Children under Siege: Pre-adolescence, PTSD, and Violent Conditions

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Abstract

The following literature review addresses the developmental and domain-specific consequences of previous and current diagnostic criteria for posttraumatic stress disorder (PTSD) in pre-adolescent children. PTSD was introduced in 1980 to capture extreme responses following a traumatic event. I analyze the evolution of the disorder's diagnostic criteria toward a more developmentally conscious structure. I also examine instances in which these criteria lack developmental consistency: (1) preschool PTSD is the only diagnostic subtype despite the fact that childhood development also differentiates traumatic expressions in older children from adolescents and adults; and (2) many of the PTSD epidemiological data that have been reanalyzed under the most recent (DSM-5) typology only refer to adolescent and adult samples although many researchers have demonstrated that developmental alterations to DSM-IV and DSM-IV-TR criteria produce significantly higher prevalence rates in children.

Keywords: posttraumatic stress disorder, pre-adolescence, diagnostic criteria

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Two years ago, I traveled on an alternative spring break trip ("Roots to Rights") that was sponsored by Jewish Life at Duke and the Mary Lou Williams Center for Black Culture. I realized that, due to my belief that contemporary sympathy was merely a façade for monetary motivation, my knowledge of the scope of humanity was sorely inadequate. I had been a capitalist cynic who watched humanitarian commercials like "Feed the Children" or refugee aid in abhorrence of the unnecessary demonization of foreign instability and proselytization of Western "peace". However, this trip changed my view of humanity: although those commercials might still be capitalist ploys, they chronicled a more complex narrative than I gave them credit.

The trip toured sites of the southern Civil Rights Movement and visited historic memorials. We also sat down with figures such as Sherry Frank and Carolyn McKinstry to listen to their first-hand accounts of past events. McKinstry, in particular, recounted her own experience of, at the age of 14, surviving the 1963 bomb attack on the Sixteenth Street Baptist Church bombing in Birmingham. While she easily explained the politico-social impact of the bombing and subsequent range of emotions (fear, despair, and determination) felt throughout the church community, many of us inquired about her emotions and personal experiences following the attack (McKinstry, 2012).

Aptly nicknamed "Bombingham", Birmingham was notorious for such terror campaigns and outright violence during the 1960's (Martin, 2011). As such, McKinstry's traumatic experience was not unique, and neither were her responses to them. Aside from the shock, confusion, and disbelief that she described immediately after realizing four of her friends had died in the bombing, McKinstry also mentioned having severe emotional

and psychological repercussions that lasted well into adulthood. She would have recurrent flashbacks and extensively ruminate over her traumatic memories. Bouts of sudden grief and high levels of arousal and sensitivity led her to be diagnosed with both anxiety and depression on multiple accounts (McKinstry, 2011; McKinstry, 2012).

With traumatic experience as a precursor for McKinstry's extensive and impairing cognitive and emotional shifts, contemporary clinicians would more likely recognize her symptoms as posttraumatic stress disorder (PTSD). In the aftermath of similar events and unstable environments throughout the world, epidemiological data have shown that overall PTSD prevalence rates can range between 17% and 50% (Allwood, Bell-Dolan, & Husain, 2002; Kinzie, Sack, Angell, Manson, & Rath, 1986; Laor, Wolmer, Mayes, Gershon, Weizman, & Cohen, 1997). These rates have also been reproduced in strictly pre-adolescent samples under similar conditions (Dhavale, Damani, Kedare, Jethani, & Sharma, 2002; Saraiya et al., 2013). Other data have shown that these rates often decrease with time and that individual cases are partially predicated by factors such as personality, proximity to the event(s), level(s) of severity, and nature of the traumatic exposure(s) (Allwood et al., 2002; Fremont, 2004; Scrimin, Moscardino, Capello, Altoe, & Axia, 2009; Thabet & Vostanis, 2000).

Even so, the introduction of PTSD to the American Psychiatric Association's (APA) Diagnostic and Statistical Manual of Mental Health Disorders (DSM) was a controversial one. Since its debut, PTSD diagnostic criteria have been repeatedly contested, reformulated, and developmentally modified outside the realm of official nosology (Friedman, 2013; Scheeringa, Myers, Putnam, & Zeanah, 2012; Scott, 1990). The following pages retrace these diagnostic transitions in the developmental context of

pre-adolescent epidemiology and recount the symptomatic expressions of PTSD within childhood.

Defining Trauma and Pre-Adolescence

This section provides introductory definitions for key PTSD features: (1) traumatic experience, (2) traumatic response, and (3) pre-adolescent childhood. Although social scientists generally agreed that traumatic experiences influenced an individual's expression of traumatic responses, they would often disagree on the magnitude and type of event necessary to elicit such responses (Jeffrey, 2004; Stout(b), 2002). This was partly due to different domains (humanitarianism, international relations, sociology, psychiatry and psychology) addressing the issue from dissimilar perspectives. Domain-specific considerations ranged from severity and duration of experience, to socialized mechanisms of stress coping, to pervasiveness of civil unrest, to geopolitics or legal provisions for relief and reeducation.

Of these domains, psychiatry and psychology have offered formal coding and classification guidelines, criteria for diagnosing individual cases, and assessments of the severity of traumatic expressions (APA, 2013). It is from within this convergent perspective that traumatic experience and trauma will be considered. These definitions are then followed by a cursory overview of pre-adolescent developmental stages and an analysis of negative developmental effects in the context of traumatic experience. After the methods sections, I provide an investigation of PTSD diagnostic adjustments and examples of assessing child-specific epidemiology using different PTSD organizations.

Traumatic Experience

A traumatic experience is a critical life event (or event series) that simultaneously

provides severe environmental instability, thus exceeding an individual's capacity to cope with the stress. In order to be considered as truly traumatic and not merely a life event such as childbirth or even a car accident, the experience must be sudden, unexpected, or non-normative (does not conform to commonly acknowledged living standards or humane treatment) (Elliot, 2002). This condition allows an occurrence to surpass normal criticality and excel into traumatic criticality. According to Teri Elliot (2002), the occasion must "overwhelm" the individual's perceived ability to cope with it and violate his/her central psychiatric needs, beliefs, frame of reference, and convictions. For example, a child who unexpectedly loses his only sibling may experience, in addition to grief, a self-descriptive shift and begin to question whether or not he is still a brother.

This definition is useful in many ways. (1) It combines features from the Psychiatric Epidemiology Research Interview (PERI) Life Events Scale (i.e. magnitude of life change and affective perception of that change) with the umbrella concept of environmental instability in order to account for factors like relocation and homelessness, shifts in caregiver system, and death of a loved one (Dohrenwend, Krasnoff, Askenasy, & Dohrenwend, 1978; Sarason, Johnson, & Seigel, 1978; Wiley, 2009). (2) The definition applies easily to a wide range of traumatic events, man-made or natural. Although some have theorized that the intentionality behind man-made instability – such as terrorism and internal conflict – is a reinforcing traumatizing factor (Ekblad, 2002), this definition is not dependent upon it. (3) Because the event(s) must be non-normative in order to be considered traumatic, this allows for benchmarks such as the 1949 Geneva Convention humanitarian law and 1977 Protocols (I and II) to be accepted as the international standard (International Committee of the Red Cross, 2013). For analysis purposes, I

introduce the condition of man-made causality: situations of pre-war violence and postwar conditions.

The first terms necessitates a level of intractability that is commonly found in terrorism, guerrilla warfare, riots, and civil unrest. The second term refers to descriptors such as refugee camps, genocide, and civil and international wars. These two categories are differentiated by their intended target and spectrum of practice (individual level, group level, or regime-spectrum). For example, terrorism comprises intentional and targeted violence meant to instill fear, helplessness, and stagnation within the victim community. It contrasts with guerrilla warfare, which is considered a violent act toward individual or corrupted members of society (Stout(a), 2002; Stout(b), 2002). Neither terrorism nor guerrilla warfare are necessarily excluded from the postwar category. However, they are rarely included because they usually lack the involvement of government agencies (although each has the potential to form new agencies that attempt governance). According to the World Health Organization (1986), both pre-war violence and postwar conditions inflict significant and avoidable pain and suffering.

Such events are often characterized by bombing campaigns, sexual assaults, torture, and (mass) shootings (O'Kane, 2007; Martin, 2011). These events can be one-time occurrences, such as the September 11th attacks, the 1995 Oklahoma City bombing, and the 1958 bombing of the Hebrew Benevolent Congregation Temple in Atlanta, Georgia (Blumberg, 1987; Klein, Devoe, Miranda-Julian, & Linas, 2009; Martin, 2011; Stout(a), 2002; Stout(b), 2002). At the same time, a traumatic experience may comprise a series of events, as observed in Pol Pot's Kampuchea (1975-1979), the Yugoslavian ethnic cleansing campaigns during the Bosnian War (1992-1995), and the Israeli-Palestinian

conflict over the Gaza Strip (Laor et al., 1997; Martin, 2011; Thabet & Vostanis, 2000; Thabet, Karim, & Vostanis, 2006; Ratner, 2012).

Traumatic Response: Psychiatric Trauma

Trauma can be a confusing term because it has both a psychiatric and a medical definition (serious or critical injury). While the latter is of no concern, the former can be conceptualized as a response to any traumatic event expressed through thoughts, feelings, or sensations (Elliot, 2002). Most researchers agree there is no proper way to express pain and confusion to an extreme event. This response can take multiple forms including a sense of helplessness, a shift in worldview, or a trauma- and stressor-related disorder. Emotions can fluctuate suddenly and range between fear and anxiety, guilt and relief, anger and irritability, sadness (Elliot, 2002; Fremont, 2004; Scrimin et al., 2009; Thabet & Vostanis, 2000). Sensations can include somatic disturbances (i.e. difficulty sleeping, headaches, and stomach aches) and heightened startle response (hyperarousal). Isolation, difficulty concentrating, and sensitivity to traumatic reminders are some of the cognitive expressions of traumatic response (Landers, 1998; Mash & Wolfe, 2010).

While trauma is the response to a traumatic event, trauma- and stressor-related disorders are consequences of impairments that sometimes develop from the over-expression of that response (APA, 2013; Elliot, 2002; Friedman, 2013; Landers, 1998). In most individuals, trauma abates with time (Laor et al., 1997). Nevertheless, long-term negative effects may arise if an individual is unable to adequately cope with his/her traumatic response (Mash & Wolfe, 2010). Reactive attachment disorder, disinhibited social engagement disorder, PTSD, acute stress disorder, and adjustment disorders, make up the bulk of the DSM-5 diagnostic categorization for trauma- and stressor-related

disorders. The duration of distress and type of traumatic expression are generally the two factors that separate out each diagnosis (APA, 2013).

Pre-Adolescent Childhood Development

Childhood is the ultimate introductory course in which the individual achieves developmental milestones and acquires cultural-social practices, attachment patterns, education, and communication skills (Wilbourn, 2010). Early development is a complex process and a critical period to cultivate basic emotional and cognitive mechanisms (National Scientific Council on the Developing Child, 2004; Saraiya, Garakani, & Billick, 2013; Wiley, 2009). Pre-adolescent childhood can be broadly categorized in three age ranges: infancy (0 – 30 mos.), early childhood (2.5 – 7 years), and middle childhood (7 – 11 years) (Elliot, 2002). Each range depends upon social progression, neurobiology, and physiological development.

The first element primarily refers to familial attachment, peer development, and perspective taking, while the second consists mainly of neural plasticity, synaptic density, and pruning (Mash & Wolfe, 2010; National Scientific Council on the Developing Child, 2010a, 2010b). Thirdly, different physical milestones (i.e. movement, language, and depth perception) allow children to gradually gain independence and autonomy (Wilbourn, 2010). Additionally, links have been shown between early responsiveness to sensory stimuli (visual or tactile) and personality and attachment factors, some of which are moderately correlated with either disorder vulnerability or resiliency following traumatic exposure (Galatzer-Levy, Madan, Neylan, Henn-Haase, & Marmar, 2011; Jakšić, Brajković, Ivezić, Topić, & Jakovljević, 2012; Kendler, 2004; Larsen & Buss, 2009; Leavitt, 2000).

Neurobiological processes can be particularly vulnerable to environmental instability during pre-adolescent development (De Bellis, Keshavan, Clark, Casey, Giedd, Boring, Frustaci, & Ryan, 1999). Anatomical differentiation, due to the overabundance of unconnected neurons produced during the embryonic stage, allows the perinatal brain to be at maximum potential for acquiring information (Hyder, 2004; Mash & Wolfe, 2010). In the following years, the brain gives rise to a multiplicity of synaptic connections. Neural plasticity and pruning – the cutting away of unused neural pathways and strengthening of frequented ones – produce a uniquely intense phase of mental activity: between ages 3–10, the child brain is 2.5 times more active than the adult brain (Hyder, 2004). All the while, the brain continues to grow in size, complexity, and specialization. Brain weight steadily increases with age through middle childhood: 70% of adult brain weight is achieved at 18 months, 80% at 3 years, 90% at 5–8 years, and 95% at 10 years (Huelke, 1998).

However, recent research on the biology of stress has shown that extreme adversity can weaken developing brain architecture and permanently over-stimulate the body's stress response system. Traumatic events activate neural stress systems – the amygdala and hippocampus – and elevate levels of stress chemicals such as cortisol, adrenaline, and noradrenaline (Cohen, Perel, de Bellis, Friedman, & Putnam, 2002; National Scientific Council on the Developing Child, 2010b). The release of too much cortisol, for instance, can impair memory and learning in nonthreatening situations by damaging brain cells and inhibiting prefrontal cortex functions (Arnsten, 2009). Elevated cortisol levels can also feed back into these systems and affect their activity and growth, thus perpetuating their activation. This phenomenon, diagnostically referred to as

hyperarousal, demonstrates how chronic stress can increase the danger of brain toxicity being neurologically embedded during childhood development (National Scientific Council on the Developing Child, 2005, 2010a).

Furthermore, children react uniquely to traumatic situations. As Tina Hyder pointed out in her book *War, Conflict, and Play* (2004), child-specific traumatic responses can include a variety of behavior: preoccupation with death, problems in school performance, and even regressive behavior (i.e. in toilet training or having somatic complaints). Another such behavior is posttraumatic play, which is the pursuit of compulsive and anxious activity (Hyder, 2004). Behavioral and clinical manifestations are identified by Cassie Landers (1998) as two main areas of posttraumatic impact in children. The sensory overload of coupling a chaotic environment with rapid developmental progression is the main contributor to the behavioral facet.

For Landers, clinical manifestations may or may not be present. If present, they vary according to age due to cognitive and physiological capacities to process, express, and communicate distress (Elliot, 2002; Landers, 1998; Mash & Wolfe, 2010). Infants can display a range of maladaptation: withdrawal, clinging, and restlessness. Toddlers may regress to previous behaviors or show signs of fear, aggression, or destructive behavior. Moreover, preschool children can potentially demonstrate traumatic fantasies, experience grief through mourning, feel guilt about the event, or withdraw from social situations (Allwood, 2002; Landers, 1998; Saraiya, 2013). These notions of age-differentiated traumatic responses are supported in epidemiological research following events such as the September 11th attacks (Klein et al., 2009), the 1992-1993 communal riots in Mumbai (Dhavale et al., 2002), the Scud missile attacks in Israel (Laor et al.,

1997), and more. Further examination of these designs is provided below.

Methods

The research process required a three-fold approach: overviewing materials regarding (1) traumatic experience and response, mass-related violence, and man-made conditions, (2) pre-adolescence, and (3) PTSD epidemiology and diagnostic structure.

The research process began by consulting the National Child Traumatic Stress Network (NCTSN) website. I gathered a list of resources that covered both the types of child-specific trauma symptoms and recovery practices for professionals, parents, and educators. I pulled six elements: complex trauma, early childhood trauma, natural disasters, refugee and war zone trauma, terrorism, and traumatic grief. With these construct summaries, I prepared a list of reviews and empirical studies which traced the diagnostic trends in American Psychiatric Association (APA) traumatic disorders. At this point, I narrowed the lists by removing natural disasters and traumatic grief. However, I also added the role of brain development. Most of the listed resources were published prior to 2000, so I conducted a cited reference search for more recent publications based on frequented authors.

Some of these names include Judith A. Cohen, who studies the effects of intimate partner violence and sexual abuse on children as well as psychotherapeutic practices for child PTSD; Michael De Bellis, M.D., a faculty member at Duke University and member of the Duke-UNC Brain Imaging and Analysis Center (BIAC) in Durham, North Carolina (www.biac.duke.edu, 2012); Betty Pfefferbaum, who studies the effects of disaster-related trauma – such as the September 11th attacks – on childhood traumatic symptoms

and resilience; Robert S. Pynoos, who has taken a more ecological approach to the role of traumatic stress; and Bessel van der Kolk, M.D., who founded the Trauma Center at the Justice Resource Institute and has conducted research on developmental trauma for more than 25 years (www.traumacenter.org, 2013).

Some supplementary sources I consulted regarding trauma and war conditions include the National Center for PTSD website (www.ptsd.va.gov, 2012) and the APA Task Force on the Psychosocial Effects of War on Children (APA, 2010). I referred to Rosemary O'Kane's two book editions of *Terrorism*, the *SAGE Encyclopedia of Terrorism*, Second Edition (Martin, 2011), and the four-volume series *The Psychology of Terrorism* (Stout, 2002) to explore mass-related violence and man-made traumatic conditions in the general context.

The second phase of the research process focused on developmental aspects of pre-adolescent childhood. General information about physical and cognitive capacities was attained from material provided by Dr. Makeba Wilbourn, an assistant professor who directs the Wilbourn Infant Lab at Duke (WILD) and conducts research on child language acquisition and cognitive development. I also referred to Harvard University's Center on the Developing Child for narrower publications on neurobiological procedures in the context of chaotic and traumatic environments. Other databases and journal sources related to physiological and social development were the Journal of the American Medical Association (JAMA), the publications and statistics websites for the United Nations International Children's Emergency Fund (UNICEF), and publications sponsored by the Urban Institute publication. I consulted the UN Refugees Agency (UNHCR) publications website (http://www.unhcr.org/pages/49c3646c4b8.html) for general

information about internal and international instability. I also accessed the United Nations Office of the High Commissioner of Human Rights (OHCHR) website (http://www.ohchr.org/EN/UDHR/Pages/Introduction.aspx).

The approach to PTSD prevalence rates and past diagnostic criteria was not as uniform as the previous two phases. In terms of epidemiology, I researched (1) normal environmental conditions and (2) potentially traumatic environments (i.e. extended pre-war violence and postwar conditions). The National Comorbidty Survey and its replications in different national studies were paramount resources for PTSD epidemiology in normal conditions. Initial resources for location-specific traumatic conditions included the longitudinal research series on the Scud missile attacks in Israel by Laor et al. (1996, 1997, 2001) and a variety of suggested authors and publications: Melissa Bryner, Steven Berkowitz, Patricia Watson, Beitchman et al., (1992), and Pelcovitz et al. (2000).

I also conducted a separate series of database searches (i.e. Web of Science, PsychInfo, and PubMed) based on previously traumatic locations: Cambodia, India, Croatia, Bosnia, Colombia, Ghana, South Africa, Kuwait, Yugoslavia, Serbia, Macedonia, and Venezuela. However, the location-specific search was not as successful as the aforementioned methods for child-related trauma research. This was partly due to the fact that I received author suggestions from Dr. Kimberly Blackshear, the NCTSN Liaison Project Coordinator for the Duke University Medical Center. Due to her experience in the child-traumatic field, the suggestions were already well centered on the project's topic.

Although I initially started researching traumatic disorders in both the DSM and the International Statistical Classification of Diseases and Related Health Problems (ICD)

manuals, I decided to focus on only the DSM criteria. The latest APA revision (DSM-5) was published in early 2013, and it provided a more recent authority on official PTSD developmental categorization. Equally, reviewing only the DSM criteria allowed me to focus on one set of diagnostic changes and avoid comparing apples and oranges. Furthermore, the most recent edition of internationally analogous criteria (ICD-10) was released two decades ago. Although it has been updated several times by the World Health Organization (WHO), this time frame has allowed extensive independent revisions to be published (WHO, 2013). With the newest international edition (ICD-11) scheduled for release in 2014, ICD-10 criteria would not be useful addition to the current argument.

Diagnostic Categorization and PTSD Criteria

Posttraumatic stress disorder (PTSD) was introduced into the realm of psychiatric nosology with the publication of the DSM-III (APA, 1980). Since then, the disorder has undergone a sequence of alterations regarding its categorization, diagnostic criteria, and number of subtypes and specifiers. With PTSD's introduction also came a fundamental shift in the perception of mental health disorders: an etiological agent might not only be a manifestation of inherent individual weakness but potentially an external factor as well (Friedman, 2013). This section outlines some of the changes to the formulation of PTSD that have necessarily affected its diagnostic application over the past three decades.

PTSD categorically evolved from an anxiety disorder and is now considered a trauma- and stressor-related disorder. Even so, it has maintained a valuable position in traumatic treatment and research. PTSD has been employed in the assessment of military servicemen such as Vietnam veterans and survivors of natural disasters like Hurricane

Katrina (APA, 2013; Keane e al., 1987; Scheeringa & Zeanah, 2008). By tracing the diagnostic organization of PTSD in official APA revisions, I outline a trend toward a more developmental structure. These subsequent publications include the DSM-III-R (1987), the DSM-IV (1994), the DSM-IV-TR (2000), and the DSM-5 (2013).

DSM-III and DSM-III-R: Categorization and Criteria

Five years after the bombing that almost claimed Carolyn McKinstry's life, the APA released its second edition of the DSM. Unlike the previous edition, there was no mention of a disorder known as “gross stress reaction” which had embodied evidential trends of shell shock, war neurosis, and combat hysteria in veterans prior to the 1950's (Crocq & Crocq, 2000). However, in the aftermath of the Vietnam War, the disorder's absence was widely felt. Many psychiatrists and grassroots “rap groups” were uncomfortable with classifying reported symptoms under the standard (and dis-jointed) categories of depression, schizophrenia, and alcoholism (Scott, 1990). This dissatisfaction led to a decade-long process of independent researchers and coalitions preparing empirical data and prompting public displeasure with the current DSM-II classification.

By 1978, the APA Committee on Reactive Disorders had accepted proposals from the veteran-inspired Working Group to establish “catastrophic stress disorder” as a category within the upcoming nosologic publication (Scott, 1990). In efforts for impartiality, DSM-III authors renamed the proposed category as “post-traumatic stress disorder” (APA, 1980). Here, PTSD was categorized as an anxiety disorder that resulted from an individual's reactions to any event falling outside the purview of usual human experience. This approach accomplished the initial goal of separating out individual

blame from his/her subsequent readjustment difficulties. However, this perspective left room for diagnostic confusion about the psychodynamic of individual patients. It appeared that differential vulnerabilities and response thresholds to extreme conditions were excluded factors (Friedman, 2013).

Both the 1980 and 1987 publications presented PTSD as being primarily experienced by adults. Each had an age-related specifier – comprising a single line in the third edition and a mere four sentences in the revised DSM-III-R – that demonstrated a lack of deep-seated developmental consideration (APA, 1980; APA, 1987). This was partly due to the convergence of funding on veteran mental health throughout the 1980's (Scott, 1990). Another factor was the lack of extensive epidemiological data on PTSD prior to the 1990's (Kessler et al., 1995). Although the PTSD subcommittee had grown five-fold in those seven years, this deficiency meant that psychiatrists had little information about the relatively high lifetime prevalence rates of the disorder (Kessler et al., 2005; Kessler et al., 2012; World Health Organization Mental Health Survey Consortium, 2007). Nor was information readily available to support assumptions about the serious potential for its early development (APA, 1987; Friedman, 2013).

DSM-IV and DSM-IV-TR: Categorization and Criteria

Although the revised DSM-III-R designated an unlimited age of onset for PTSD, by the release of the fourth edition little more progress was made in reference to a developmental perspective or subtype. DSM-IV age-related features advised that sleep disturbances and generalized fears might be an indicator that children were suffering from PTSD. However, the scheme did not organize an age-range in which these fears were to be considered to be especially harmful (APA, 1994). The normalcy of such

disturbances, according to Harvard University's Center on the Developing Child (2010a, 2010b), can be rejected after preschool and considered an irregular deviation from development. DSM-IV criteria made no such differentiation.

Instead, the updated age-specification stated that due to developmental constraints on reporting internal states, it would be up to the evaluation process to determine whether adult observations and reports merited PTSD diagnosis (APA, 1994). Such practices, the consultation of caregivers and teachers for information about a specific child, are far from an uncommon practice. In fact, most cases of child psychopathology depend on these consultations (Mash & Wolfe, 2010). All the same, the listed criteria provided no real diagnostic guidance – only four notes were included to modify the twenty-one criteria – for procedural evaluation of the severity of PTSD within different age ranges. Lastly, despite evidence that children have a diminished capacity to successfully avoid stimuli, childhood symptomatology was equated with all three adult distress clusters: (1) intrusive recollection or re-experiencing, (2) avoidance, and (3) hyperarousal (APA, 1994).

The 1994 publication of the DSM-IV maintained the categorization of PTSD as an anxiety disorder, as did its revision (DSM-IV-TR). Both the DSM-IV and DSM-IV-TR publications upgraded the diagnostic organization to include fuller comparisons of PTSD and other disorders. Given the duration, severity, frequency, type, and precursor of the symptoms, a patient may instead suffer from acute stress disorder (ASD), obsessive-compulsive disorder (OCD), or a related psychotic and/or mood disorders (APA, 1994; APA, 2000). The DSM-IV-TR age-related specifications virtually mirrored its predecessor, making no serious developmental provisions.

DSM-5: Categorization, Criteria, and Subtypes

Although some early research on child reactions to traumatic conditions (in inner-city schools, Afghanistan, and Pakistan) was conducted during the late 1970's, the majority of research in this area began in the 1990's (Bloch, 1978; Fremont, 2004; Saraiya et al., 2013). Between 1970 and 1979, there were less than 40 publications relating children to constructs such as psychogenic shock, war neurosis, and traumatic assault. In the following decade, the number quadrupled. By the 1990's, the number of social science publications focused on PTSD and childhood were in the thousands (Web of Science, 2013).

This developmental subarea quickly progressed and was included in the 2013 release of the DSM-5. The PTSD subtype for children younger than seven was formally established in order to correspond with previously-listed adult stressors and traumatic distress expressions (APA, 2013; Friedman, 2013). Several modifications seen in this preschool subtype include (1) limiting the A criterion for stressors and traumatic exposure, (2) annotating specific instances of the B criterion (intrusion and re-experiencing) in order to incorporate developmental expressions such as traumatic play, (3) collapsing the D criterion (negative mood/cognition) into the C criterion of avoidance, and (4) limiting the E criterion (minimum duration) to one month instead of the previous three (APA, 2000; APA, 2013).

The DSM-5 preschool subtype remarkably resembled the diagnostic structure of PTSD in the DSM-IV-TR. In both, the D criterion accounted for hyperarousal, while the F criterion represented level of impairment (APA, 2000; APA, 2013). One change seen in the DSM-5 edition was the addition of the H (in the subtype, G) criterion, stipulating that the symptomatic disturbance(s) could not result from ingested substance(s) or medical

condition(s). The DSM-5 also outlined child-specific considerations for older children regarding the B criterion. No such annotations were made for the other criteria: A (stressor), C (persistent avoidance), D (negative cognitive/mood alterations), and E (marked changes in arousal). Since many researchers have supported the notion that adolescents express extreme distress similarly to adults, it is no surprise that the revamped PTSD criteria made no modifications for this age group (APA, 2013; De Bellis, Baum, Birmaher, Keshavan, Ecard, Boring, Jenkins, & Ryan, 1999; Hyder, 2012; Landers, 1998; Laor et al., 1997).

Developmental Shortcomings in the DSM-5

The most recent psychiatric nosology made significant gains in accounting for developmental factors in the expression of PTSD symptoms in what De Young, Kenardy, and Cobham (2011) refer to as the "neglected population". Despite the preschool subtype, there are still key developmental shortcomings to its structure. (1) The age-related annotations for children over six refer only to the B criterion. These additions could be equally extended to emotional and behavioral adjustment or attachment patterns. (2) The DSM-5 organization does not provide a secondary subtype for children between the ages of seven and twelve. This becomes problematic with expressions that, such as school performance and inattention, cannot be simply remedied with criterion-level annotations. (3) Given its recent publication, the subtype has been sparsely applied for re-analyzing previous data. At the same time, the updated criteria have been applied to adults and adolescents more than children (Carmassi, Akiskal, Young, Stratta, Calderani, Massimetti, Akiskal, Rossi, & Dell'Osso, 2013; Kilpatrick, Resnick, Milanak, Miller, Keyes, &Friedman, 2013; Santiago, Ursano, Gray, Pynoos, Spiegel, Lewis-Fernandez,

Friedman, & Fullerton, 2013).

(1) The DSM-5 modifies how PTSD primary criteria apply to older children by using age-specific notes for different points within individual criterion. Currently, these annotations occur in only one criterion: intrusion and re-experience (APA, 2013). Two of the three items relate specifically to traumatic play, which follows an abundance of research on its role in socialization and its specific vulnerability to traumatic expression en lieu of emotional variance and productivity (Comer & Kendall, 2007; Hyder, 2004). One particular study – from a developmental series on Palestinian mental health within the Gaza community during the First Intifada (1987 – 1993), the Palestinian Authority Rule (1994 – 2001), and the Second Al Aqsa Intifada (2001 – 2005) – concluded that children frequently engaged in prison games, "war", and funeral processions (Qouta et al., 2008).

All the same, no further modifications are referenced for the avoidance, negative cognition, or hyperarousal criteria. This annotative absence opposes several empirical trends in traumatic symptomatology for children. For instance, Dhavale and colleagues (2002) studied the traumatic responses in children (ages 7 – 12) following fatal riots in Mumbai between December of 1992 and January the following year. They observed that children exhibited a wide range of emotional and behavioral inconsistencies. Dhavale et al. (2002) implied that these mood fluctuations partly resulted from an inability to successfully avoid traumatic reminders. As written by Landers (1998), alternative traumatic coping methods, such as violence, anger and frustration, despair, or languid attitudes, were partly due to social and developmental constraints that hinder a child's execution of avoidance techniques. Since these externalizing symptoms can co-occur

with or replace typical adult avoidance, the DSM should provide a C criterion annotation for children over six. This annotation should also consider the role of dependency and familial attachment in the child's capacity to feel and express avoidance.

(2) One remedy to the aforementioned concern would be an additional PTSD subtype for children between the ages of seven and twelve. Such a subtype would be useful since middle childhood is neurologically and socially different from both adolescence and adulthood (National Scientific Council on the Developing Child, 2004). Charney, Deutch, Krysal, Southwick, and Davis (1993) reported that adolescents and adults shared behavioral distress expressions including substance abuse, avoidance, and flashbacks after a traumatic event. Another analysis demonstrated similarities in the maladaptive neurobiological sequelae (i.e. hypothalamic-pituitary-adrenal activity) in adolescents and adults (Goenjian, Pynoos, Steinberg, Endres, Abraham, Geffner, & Fairbanks, 2003). Such overlap has not yet been found between children and adolescents or between children and adults (Comer & Kendall, 2007; el Zein & Ammar, 2010; Qouta et al., 2008).

Children differ in their reactions to traumatic events. In part, these differential responses depend on the child's age and level of psychological maturity (Hanford et al., 1993; Osofsky, 1995; Smith & North, 1993; Yehuda et al., 1998). For example, due to the incompletion of prefrontal cortex development, children between ages seven and twelve have limited coping skills and perspective taking abilities (De Young et al., 2011; Dhavale et al., 2002; National Scientific Council on the Developing Child, 2004). With diminished executive functioning, the traumatic interpretations of children are likely less informed than those of adolescents and adults. This differential perception can affect both

how children react to traumatic events and apply coping methods.

Moreover, latency-age children (6 – 11) may have attention problems and angry outbursts (Nader et al., 1990; Terr et al., 1999). Since middle childhood is often accompanied by school entry, new settings might elicit the expression of traumatic distress as concentration difficulties (Dhavale et al., 2002; National Scientific Council on the Developing Child, 2005; NCTSN Complex Trauma Task Force, 2003). The current D criterion refers to subjective thoughts more than cognitive performance, so separating middle childhood PTSD criteria from adolescence and adulthood would provide the opportunity to outline attention-related symptomatology (APA, 2013; Kuterovac-Jagodic, 2003).

Also, the G criterion from primary PTSD refers describes disturbances in occupational and/or social functioning as a key symptom. However, both these terms fail to make available the full spectrum behind the developmental conditions in primary education, in which performance and socialization interact. Inattentive trends, within the school setting, have been noted by several post-conflict analyses (Allwood et al., 2002; Dhavale et al., 2002; El Zein & Ammar, 2011; Kuterovac-Jagodic, 2003; Qouta et al., 2008). Educational inattention as a new posttraumatic symptom in older children might be useful for treatment considerations given the recent upsurge in media coverage of school shootings.

Not only does the DSM-5 not provide room to account for the effects of attachment stability/instability in children following a traumatic event, but the current diagnostic organization does not account for potentially regressive behavior in older children. Such regression has been documented in several outlines of posttraumatic

symptomatology (Fremont, 2004; Kuterovac-Jagodic, 2003; Pfefferbaum et al., 2002; Salmon & Bryant, 2002). At the same time, Dhavale et al. (2002) pointed to affect regulation as one of the key traumatic responses in children.

(3) The third limitation of the DSM-5 criteria does not apply to its diagnostic content but to its field-research applicability. In the past twenty years, several projects have produced internationally rich data on children in traumatic environments. However, the vast majority of subsequent analyses have employed DSM-III-R, DSM-IV, or DSM-IV-TR criteria. Even while these structures were considered too developmentally insensitive, so much so that independent teams and researchers ventured to create their own diagnostic criteria, the DSM-5 restructuring has not produced many child-specific re-analyses of traumatic data. Nevertheless, reanalysis under DSM-5 modifications would enhance the uniformity and diagnostic sensitivity of epidemiological results (Iselin et al., 2010; Scheeringa, 2013).

In the Web of Science database, developmental re-analyses are sparse. One recent undertaking reviewed PTSD publications between 1998 and 2010 in order to create a DSM-5-based epidemiology. However, the reviewed articles did not include pre-adolescent children (Santiago et al., 2013). Elhai, Miller, Ford, Biehn, Palmieri, & Frueh (2012) constructed a DSM-5-based nonclinical study of college students. A similar construction of earthquake survivors was undertaken by Carmassi and colleagues (2013). Kilpatrick et al. (2013) compared PTSD prevalence in adults using the DSM-IV and DSM-5 criteria. To be fair, Pfefferbaum, Noffsinger, Wing, & Allen (2014) appear to be releasing one of the first child-specific, DSM-5-based epidemiological surveys of PTSD prevalence.

Epidemiology in Normal and Traumatic Conditions

A recent epidemiological analysis estimated the lifetime prevalence (LT), 12-month prevalence (12M), and lifetime morbid rates (LMR, based on age of onset) of DSM-IV-TR anxiety and mood disorders within the United States (Kessler et al., 2012). In this study, PTSD was moderately ranked (5.7%) amongst anxiety disorders in lifetime prevalence. The disorder was found to be more prevalent among women than men in both the adolescent (6.9% vs. 2.3 %, $P<.05$) and adult (11.7% vs. 4.0%, $P<.05$) groups. No data were provided concerning childhood LT.

However, in the accumulated data set, the mean LT averaged at 6.06%. 12M and LMR estimates were 3.7% and 10.1%, respectively. The ratio of 12-month prevalence to lifetime prevalence (12M: LT) varied substantially by age: the highest ratio was found among adolescents (.8) and the lowest among the elderly (.3). Kessler and colleagues (2012) presumed this variance reflected the joint effects of associations between age and time-since-onset and between time-since-onset and persistence. Kessler et al. (2012) found a higher proportion of lifetime cases of PTSD (42%) than generalized anxiety disorder (20%), major depressive episode (27%), and panic disorder (27%), signifying that the first occurrence of traumatic events is likely during childhood (Cisler, Begle, Amstadter, Resnik, Danielson, Saunders, & Kilpatrick, 2012; Fairbank & Fairbank, 2009). Given the need for an overwhelmed capacity for stress coping in the definition of a traumatic event, this conclusion is not surprising in the absence of severely traumatic man-made environments.

Traumatic Conditions

De Jong, Komproe, van Ommeren, el Masri, Araya, Khaled, van de Put, and Somasundaram (2001) found that the prevalence of PTSD (DSM-IV criteria) in individuals over the age of sixteen ranged between 15.8% - 37.4% in four post-war, low-income nations: Algeria, Cambodia, Ethiopia, and Gaza. Of the many risk factors found to contribute to the development of this traumatic disorder (torture, history of mental illness, mediocre living conditions, death or separation in the family, etc.), the most-significant factor, which was present in all four samples, was conflict-related related trauma after age 12 (de Jong et al., 2001).

A general population study of German adolescents and young adults yielded a lifetime rate of traumatic experience (A1 entry criterion) of 21.4% (Perkonigg et al., 2000). Of these individuals, 79.3% also qualified for the DSM-IV A2 entry criterion after acknowledging having felt horror and anxiety during the occurrence of the traumatic event. Among the A2-qualifying individuals, 7.8% met all the DSM-IV diagnostic criteria for PTSD, resulting in a LT of 1.3% and 12M of 0.7%. Males were more likely to report both A1 (25.2% vs. 17.7%, $P<0.001$) and A2 criterion (18.6% vs. 15.5%, $P<0.05$). However, more females developed subsequent PTSD (12.5% vs. 1.6%, $P<0.001$). Females from this sample also had higher LT (0.4% vs. 2.2%, $P<0.001$) and 12M (0.1% vs. 1.3%, $P<0.01$) than males. The LT: 12M ratio was also significantly higher among men (0.1% vs. 1.1%, $P<0.01$), which suggests that PTSD may have a more chronic course among women (Perkonigg et al., 2000).

In the communal survey conducted by Dhavale et al. (2002), nearly two-thirds (62.6%) of participants (ages 7 – 12) suffered sleep disturbances one month after the riots

had quieted. 40.2% complained of somatic symptoms (i.e. headaches and stomachaches). 104 children (21%) were rated severely on their posttraumatic symptom expressions. A follow-up interview of these individuals found that, six months after the riots had ceased, 11.9% faced symptom persistence at the same level of severity (Dhavale, et al. 2002).

A study of Israeli preschoolers after four violent months that preceded the Gulf War compared the influence of displacement and maternal coping with PTSD symptomatology. Laor et al. (1997) found that displaced children had higher PTSD severity levels compared to children who were not removed from their household (moderate: 37.3% vs. 28.1%; severe: 7.8% vs. 3.5%). The significance of these differences also carried over into the 30-month follow-up review. Laor and colleagues also determined that maternal depression and emotional availability affected 3-year-olds more than other children, which lends some support to the idea of attachment's role in stress-coping in children. However, personality and prior mental health were among other noted factors in PTSD prognosis. The research team backed the notion of a "protective matrix" that combined cultural, familial, and personal adaptive mechanisms to regulate stressful occurrences (Laor et al., 1997).

Another child-specific PTSD study focused on the effects of the 2006 war on Lebanese children between ages nine and twelve (El Zein & Ammar, 2011). Both proximity and exposure to combat (residential shelling and structural damage) were observed as significant factors in the difference in state-scale anxiety between directly-exposed children and the control group ($M = 39.50$ vs. $M = 37.21$). Although the authors noted that this influence was inconsistent with previous studies in Israeli (1973) and Palestine (Thabet et al., 2002), they mention that Lebanon had

not been under continuous threat. Thus, Lebanese children reacted to trauma according to what it meant to them (El Zein & Ammar, 2011). The authors also noted that, likely due to the importance of family ties and proper burial rites in Lebanese culture, the death of a loved one and witnessing mass graves were both positive indicators of heightened anxiety and grief symptoms. According to el Zein and Ammar (2011), 113 of the 215 selected participants had experienced family loss.

Following the 2001 attacks on the World Trade Center (WTC), Klein et al. (2009) conducted a mix-method survey of children under five, and their parents, who had witnessed or experienced the September 11th WTC bombings. Although the authors did not seek to undo the criticality of caregiver mental health, physic health, and parenting, they were aiming to qualitatively illustrate child functioning separate from the adult. The research team videotaped over 80 semi-structured interviews of preschoolers and parents as they communicated their experiences and understandings of the terrorist attacks. Klein and colleagues (2009) also conducted 13 focus groups in which parents conversed regarding their child behavior and subsequent adjustment.

From this material, the authors coded child reactions into an acute category and a long-term category. Common acute responses included extreme calmness and cooperation, abnormal behavioral difficulty, fear and crying, and regulatory changes in sleep and irritability. Some of the long-term responses included expressions of sadness (i.e. the loss of personal objects or routines), separation issues, and new fears. Parents noted these long-term symptoms persisted for several months

following the attacks before they began decreasing. For instance, one mother reported her four-year-old 8 months after WTC being more anxious about separation that prior to the disaster (Klein et al., 2009).

Final Thoughts: Why Should We Care about Childhood Trauma?

The concept of traumatic experience has been widely applied over the past 40 years, but half that time was spent ignoring the effects of traumatic stress on children. Despite prior opinion, children do not forget negative experiences more easily than adults (Elliot, 2002; Hyder, 2004). Infants can maintain olfactory, auditory and even visual representations of traumatic events for extended periods of time. By early childhood, although verbal and pictorial memories have increased in accuracy, issues in perspective taking may make understanding traumatic occurrences more difficult. Additionally, young children exposed to the toxic stress of strong, frequent, and prolonged adversity without adult support are more likely to exhibit developmental delays, especially prior to age three (National Scientific Council on the Developing Child, 2010b).

Early traumatic experiences can inhibit brain capacities that help individuals establish independent relationships and emotional regulations (Kaufman, Yang, Douglas-Palumberi, Houshyar, Lipschitz, Krystal, & Gelernter, 2004; Kaufman, Yang, Douglas-Palumberi, Grasso, Lipschitz, Houshyar, Krystal, Gelernter, 2006; NCTSN Complex Trauma Task Force, 2003). Beeghly and Cicchetti (1994) documented that traumatized children as young as 30 months demonstrated deficits in discriminating affective states. Furthermore, early trauma can distort basic cognitive building blocks such as a sense of self, sense of agency, objectivity, and basic cause-and-effect (NCTSN Complex Trauma

Task Force, 2003).

Data that easily reflect levels of international and civil unrest, thereby implicating the presence of traumatic events, are refugee migratory patterns and repatriation statistics. By the 1950's, only 1.5 million refugees and displaced persons (DPs) remained in international quarters following the Second World War (Bemak & Chung, 2002). By 1976, refugee estimates had risen to 2.7 million. With estimates of 10.3 million, this number had steadily increased by 1982. By 1997 worldwide projections approximated the total number of refugees to be 26 million (Balian, 1997; Bemak, Chung, & Pedersen, 2003). Furthermore, quarterly trends between January and June of 2006 tallied more than 93,000 new applications for refugee status. With a recognition rate of just 41%, the amount of individuals in asylum in some 96 countries (not including the United States, the United Kingdom, France, Germany, Soviet Union, and other developed nations) hovered around 6.1 million (UNHCR, 2006). One sobering element of these statistics is that, at least in the United States, approximately 40% of all inbound refugees are children (APA Task Force on the Psychological Effects of War on Children, 2010).

Children who have been granted refugee recognition are only a fraction of the total number who experience pre-war violence and postwar conditions. A vast majority of these children have experienced a wide range of severe trauma and adversity. Of the more than 1300 Palestinian children interviewed by the Gaza Community Mental Health Programme (GCMHP), 74% reported experiencing assault toward family members, 88% reported night raids at home, and 51% reported having been beaten by soldiers during the First Intifada (Quota et al., (2008). During the Al Aqsa Intifada, 52-77% of interviewed children had witnessed at least one killing.

Despite high levels of posttraumatic symptoms in children (58-65% among children who experienced the Al Aqsa Intifada), Quota et al. (2008) determined that parental care and structure were *protective* factors of child mental health. However, they also found that parental traumatic exposure corresponded with child rejection and neglect, which in turn negatively influenced the intellectual creativity and cognitive resources within the child. Qouta et al. (2008) also discovered that mothers who had lost their homes experienced more depressive, anxiety, and paranoid symptoms, a trend supported by findings from Laor et al. (1997). Maternal PTSD and the presence of mal-adaptive affective techniques in children were then positively related. During the First Intifada, children ages 8 – 14 were prone to both aggressive and withdrawal symptoms regardless of prolonged curfews (Qouta et al., 2008).

Counterarguments

It would appear that a majority of researchers agree on the diagnostic categorization of PTSD. However, some researchers have rejected the notion of trauma altogether (Hyder, 2004). During the 1970's grassroots efforts for reinstating a combat-related disorder to the DSM-III, researchers from regions like New England and Chicago met strong resistance in psychiatric sects in cities like St. Louis. These researchers believed that to externalize the etiological factor was a mistake (Scott, 1990). More contemporary resistance can also be found in researchers like Naomi Richman, who argues that the concept of trauma is too individualist and pathologizes those who are manifesting true signs of mental illness. She claims that these individuals are showing normal responses to a set of

extreme circumstances and are in need of support instead of psychological treatment (Richman, 1996).

Although the categorical organization of PTSD is far from perfect and will likely have several revisions in the future, both these counterarguments fail to account for benefits provided by the formalized disorder. One advantage is that causal knowledge about symptomatic expressions prepares clinicians to provide better treatment. Secondly, to acknowledge the symptoms whilst ignoring potential common factors between them is to refute the underlying principles of empirical research and the scientific method.

DSM-IV and DSM-IV-TR, unlike the previous two publications, contained a more economic delineation of the differences between PTSD and the symptoms of other similar disorders. Furthermore, the bulk of resistance surrounding the third DSM edition was due to fears that the new disorder would revive the previous "gross stress disorder", which had focused explicitly on war conditions (Scott, 1990). The APA Committee on Reactive Disorders preempted these fears by renaming the new disorder to deemphasize implications to man-made events (APA. 1980; Scott, 1990). Additionally, more recent applications have found a range of contexts in which PTSD can prove useful for understanding the differential severity in individual responses.

To refute the second counterargument, regardless of the fact that lifetime PTSD prevalence may be high, it is presumptuous to claim that disorderly (or extreme) traumatic reactions are typical reactions. (1) This perspective negates individual vulnerability, resilience, mental health history, and personality as factors

that influence the spectrum of human experience. Individuals experience trauma at different intensities, so Richman's (1996) view not only negates the existence of a trauma threshold but also the potential for differential perception. If it were the case that no threshold existed, then there would be no psychiatric mechanism to protect anyone from reacting traumatically (or normally) to a variety of life events (Dohrenwend et al., 1978).

Furthermore, formal PTSD diagnosis does not necessitate abnormality in anything aside from the coping methods of disorderly traumatic expression. Richman's assertion also, by disregarding differential coping, presumes that either no one can cope adequately with traumatic exposure or that everyone copes inadequately with it. Either way, her analysis appears heedless of epidemiological data. While PTSD LT rates can be high, 12M rates are much more representative of the percentage of individuals inadequately coping with stress in a single time frame (Kessler et al., 2012). Moreover, stating that someone has not adequately coped with stress is not to "pathologize" his/her reactions but to quantify those reactions in comparison with others in the context of a particular traumatic experience.

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