthermore, significant neuropsychological deficits arise as a function of PTSD or at least some forms of PTSD via acute or chronic traumatic exposure.

Key words: PTSD, neuropsychology

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الملخص

تهدف هذه الورقة الى إعادة صياغة تصنيف مفهوم اضطراب ما بعد الصدمة النفسية كاضطراب نفسي عصبي، كما تحاول فهم وتفسير سلوك كل من الجاني والضحية من منظور نفسي عصبي. ويعتبر اضطراب توتر ما بعد الصدمة (PTSD) اضطراباً نفسياً حديثاً، حيث تظهر أعراضه بعد تعرض الفرد لصدمة نفسية. ويمكن أن تختفي مثل هذه الصدمات أو يتم التأقلم معها بمرور الوقت أو بمساعدة العلاجات النفسية. أشارت نتائج هذه الدراسة الى أن اضطراب ما بعد الصدمة يؤدي إلى تغيرات عصبية معرفية. بالإضافة إلى ذلك، تظهر مشاكل نفسية عصبية واضحة كنتيجة لاضطراب ما بعد الصدمة أو على الأقل لبعض أنواعه كاضطراب توتر ما بعد الصدمة المزمن.

لا تعبر الافكار الواردة في المخطوطة عن أفكار هيئة تحرير المجلة أو عمادة البحث العلمي في جامعة بيت لحم. يعتبر المؤلف المسؤول الوحيد عن مضمون المخطوطة أو أية أخطاء فيها.

Introduction

The most common approach to understanding psychological phenomena in the first part of the twentieth century has been a Cartesian dualism of mind and body. The approach has resulted in the schism between physical and mental functioning and provided a paradigm in which a behavior is considered either physiological or psychological. More progressive and modern interpretations of this paradigm provide an interactionist perspective that allows both to be interactive, even complimentary (Wertheimer, 2015). Alternative paradigms have been considered obsolete and are infrequently considered in more modern interpretations of human functioning. One recent alternative to this approach was introduced by Roger W. Sperry, psychology's first Nobel Prize winner (1981) who suggested that the Cartesian dualism was restrictive, when the roles of mind and brain were to be considered simultaneously. He proposed a monistic paradigm which was more fluid, reflective of biological phenomena and could help explain the paradoxes that arise when mind and brain are considered simultaneously. Though some, including myself (Puente, 1993), have argued that Sperry's monistic model is nothing more than a re-interpreted interactive dualism, new research in the neurosciences and cognitive psychology provide increasing support for a monistic, fluid model that allows both the physiological and psychological to be considered as a unified concept.

The application of this monistic paradigm may help provide a window into understanding a historically misunderstood disorder, post-traumatic stress disorder (PTSD). The application of this paradigm to PTSD may help solve some of the riddles associated with this modern day and ever-increasingly present disorder. The argument will be presented in two parts. First, a revamping of traditional theoretical conceptions will be considered. Second, the presentation of a large data set on PTSD in war veterans will be presented to support this reconceptualization.

Problem Statement

PTSD was first considered as shell shock approximately one century ago (Mott, 1919).

This observation was first provided by military health professionals who discovered that soldiers had become mentally incapacitated but appeared physically intact. How could it be that the mental function was impaired but that the body and brain were intact? This was interpreted by Merriman and Winter as evolving into "war neurosis" as soldiers

returned from the Second World War with unclear etiologies for complex problems (Merriman & Winter 2006). These initial observations evolved later during the last century to what is now considered PTSD. The disorder was introduced into the Diagnostic and Statistical Manual (2014) of the American Psychiatric Association as a "mental disorder." Indeed, a review of the location of this disorder as a "mental," in contrast to a "medical" disorder, is seen in the tenth edition of the International Classification of Diseases which places this disorder in the "F" or mental disorders chapters. Similarly, disorders such as multiple sclerosis are found in other chapters that involve strictly neurological or related "medical" problems. This dichotomy has morphed into a health care industry and scientific paradigms that essentially force scholars and practitioners in the field to conceptualize the understanding, diagnosing, and treatment of the disorder as either "mental" or "medical". This dichotomizing has restricted the theoretical underpinnings of many complex and interwoven disorders resulting in an incomplete perspective of the disorders, a silo approach to assessment and treatment, and a total inefficiency in appreciating the robustness and complexity of the symptoms associated with many of these disorders. This narrow and inefficient approach has built a significant scientific paradigm and a health industry that are destined to serve a few and provide answers only to some of the questions raised about these disorders.

This is particularly true of some disorders like PTSD which have historically been diagnosed as "mental" disorders and placed in the DSM and not ICD per se. PTSD has been relegated to the domain of clinical psychologists, psychiatrists and social workers and has been substantially limited or completely parceled out from the domains of neuropsychologists and neurologists. Specifically, PTSD has been treated with drugs that are often used for depression, although there is no comprehensive understanding of the underlying neurochemical changes associated with PTSD. Consequently, the psychotherapeutic treatment has been relegated to empirically derived interventions. The American Psychological Association, moreover, recently completed an exhaustive multiple year study on what interventions are considered effective based on

scientific evidence. Although the findings are comprehensive, groundbreaking and provide for the first time APA endorsed guidelines for the treatment of PTSD, the approach used still focuses heavily on understanding the disorder as a psychological disorder. Neuropsychological perspectives are still considered secondary at best.

Present Study

An alternative approach would suggest re-conceptualizing PTSD as a neuropsychological disorder, similar to brain dysfunction or damage such as traumatic brain injury (TBI). In this case, the major difference would be to expand the scope of the harmful stimuli to the brain, on the one hand, from physical as in the case of a projectile missile to the brain for TBI, on the other. Similarly, the emotional effects of harmful stimuli such as witnessing a person undergo torture or death, could have physiological changes. Furthermore, a dichotomy could be constructed to determine the impact on such changes, presumably affecting the brain primarily. If the harmful stimuli are relatively short lived—for example, a single relative or relatively short duration minor episode, say weeks, then one might hypothesize that the impact on the brain would be temporary and the long term neuropsychological sequelae could be inconsequential. In contrast, if the episode was of great impact such as the death of a significant other in a traumatic fashion or if the harmful stimuli occur over a long period, say a lifetime, the possibility of permanent neuropsychological impact would increase substantially and with it permanent characterological changes resulting in a personality reflective of learned helplessness and relative refractory to standard psychotherapeutic or psychopharmacological intervention.

In summary, re-conceptualizing PTSD as a neuropsychological disorder would increase its understanding and widen the diagnostic, assessment and intervention focus resulting perhaps in a better grip on a complex and modern day disorder.

Along with this reconceptualization of PTSD as a neuropsychological disorder, that merges the “mental” and the “medical” in a monistic paradigm, the possibility of extending the disorder further may similarly be warranted. PTSD is typically considered a reaction to external stimuli. However, the stimuli are rarely studied especially, when it is being conceptualized materially. For example, in our large data set, involving the effects of war on the emotional functioning of veterans (Puente, Sakely, Wang, Chen, & Steed, in press), the harmful stimuli are categorized in ways that have to do with situations such as the frequency of the deployment of a soldier in war. In our sample of over 1,000 military veterans, there is no clear difference between

the neuropsychological testing results in individuals with PTSD and individuals who had been exposed to blast injuries. This lack of differences suggests that PTSD appears to be significantly associated with neuropsychological deficits.

These findings support prior reports and increasing evidence that significant PTSD does produce physiological changes. Evans (2015) suggested that in PTSD specific structural changes occur in the limbic system in the amygdala, hippocampus and hypothalamus as well as the frontal cortex. These structural changes, furthermore, impact and result in a cascade of cortisol and adrenaline release. Brewin, Andrews and Valentine (2000) have also reported that lower intellectual abilities are found in individuals with PTSD. Similar results have also been discovered with verbal memory (Brwein, Kleiner, Vasterline and Fields, 2007) as well as with attention and executive functioning, specifically with response inhibition and attention regulation (Aupperle, Melrose, Stein & Paulus, 2011).

One possibility to explain why this neuropsychological conceptualization of PTSD has not previously applied may have to do with the acute, in contrast to the chronic, nature

of trauma. Fasfous, Peralta Ramirez, and Perez Garcia (2013) have indicated that children exposed to acute trauma develop acute, short-lived, emotional and psychological responses to the trauma. In contrast, those exposed to more chronic trauma develop long-term and neurocognitive symptoms.

Beyond re-conceptualizing PTSD as a neuropsychological disorder, a proposal is made that would include the application of this reconceptualization not only to the victim of PTSD, but also to the perpetrator. In other words, not only is the recipient of the PTSD is going to experience neuropsychological deficits, but also the individual who inflicts the trauma, the perpetrator. Recent studies at the Universidad de Granada in Spain have been investigating the surprising and significant deficits in frontal lobe functioning in perpetrators of domestic violence (Bueso-Izquierdo, N., Hidalgo-Ruzzante, N., Daugherty, J. C., Burneo-Garcés, C., & Pérez-García, M., 2016). These findings suggest that whereas there are significant neuropsychological deficits in those who are violated, similar deficits were found in those who violate. The proposal here is that to fully understand PTSD, it should not only be considered as a neuropsychological disorder. Rather, it is suggested that the deficits seen in both the perpetrator and the victim intractably weave a complex system that requires both to be understood simultaneously. In essence, the proposal is to consider a neuropsychological

systems approach, where the understanding of the disorder has to be monistic and that monism has to include both parties, the perpetrator and the victim. To do otherwise results in an incomplete and possibly incorrect understanding of this complex myriad of symptoms, which in turn results in increased error in both the measurement and treatment of PTSD.

Conclusion

The second approach to re-conceptualizing PTSD comes from a large set that was collected over a decade that involved soldiers and Navy personnel that served in the Iraq and Afghanistan wars. In a recent publication in *Archives of Scientific Psychology*, 1,010 protocols involving both neuropsychological and psychological tests were obtained by two groups of researchers, one from Camp Lejeune Marine Base (the largest base of its kind in the US) and the other from the Roger W. Sperry Neuropsychology Laboratory over this decade. In this large data set, two groups were studied: one, PTSD alone, and two, blast injuries.

In the former, personnel reported significant PTSD during their war experience, while the latter reported being blasted primarily by Improvised Explosive Devices (IED). A particularly perplexing initial outcome was the significant amount of neuropsychological

deficits recorded in the evaluation of each client which lasted more than 10 hours. This was especially the case when comparing the neuropsychological deficits of the PTSD with the blast group. In essence, the PTSD group displayed greater neuropsychological deficits than the blast group. This is particularly interesting in that many of these individuals had experienced PTSD years before. The lingering effects were such that the deficits have probably become permanent and may further reflect permanent characterological effects.

In summary, two major recommendations are provided. First, that PTSD should be Re-conceptualized as a neuropsychological, not a "mental," disorder. Second, that PTSD should be re-conceptualized as a neuropsychological systems situation, requiring that the harmful stimuli (or perpetrator) and the victim be studied and, if feasible, at the same time.

This reconceptualization may particularly be fruitful with populations that have long standing PTSD and for which traditional conceptualizations, assessment, and interventions have proved incomplete, or possibly erroneous. Specifically, re-conceptualizing PTSD may prove especially robust with populations, for whom PTSD has become so embedded into the social fabric

that some consider the change to go beyond the neuropsychological to epigenetic. At such a point, PTSD then switches from being a disorder to being a social and cultural trait. That distinction takes it away from the psychological realm into the sociological, anthropological and political arenas.

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