

AIP model-based Acute Trauma and Ongoing Traumatic Stress

Theoretical Conceptualization.

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This paper aims to give a clinical case conceptualization of acute trauma and ongoing traumatic stress based on Dr. Francine Shapiro's Adaptive Information Processing (AIP) theoretical model that could serve as a framework for a working hypothesis to expand the clinical and research horizons of the AIP-informed interventions for individuals and groups.

Keywords: eye movement desensitization and reprocessing (EMDR); Adaptive Information (AIP) Processing Model; AIP-informed Interventions; Acute Trauma; Ongoing Traumatic Stress.

Adaptive Information Processing Model

EMDR therapy is guided by the Adaptive Information Processing (AIP) theoretical model (Shapiro, 2001; 2018) which posits that memory networks are the basis of pathology and health. Briefly stated, the AIP is a memory-related model of pathogenesis and change. This unique theoretical model posits that psychopathology is primarily caused by memories of adverse life experiences that have been inadequately processed and maladaptively stored in a state-specific form (meaning that the information acquired at the time of the event -images, sounds, affect, physical sensations- is stored in the same form in which it was initially experienced). These memories are stored by association and form memory networks that link present experiences to past experiences and can be triggered by current internal and external stimuli, contributing to present dysfunction. The AIP is the cornerstone of EMDR Therapy because it interprets clinical phenomena, predicts successful treatment outcomes and guides clinical practice.

Recent Traumatic Events

Dr. Francine Shapiro (2001; 2018) posits that *older traumatic memories* generally can be treated by concentrating on one part of the traumatizing event and that targeting this one part usually results in the whole memory being reprocessed. That is because the reprocessing effect becomes generalized to the entire memory.

After the 1989 San Francisco Bay Area earthquake, Dr. Shapiro found that concentrating on one part of the event had no effect on any other part of the incident. On some level of information processing, the memory had not had sufficient time to consolidate into an integrated whole. She hypothesized that, although the memory of an isolated recent traumatic event (*after a post-trauma safety period*) is consolidated on some level (since the patient can give a serial description of the experience), on a crucial stratum of information association the various aspects/parts of the memory are not integrated.

Based on clinical observation, Dr. Shapiro estimated that the period required for consolidation is approximately 2 to 3 months, but there has been no definitive research to measure the time of the memory consolidation process or to determine individual variables that may influence consolidation. It appears that the time for memory consolidation may vary considerably (Maxfield, 2008). From a neurobiology perspective, consolidation is understood as the transition from short-to long-term memory (Centonze et al., 2005).

Dr. Francine Shapiro recommends her Recent Event Protocol (2001; 2018) for an isolated individual trauma that has occurred within the last 2–3 months -and which is then followed by a period of relative safety and calm. However, in case of an *extended* post-crisis period of natural or man-made disasters, in order to address situations in which there is *ongoing trauma* and therefore no subsequent period of safety, Dr. Shapiro (2018) recommends the EMDR Protocol for Recent Critical Incidents and Ongoing Traumatic Stress (EMDR-PRECI; Jarero, Artigas & Luber, 2011). The Recent Traumatic Episode Protocol (R-TEP; E. Shapiro & Laub, 2008) has also been recommended by Dr. Shapiro (2018) to be used for extended traumatic events and emergencies.

AIP model-based Acute (Recent) Trauma and Ongoing Traumatic Stress Case Conceptualization.

To Stevens, Eagle, Kaminer, & Higson-Smith (2013), existing conceptualizations of traumatic stress, such as PTSD and complex PTSD, may have limited utility for ongoing threat and danger due to the notion that trauma exposure is temporally located in the past, on a finite past traumatic event. Therefore, do not capture the daily experiences of ongoing traumatic stress with an absence of safe spaces in which to find protection and experience recovery (Straker, 2013).

The impact of trauma exposure is cumulative in nature (Brewin, Andrews, & Valentine, 2000), and the cumulative effects of prior trauma could be associated with more severe emotional responses to the next trauma (Berninger et al., 2010). Since 1994, studies have shown that individuals exposed to prolonged, repeated, or multiple stressful events are more likely to show PTSD symptoms when compared to individuals who experienced only one stressful event (e.g., Koopman, Classen, & Spiegel, 1994; McFarlane, 1989; Uddo, Allain, & Sutker, 1996). Therefore, the risk of PTSD and comorbid disorders (e.g., anxiety and depression) increases with the number of exposures (McFarlane, 2010). In addition, multiple stressors (for example in cancer) may exacerbate PTSD symptoms because (a) the initial trauma may lower a person's coping resources to address subsequent stressors, and (b) a person may already be suffering clinical or subclinical PTSD when new stressors appear (Freedman, Brandes, Peri, & Shalev, 1999).

To Nuttman-Shwartz & Shoval-Zuckerman (2015, p. 2) "*supplementary frameworks are needed to understand the psychological impact of living with ongoing exposure to danger, as well as appropriate intervention strategies for coping with life in a reality of persistent violence.*"

From their extensive field work with survivors of natural and human-provoked disaster, Jarero and Artigas have observed that when they asked patients to recount the history of the disaster, they described the event in a fluid narrative - with no post-trauma safety/calm period lapses - from just before the impact until the present moment (even 6 or more months later). For them, there was not a day or exact moment in which the first traumatic event finished, and new traumatic events began. Their narrative reflects a continuum, often along the themes of safety, responsibility, and choice.

Patients experience such an extended period of prolonged adverse experiences as one continuous recent traumatic event (Jarero, Artigas & Luber, 2011). These observations are similar to the experience of E. Shapiro and Laub (2008) with their Recent Traumatic Episode Protocol (R-TEP), which recommends targeting the original incident along with any significant subsequent experiences until the present.

Jarero & Artigas (2016) have also observed the narrative's parallel between survivors of man-made and natural catastrophes with no post-trauma safety period, and patients with cancer-related PTSD symptoms. Morasso (2002) "*considers people with cancer*

interconnected to a series of crises that occur during the course of the disease and/or that involve changes in the environmental ecosystem surrounding the patient." (p.2).

To explain this clinical phenomenon, Jarero & Artigas use F. Shapiro's (2001; 2018) adaptive information processing (AIP) theoretical model framework in their clinical case conceptualization on the nature of prolonged adverse experiences that occurred within a three or more months period in which *there is not a post-trauma safety window for traumatic memory consolidation*.

Previously they have argued that, from a memory networks perspective (patterns of associated memories), acute trauma situations are related not only to a time frame (days, weeks, or months), but also to a *post-trauma safety period* (Jarero, Artigas, & Luber, 2011; Jarero & Uribe, 2011, 2012; Jarero et al., 2015a; Jarero et al., 2015b).

Their hypothesis is that often, as a result of this ongoing lack of safety, the consolidation of the traumatic memory network is prevented. This means that one separate part is unable to represent the entire memory network, and for that reason, reprocessing one part of the memory had no effect on any other part of the network. Therefore, the continuum of *prolonged adverse experiences* creates a cumulative trauma exposure memory network (CTEMN; Jarero et al., 2013), of linked pathogenic memories (Centonze et al., 2005) with similar emotional, somatic (body sensations), sensorial (the five senses), and cognitive information (thoughts and beliefs), that does not give the cumulative state-dependent (van der Kolk & van der Hart, 1991) traumatic memory network sufficient time to consolidate into an integrated whole.

From a neurobiological perspective, the *prolonged adverse experiences* generate a continuous cortisol exposure over the Hippocampus (especially in the CA3 regions), that could be related to the deterioration of the cumulative trauma exposure memory network consolidation-capacity and therefore, the impossibility to consolidate into an integrated whole. The Hippocampus is a medial temporal lobe structure that plays an important role in the consolidation of information from short-term memory to long-term memory (Kim et al., 2015).

Thus, this cumulative network of linked pathogenic memories remains in a permanent excitatory state as short-term memory, expanding with each subsequent adverse experience to the first adverse experience in this continuum (analogous to the ripple effect of a pebble

thrown into a pond) that extends into the present moment, and often producing maladaptive/catastrophic concerns about the future or flash-forwards (Logie & de Jongh, 2014). Ongoing/continuous traumatic stress emphasize anticipatory anxiety and its impact. *"Emerging research suggests that anticipated trauma underlies the anxiety associated with ongoing exposure to security threat and may be central to the development of posttraumatic psychopathology"* (Goral et al.,2021, p. 2). As a result, this cumulative trauma exposure memory network (CTEMN) generates a progressive recruitment of PTSD, anxiety, and depression symptoms, related somatic pathological outcomes, and significant impairment in daily functioning across time and repeated exposures to adverse experiences.

Some Examples of Prolonged Adverse Experiences without a Post-Trauma Safety Period.

The most recent example is the Coronavirus-COVID-19 pandemic that has been experienced worldwide since the end of December 2019. It is an ongoing collective trauma. The hundreds of patients our team has attended with Tele Mental Health (online) have described catastrophic concerns about the future. Not only the danger of illness and death of them and their loved ones, with whom they will not be able to be at the time of their death or perform funeral rituals, but also economic ruin and its consequences. The most frequent emotions they have shown are fear, helplessness, and uncertainty.

In a recent published study (Pérez et al., 2020) with healthcare professionals of ten COVID-19 hospitals who received Tele Mental Health, the worst experiences that the participants reported, were related to having to work with infected patients and fear of getting the virus themselves. In other cases, the worst experience was feeling like they had symptoms such as a fever or headache and thinking that they might be sick and die, or that they could infect a family member. Other participants reported that the worst experience was witnessing patients or co-workers suffer and die from the disease, causing fear and frustration.

Haiti earthquake of January 12 2010. After the few seconds that the 7.0 Richter scale earthquake lasted, survivors had to endure for years a continuum of external traumatic events with *no post-trauma safety period*: aftershocks; community responses such as violence and looting; being attacked, raped or harmed at the shelter; multiple losses: relatives, friends, workplace, schools, churches; living in camps at critical risk of storms and flooding; medical issues; concerns about the food, water, and air contamination; the outbreak of cholera, ten

months later, in October 2010 that infected 216,000 persons; political and economic crisis; October 4, 2016, category-5 hurricane Matthew devastation; and constant worries related to living in a threatening environment.

Another example is the case of a patient who received a cancer diagnosis 20 months ago. From a memory networks perspective, this case could be conceptualized as an acute (recent) trauma situation, because after hearing the cancer diagnosis (first traumatic event—the pebble thrown into a pond), there *has been no post-trauma safety period for memory consolidation*. Instead, the patient has experienced a continuum of adverse experiences (the ripple effect) such as physically grueling investigations and aggressive treatments, side effects of treatments, surgery and organ mutilation, bodily dysfunction, and so forth.

Thus, the patient's cumulative trauma exposure memory network has remained in a permanent excitatory state, expanding with each subsequent adverse experience in this continuum that extends until the present moment - and often to the future as well, in the form of catastrophic concerns (e.g., fear that the wounds would be infected, and worms will come out from it; imagining receiving chemotherapy again and suffering its side effects; imagining dying alone in great pain). These types of prolonged adverse experiences (ongoing or prolonged traumatic stress) situations require a different kind of EMDR treatment approach than the one used for events *with* a post-trauma safety period.

Clinical Observation

In a randomized controlled trial (Jarero, Givaudan, & Osorio; 2018) with 65 female patients with cancer-related PTSD symptoms, participants reprocessed their cancer-related pathogenetic memories with similar efficiency (only 6 sessions), efficacy (symptoms reduction) and without associations with past memories (there were no correlations with adverse childhood experiences), just as if they were reprocessing a recent event, even though, time since diagnosis varies from over four years to just three months. This clinical observation is consistent with the results from Jarero et al. (2015b) study with a similar population and with our AIP-based case conceptualization. Perhaps Rosenblum et al. (2017) assertion could explain part of this clinical phenomenon "*Because EEI (early EMDR interventions) does not delve into the past, it is typically six or fewer sessions and, yet it provides strong, significant, enduring, symptom reduction.*" (p. 7).

Expanding the Horizons of the EMDR Early Interventions

The above-mentioned clinical case conceptualization could serve as a working hypothesis to expand the clinical and research horizons of the AIP-informed interventions for individuals and groups. The arbitrary first three months early intervention frame (which is not based on empirical research) could now be extended to include *prolonged adverse experiences without a post-trauma safety period* (e.g., ongoing/continuous traumatic stress).

Therefore, in our understanding, AIP-informed early intervention could be conceptualized, for clinical practice and research purposes, as those interventions provided *within* a stepped care context (stepped progression of mental health care provided in an increasingly intensified manner) during the first 3 months after the adverse experience, *or later* in case of ongoing traumatic stress situations with *no post-trauma safety period for memory consolidation*.

EMDR Therapy XXI Century New Frontiers

Rosenblum et al. (2017) propose an expanded concept of and work with disasters beyond the traditional definition of "big D" Disaster to include ongoing stressful and traumatic community events or "little d" disasters. She believes that *"by serving those affected by little d disasters, the field of disaster response can be broadened in powerful ways."* (p.206).

To Kaminer et al (2016) treatment protocols should be more sensitive when treating patients exposed to ongoing conflict keeping in mind that stress symptoms stem from past, direct or indirect exposure as well as from potential injury from future traumatic events (flash-forwards).

We believe that our clinical healing power could be expanded with AIP-informed procedures and protocols specially tailored to treat individuals or large and small (e.g., families) groups living with recent, present or past prolonged adverse experiences, like the EMDR Integrative Group Treatment Protocol Adapted for Ongoing Traumatic Stress (EMDR-IGTP-OTS; Jarero et al., 2015b), the EMDR-Protocol for Recent Critical Incidents and Ongoing Traumatic Stress (EMDR-PRECI; Jarero, Artigas, & Lubert, 2011), the Recent Traumatic Episode Protocol (R-TEP; E. Shapiro & Laub, 2013; Acarturk et al, 2016) and the Group Traumatic Episode Protocol (G-TEP; E. Shapiro, 2012; Lehnung et al, 2017; Yurtsever et al, 2017).

These evidence-based protocols can be used with patients who have been *through prolonged, repeated, or multiple traumatic events or circumstances*. These include *victims of constant violence* (e.g., sexual abuse, interpersonal violence, violence within a community and violence toward a community -LGBTQIA+, criminal violence); *at-risk personnel* (e.g., agency and NGO staff dealing with natural disasters, violent conflicts, rape, and domestic violence; first responders/emergency response personnel, military on duty); *people undergoing life-changing experiences with ongoing traumatic stress or multiple extreme stressors* (e.g., pandemics, epidemics, racial/historical trauma, incarceration, refugees, internally displaced persons, long term disasters, ongoing war, ongoing exposure to security threats, prolonged violent conflicts, terrorism, geopolitical crisis); *people with diverse ongoing trauma histories with similar circumstance in common* (e.g., chronic or severe illness; individuals, couples and families with ongoing domestic violence situations that have not been resolved and are still unsafe to some degree; children/young adults who are/were placed in the foster care system); *people living continuous traumatic situations*, which relates to residents living in ongoing situations of political violence and security threats with perpetual exposure to war and terror attacks (Nuttman-Shwartz & Shoval-Zuckerman, 2015).

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