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Evidence Based Trauma Treatment for Children and Youth

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Abstract Exposure to traumatic events and experiences does not discriminate against age, gender or race. Though not all children and youth exposed to trauma experience difficulty, many experience significant adverse effects that impede their cognitive, physical, psychological, affective, interpersonal and behavioural functioning The focus of this paper is to review the literature on the effects and needs of children and youth exposed to traumatic events, analyze current evidence based treatments, and explore emerging treatment modalities.

Keywords Trauma · Youth · Emerging treatments

Trauma Treatment for Children and Youth

Exposure to traumatic events and experiences does not discriminate against age, gender or race. Many children and youth, from birth to age 18, experience some form of trauma during their formative years (Van Ameringen et al. 2008). Though not all children and youth exposed to trauma experience difficulty, many experience significant adverse effects that impede their cognitive, physical, psychological, affective, interpersonal and behavioural functioning. Trauma exposed children and youth may experience extended and comorbid difficulties into adulthood (Brady et al. 2000; Hubbard et al. 1995). Effective treatment modalities become essential to ameliorate the negative effects of trauma exposure. The focus of this paper is to review the literature on the effects and needs of children and youth exposed to traumatic events, analyse current evidence based treatments, and explore emerging treatment modalities. In conclusion, this paper will synthesise the literature and propose models of treatment requiring further consideration, integration and research efforts.

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Considerations for Child and Youth Trauma Responses

Trauma, as identified by the Diagnostic and Statistical Manual of Mental Health Disorders, Text Revised (DSM-IV-TR), is described as a perceived sudden and unexpected experience of shocking nature, where death or threat to life of body integrity occurs, and there is a subjective feeling of intense fear, terror, and helplessness (American Psychiatric Association 2000). The experiences that may be considered as traumatic can vary from single events, such as natural disasters, to repetitive interpersonal violence, such as sexual abuse. Following traumatic exposure, some children and youth experience psychological, physical, and emotional consequences, referred to as posttraumatic stress disorder (PTSD). The DSM-IV-TR criteria for the diagnosis of posttraumatic stress disorder (PTSD) outline that the individual must have at least one symptom of re-experiencing the traumatic event through intrusive thoughts, two or more symptoms of hyperarousal, and three or more avoidant behaviours (American Psychiatric Association 2000). However, the DSM-IV-TR does not distinguish between adult and child or youth trauma reactions. Though childhood PTSD resembles the DSM-IV-TR criteria, there are notable differences. Given that the development of PTSD is reliant on the interpretation and personal significance attributed to the traumatic event

(Amir et al. 2002), children and youth experience PTSD and the symptoms differently than adults. The type of trauma, the age of exposure, the duration of experiences, and the developmental stage of a child all effect the manifestation and symptoms of PTSD (Najjar et al. 2008). The child or youth's developmental stage, the perception of the incident, the interpretation, the ability to express self linguistically and organize memories are quite different from an adult; influencing the responses and symptoms of trauma exposure. Therefore, the identification of child and youth PTSD is complicated.

Interestingly, PTSD is not the most common diagnosis for children and youth exposed to traumatic events. Numerous studies suggest that children and youth exposed to traumatic events garner different diagnosis such as separation anxiety disorder, oppositional defiant disorder, and phobic disorders (Ackerman et al. 1998; Saul et al. 2008; van der Kolk 2005).

Impact of Trauma Exposure on Children and Youth

Research into neurological disruptions following trauma has indicated significant effects to brain function. Van der Kolk (2006) describes the biological process that occurs when individuals exposed to trauma are re-stimulated. He indicates:

> Subjects had cerebral blood flow increases in the right medial orbitofrontal cortex, insula, amygdala, and anterior temporal pole, and in a relative deactivation in the left anterior prefrontal cortex, specifically Broca's area, the expressive speech center in the brain, the area necessary to communicate what one is thinking and feeling. (p. 278).

Consequently, when a traumatized individual re-experiences traumatic events, the brain structures responsible for intense emotions is activated and brain structures responsible for emotion regulation and communication are deactivated. Therefore re-experiencing elevates emotional reactions and suppresses emotional control and expression. Therefore, supporting evidence demonstrates that multiple functioning domains simultaneously become affected when one is exposed to trauma events. For children and youth, this process becomes even more complex.

Putnam (2009) argues that neurological and psychological developmental processes can be significantly affected by abuse and neglect. A sensitive period in childhood can be considered a time during brain development when a "function or capacity is most easily acquired and after which is difficult or impossible to achieve normal function of that capacity if it has not already occurred", (Putnam 2009, p. 3). Though direct association between brain size and childhood abuse has not been verified, some studies suggest that children exposed to abuse may have smaller brain regions compared to those who have not been exposed to abuse (De Bellis & Thomas, 2003). In addition, children who are preverbal or minimally verbal tend to experience and perceive trauma exposure differently than older children, youth and adults. Young children are often unable to provide coherent and sequential accounts of events or the executive cognitions to interpret the events, due to limited linguistic abilities (Feldman & Vengrober 2011). Therefore, traumatic events can cause disruptions in the child's developmental progression, physical advancement, interpersonal effectiveness and behavioural difficulties. Children exposed to trauma have been found to experience developmental regressions, dysregulation of bodily functions such as sleep and appetite, separation anxiety, disorganized attachment, social constrictions, limited awareness of danger and aggression (American Psychiatric Association 2000; Feldman & Vengrober 2011; Najjar et al. 2008; van der Kolk 2005).

In contrast, youth, aged 13–17, tend to present symptoms closer to the DSM-IV-TR criteria for PTSD, but again express with more behavioural orientations. These behavioural expressions often supersede identification of trauma and create difficulty with identifying and assessing early traumatic exposure, therefore, delaying treatment. In addition, given the vulnerability youth experience with physiological, psychological, and social changes, identification and assessment are further challenged (Cook et al. 2005). Yet research suggests that early intervention is most effective (Silverman et al. 2008). If left untreated, trauma exposed youth have been found to experience co-occurring psychiatric problems such as mood disorders, anxiety disorders, eating disorders, self-injury (Spinazzola et al. 2011), and substance abuse (Cook et al. 2005; Dube et al. 2005). Dube et al. (2005) found youth more likely to become substance abusers if psychically abused (6–12 times) and sexually abused (18–21 times) compared to those who did not identify childhood abuse.

Research and practice in childhood trauma proposed a potential subtype of PTSD referred to in the literature as complex trauma (Courtois 2008; Cook et al. 2005). Complex trauma refers to the development of problematic trauma responses that occur when children or youth experience repetitive and cumulative traumatic experiences connected to prolonged exposure with an interpersonal relationship (Courtois 2008; van der Kolk et al. 1996). Though complex trauma is not included as a formal diagnosis in the DSM-IV, it is a pertinent term necessary to describe the complexity and severity of some forms of childhood trauma.

Complex Trauma

Individuals with complex trauma tend to experience additional difficulties with cognitions, dissociation, physical

biology and awareness, affect regulation, interpersonal attachment, and behavioural control (Najjar et al. 2008; Herman 1992). Dissociation, a crucial feature in complex trauma refers to a protective state when an individual is faced with traumatic reminders (Cook et al. 2005). In a dissociative state, individuals experience psychological and physical disconnect and awareness (Cook et al. 2005).

Research into the treatment of child and youth trauma exposure has proposed that treatment must be flexible and adaptable to meet the age, developmental stage, gender, and ethnicity of the individual (Cook et al. 2005). The stepped model of interventions has been recommended for youth with complex trauma, focusing on the social, behavioural and emotional aspects of difficulty that arise. (Cohen et al. 2012; Cook et al. 2005; Ford et al. 2005; Kowalik et al. 2011). In particular, a specific model, Structured Psychotherapy for Adolescents Responding to Chronic Stress (SPARCS), discussed later, is shown to be particularly helpful for adolescents who present with a history of continued exposure to violence and trauma. (Habib et al. 2013; Weiner et al. 2009).

Courtois (2008) suggests that those struggling with complex PTSD often have a mind and body disconnect. She argues that since trauma survivors tend to ignore their bodies and are neglectful with wellness and medical concerns, there is a need for evidence based interventions that include the mind and body. A new body of research suggests given that trauma effects multiple domains, such as physical awareness and dissociation, the need to address internal sensations and physical patterns is necessary for the treatment success of trauma (Courtois 2008; Emerson et al. 2009; Spinazzola et al. 2011; van der Kolk 2006). This research suggests learning body awareness and regulation of physiological arousal may effectively address symptoms of hyperarousal and dissociation (van der Kolk 2006). Cohen et al. (2012) suggested that physically based relaxation strategies may be more beneficial during the early coping strategies of trauma work versus cognitive processing.

Overall, it appears that while cognitive and behavioural approaches have been reported as showing evidence of success with children and youth who have been traumatized, there is new research suggesting the need to move beyond these approaches to include body awareness and sensory mastery prior to cognitive and/or behavioural interventions.

Searching the Literature

The method for searching the literature for this study includes a review of online peer-reviewed journal publications. Electronic journal databases searched include: Google Scholar, NREPP, JSTOR, OECD Health Data, Proquest Nursing & Allied Health Source, PsycARTICLES, PsycINFO, PubMed, Sage Journals Online, Social Service Abstracts, Sociological Abstracts, and Web of Science. Search terms used included the following: 'Adolescent' + 'trauma', 'evidence based' + 'trauma treatment', 'childhood trauma', and specific searches using children and adolescent along with terms such as 'yoga' + 'trauma', 'art therapy' + "trauma", and finally 'trauma focused' + cognitive behavioural theory + 'adolescents'. A search point took place for articles published in English in the last 20 years, from January 1993 to January 1 2013. However one publication dated back to 1989 (Shapiro 1989) to include the original author and publication. Inclusion criteria were outcome studies and reviews available online in peer-reviewed scholarly journals, as well as books published in English.

The primary objective is to review the literature on the effects and needs of children and youth exposed to traumatic events, analyze current evidence based treatments, and explore emerging treatment modalities. The ability to go into great depth regarding each of interventions listed below is beyond the scope of this review. However, sample information will be presented regarding evidence based practices that demonstrate how they effectively meet the needs of children and youth exposed to traumatic events.

Current Evidence Based Treatments

Though consistently utilized, there is a lack of sufficient evidence to suggest that psychopharmacology alone can effectively treat PTSD (Keeshin & Strawn 2012; Courtois 2008). Studies thus far have limited rigorous methodology, demonstrate inconclusive findings and have limited long term outcomes (Kowalik et al. 2011; Nikulina et al. 2008). Results of research indicate selective serotonin reuptake inhibitors (SSRI) have been used to treat symptoms of depression and anxiety (Najjar et al. 2008). Two studies on the effects of the SSRI Citalopram on children and youth with PTSD symptoms found conflicting results. The first trial by (Seedat et al. 2001) with 8 youth, aged 12–18 years, administered 20 mg Citalopram, experienced improvement in PTSD symptoms, but not with depressive symptoms. The second trial by Seedat et al. (2002), which studied 24 youth, aged 10–18, found participants experienced a reduction in hyperarousal but no changes to avoidance or re-experiencing symptoms. Sympatholytic medications, such as Clonodine, have been used to treat hyperarousal. (Harmon & Riggs 1996) studied of seven, 3 to 6 year olds with problematic symptoms associated with childhood abuse, who were administered Clonodine. Results indicated reductions in aggression, hyperarousal and sleep difficulties. However, what appears evident in the research is that pharmacology can assist in the reduction of

some symptoms but are more successful in combination with psychotherapy to address the needs of trauma survivors (Courtois 2008).

Cognitive Behavioural Therapy

To date, the most researched and evidenced based approach to treatment for traumatized children and youth is Cognitive Behavioural Therapy (CBT) (Ahmad et al. 2007; Cohen & Mannarino 1996; Courtois 2008; Cukor et al. 2009; Foa et al. 2009; Kowalik et al. 2011; Silverman et al. 2008). CBT focuses on addressing and altering dysfunctional thoughts, maladaptive behaviours and unhealthy emotional responses. It is based on the premise that one's thoughts about a situation or an event effects how one feels and consequently reacts or behaves. In trauma treatment, CBT is believed to address symptoms of re-experiencing, avoidance, and arousal; the core feature of PTSD (Najjar et al. 2008). CBT for trauma frequently includes psychoeducation, gradual exposure, cognitive repossessing and structuring (Cohen & Mannarino 2010).

Despite CBT's success in areas of anxiety and arousal, other studies have noted that the complexity of treating adolescents with a history of trauma, presenting with comorbid symptoms needs to be studied further (Lewis et al. 2010). In a large randomized study of 427 adolescents, Lewis et al. (2010) noted that the results showed that:

> CBT was *less* efficacious for treating depressed teens with a history of childhood trauma….Furthermore, our findings replicate the results from three previous studies with depressed adolescents that demonstrated that CBT performed poorly with teens who had experienced childhood trauma. (p. 138).

The authors questioned whether the modular approach, often used in CBT, focusing primarily on psycho-education and skill development, might limit the flexibility and interpersonal context needed for adolescent trauma survivors. Lewis et al. (2010) also note that "*Post hoc* analyses revealed that approximately 60 % of the TADS teens who had experienced CSA also had a comorbid internalizing disorder, a significantly higher percentage than those without a history of CSA." (p. 138). Based on these findings the authors recommend assessing for trauma history for all clients presenting with issues such as anxiety and depression, allowing for intervention specific to their trauma experience as in TF-CBT.

Trauma Focused Cognitive Behavioural Therapy

Trauma Focused CBT (TF-CBT) is a psychosocial treatment modality identified as a validated treatment for children and parents (Cohen & Mannarino 2008, Cohen et al. 2004; Deblinger et al. 1996). Appropriate for children and youth, 3–18 years of age, who have experienced diverse forms of trauma, TF-CBT is conducted through individual and joint parent and child sessions, over a period of 12–16 sessions (NREPP: SAMHSA's National Registry of Evidence-based Programs and Practices 2008). Components of TF-CBT include psycho-education, parent skill development, relaxation, affective modulation, cognitive reprocessing, and re-creation of trauma narratives, in vivo practice and safety planning. (Cohen & Mannarino 2008). It is considered to be effective across racial and ethnic minorities (Weiner et al. 2009).

Silverman et al. (2008) considered TF-CBT the only well-founded treatment with "statistically significantly superior to psychosocial placebo or to another treatment in at least two group-design experiments conducted in at least two independent research settings" (p.160) and "the only well-established treatment for children exposed to traumatic events" (p.162), following evaluation of 21 randomized control trials of psychosocial treatment modalities for children and youth exposed to traumatic events. Cohen et al. (2004) found TF-CBT demonstrated significant improvement with symptoms of PTSD, depression, behavior problems, shame, and abuse-related attributions compared to child centered therapy (CCT) group through their random controlled trail of 229 children, aged 8–14 who identified PTSD symptoms.

Results of Deblinger et al. (2011) study of 210 children sexually abused, aged 4–11, and their parents, indicated TF-CBT effectively improved participants PTSD symptoms and parenting skills. Mannarino et al. (2012) conducted a follow-up assessment to the aforementioned study conducted by Deblinger et al. (2011), included 158 children from the former study, and concluded that the progress reported previously was sustained at 6 and 12 months post-treatment, thereby solidifying TF-CBT's sustainability and durability with sexual abuse survivors. Given the breadth of research, TF-CBT has demonstrated efficacy, sustainability, and durability with child and youth trauma survivors, particularly sexual abuse survivors. Its wide age range of efficacy with both children and youth also categorizes it as flexible and adaptable to developmental diversity.

However, some researchers argue that CBT approaches cannot address all levels of functioning effected by trauma exposure, particularly physical and neurological functioning. Specifically, van der Kolk (2006) argues that CBT practice does not pay enough "attention to the experiences and interpretation of disturbed physical sensations and preprogrammed physical action patterns" (p. 282). He argues that traumatic memories and emotional pain are programmed and intertwined within the mind and body requiring somatically orientated therapies to address symptoms of dissociation, hyperarousal, and to improve

body awareness affected by trauma exposure (van der Kolk 2003).

Emerging Treatment Modalities

Further treatment modalities have been used to treat adult populations with PTSD. While CBT has demonstrated encouraging efficacy with child and youth populations, treatment failure still occurs and requires further approaches and alternative models of treatment (Chemtob et al. 2002, Deblinger et al. 2011). Unfortunately, research supporting alternative treatments for children and youth are limited. Nonetheless, several treatment modalities offer noted potential.

Eye Movement Desensitization and Reprocessing

Eye Movement Desensitization and Reprocessing (EMDR) is an individual therapeutic modality which focuses on desensitizing an individual to the traumatic memory through standardized short imagined exposures and bilateral stimuli (Shapiro 1989). The purpose is to assist the traumatized individual in adequately processing traumatic memories and fuse them with healthy processed memories (Rodenburg et al. 2009; Shapiro 1989).

EMDR has shown positive results for adult diagnoses with PTSD (Scheck et al. 1998; Shapiro 1989; Wilson et al. 1997). However few studies have tested the efficacy with children and youth. Silverman et al. (2008) considered EMDR for children as a "possibly efficacious psychosocial treatment" (p. 169). Rodenburg et al. (2009) meta-analysis of EMDR with children suggests that EMDR appears to be beneficial and may add "small but significant incremental value" (p. 604). Chemtob et al. (2002) randomized controlled trial studied 32 children, exposed to disaster related trauma through a hurricane, who had not responded to CBT. Participants who had three sessions of EMDR experienced reduced PTSD symptoms following intervention and at 6 month follow up, compared to waitlist control group who received no treatment. In addition, (Jaberghaderi et al. 2004) compared EMDR and CBT with Iranian sexually abused females, age 12 and 13. Results indicated both interventions showed statistically significant effect sizes on posttraumatic symptom outcomes, and a medium effect sizes on the behaviour outcome. Though the sample size was small, the study suggests potential efficacy for EMDR. Ahmad et al. (2007) small sample randomized control trial, of 32 children, aged 6–16 diagnosed with PTSD, showed improvement in re-experiencing symptoms post-treatment compared to waitlist group. Yet, results also indicated no improvements in hyper-arousal symptoms. Therefore, despite promising potential strength of EMDR with children, further research is necessary to conclude efficacy.

Dialectical Behavioural Therapy

Application for dialectical behavioural therapy (DBT) with trauma survivors has been newly proposed given the relation between Borderline Personality Disorder (BPD) and histories of trauma (Rathus and Miller 2002; Steil et al. 2011). DBT is a cognitive behavioural treatment developed for individuals diagnosed with BPD (Linehan 1993). Treatment focuses on managing emotion dysregulation and balancing acceptance and change, through concurrent individual psychotherapy and group skill building sessions. Mindfulness, emotion regulation, distress tolerance and interpersonal effectiveness are the four core skills taught (Linehan 1993).

Steil et al. (2011) proposed a 3 month residential DBT program for PTSD (DBT-PTSD) for adults. They conducted an uncontrolled pilot study including 29 adult female participants. Though the study had multiple limitations, it did suggest potential promise in reducing PTSD symptoms for adult women exposed to childhood sexual abuse. However, no studies involving children or youth trauma survivors have been conducted. Given the potential efficacy with adult populations with histories of sexual abuse traumas and skills components that address PTSD symptoms such as deregulation of cognitions and affect, DBT could be utilized for trauma survivors in conjunction treatments that process traumatic memories.

Often linked to DBT is another emerging trend focusing solely on adolescents; Structured Psychotherapy for Adolescents Responding to Chronic Stress SPARCS. According to (Habib et al. 2013), the authors describe the program as using curriculum that incorporates "complex trauma treatment and is grounded in techniques derived or adapted from evidence-based interventions" (p.719).

The group based intervention is usually a 16 week manually guided group to improve cognition, behaviour, and promote self-regulation capacities. While evidence based studies using SPARCS with children and youth exposed to trauma are on the rise, many of the studies are small samples and more detailed studies are recommended. In addition to this, while the SPARCS model includes mind/body connections such as mindfulness, (Weiner et al. 2009) notes that mindfulness is explained to group members as "paying attention in a particular way, on purpose, and non-judgmentally." While mindfulness is a step toward the mind/body connection, it is questionable whether children and youth can grasp the mindfulness concept in its complexity. With that in mind the following interventions offer other mind/body interventions which might prove to be more hands-on, requiring less conceptualization.

Yoga

Yoga practice can offer child and youth trauma survivors means to develop mind body connections and regulation of body sensation. Emerging research has begun to incorporate mind body interventions into trauma services through the use of yoga practice. Studies suggest that yoga has a positive impact on the physical and emotional well-being of trauma survivors (Descilo et al. 2010; Emerson et al. 2009; Spinazzola et al. 2011).

Van der Kolk (2006) believed that the practice of yoga could be an effective technique to stabilize the autonomic nervous system (ANS) through yogic breath. Cohen et al. (2012) suggest that physically based relaxation strategies may be more beneficial during the early coping stages of trauma work versus cognitive processing. Current research suggest, given the effects of trauma on multiple functioning domains, the incorporation of mental and physical health therapeutic practices, such as yoga practice, can address the internal sensations and physical patterns necessary for the successful treatment of trauma (Courtois 2008; Emerson et al. 2009; Khalsa et al. 2009; Spinazzola et al. 2011; van der Kolk 2006). The aforementioned researchers propose that yoga practice can be a complementary therapeutic approach in conjunction with psychotherapy for the treatment of trauma, in order to address the physical effects of trauma, the mind body disconnections and dissociations, and the regulation of body sensations.

Yoga can provide a nonthreatening physical method of treatment that focuses on body awareness and internal processes. Yoga, a traditional Hindu practice, is used to help "transform or transcend the self (White 2009, p. 227) through specific postures coordinated with breathing, meditation and internal concentration. Though the modern practice of yoga has evolved, particularly in western societies, the practice is still grounded in spiritual and meditative domains. The practice is non-competitive, which can be appropriate for children of all ages, abilities, and emotional states (White 2009). There are up to 40 styles of yoga, each with their own approaches, techniques, and purposes (White 2009).

Research on the therapeutic effects of mind body interventions on mental health, including yoga practice, have been documented. Yoga practice has been found to have a positive effect on adult anxiety (Gururaja et al. 2011; Khalsa et al. 2009), depression (Descilo et al. 2010), improved stress management (Granath et al. 2006), improved self-concept and coping for adult female's with a history child abuse, and treating substance abuse (Bowen et al. 2007). Jensen et al. (2012) also found potential evidence of reduced moods wings, hyperactivity, social problems, and emotional outbursts for adolescent boys diagnosed with attention deficit and hyper active disorder (ADHD).

Studies involving adolescent trauma survivors have also been conducted utilizing alternative mind body methods. Though there are several limitations with the studies, mainly small sample sizes or lack of control groups, the results still suggest potential therapeutic benefits. (Gordon et al. 2004) studied 139 high school students in Kosovo exposed to combat and terrorism. Youth participated in a 6 week meditation, biofeedback, movement, and breathing technique sessions. They found participants had a reduction in PTSD scores. However, this study lacked a control group. Spinazzola et al. (2011) explored the use of yoga with traumatized youth, aged 12–21, in a residential treatment setting through case examples. They believed their study suggested yoga practice to be a "promising practice" (p. 11) for youth trauma survivors with severe emotional, behavioural, and self-regulation difficulties. However, they propose that formal controlled studies are required to evaluate the efficacy and effectiveness more clearly.

Art in Therapy

Although not widely researched in child and youth trauma, art in therapy intervention could be a holistic approach to treatment that can appeal to children of all developmental, cognitive and cultural diversity. It has been proposed that art therapy assists children exposed to traumatic events with expressing emotions and communicating their experiences (Malchiodi 2001), and empowers a sense of competency and control following the events (Stronach-Buschel 1990). It has also been suggested that art therapy provides young and pre-verbal children a means to express their experiences (Murphy 2001). Art therapy in the treatment of trauma exposure tends to be initiated through engagement of the senses and the body by sensory art materials, followed by symbolic and autobiographical accounts of the traumatic memories and cognitive reflections of work through repetitive reframing of product and process (Sarid & Huss 2010). Several studies have indicated the efficacy of art therapy with children and youth by increased coping (Gersch et al. 2006) and reducing emotional and behavioural severity (Saunders & Saunders 2000). (Chapman et al. 2001) studied 31 children, aged 7–17, who had been admitted to hospital following an injury. Though the results did not indicate statistically significant differences between the art therapy group and control group receiving standardized care, examination of avoidance indicators revealed a reduction in symptoms, showing possible strength in the intervention. (Lyshak-Stelzer et al. 2007) studied 13 youth inpatients, age 13–18, diagnosed with PTSD. Youth who received trauma focused

art therapy experienced statistically significant reduction in PTSD symptoms and behavioural incidents compared to treatment as usual group. A stronger methodically sound study by Pretorius & Pfeifer (2010) evaluated an art therapy group for 25 females, aged 8–11, with histories of sexual abuse. Components of the group included painting, role play and mutual story telling. Results indicated decrease in depressive, anxiety and sexual trauma symptoms compared to individuals on a wait-list; however there was no change to low self-esteem.

Art in therapy's limited rigorous studies and evaluation, give rise to the need for further study. However, its flexibility in design and implementation, art therapy may offer a holistic and adaptable adjacent to evidence based treatment for children and youth. This may be particularly true for children and youth who struggle to articulate or verbalize their experiences through cognitive and behavioural methods.

Conclusion

What appears apparent is that no one model fits the needs of all children and youth from birth to 18. Despite the vast research and evidence demonstrating the strength in CBT models, treatment failure still occurs. Modifications, flexibility and adaptations need to be made. Some models lean more to the needs of child and youth. CBT models can be utilized in brief models and implemented in various forms and milieus effectively. It can be considered a cost effective approach to treatment. TF-CBT has demonstrated efficacy, sustainability, durability, and flexibility with child and youth trauma survivors, particularly sexual abuse survivors. However, given the primary participants of studies have been sexual abuse survivors; the diffusion of practice to a single incident trauma is still questionable.

Based on this review, several themes appear to emerge. Both CBT and TF-CBT involve forms of reprocessing of traumatic events and reconstructing new narratives and cognitions. Incorporation of support networks is also seen as necessary to be integrated within the treatment. Conversely, there remains the argument that cognitive based treatments focus primarily with thoughts and behaviours, and less on the psychical and spiritual aspects of trauma. In terms of research on efficacy, many of the evidence based treatments are structured and standardized modalities which make evaluation and implementation more succinct and dependable, eliminating extraneous variables. Each evidence based treatment provided in this paper requires a certain level of training and include manuals for implementation.

The alternative treatment modalities discussed in this paper have undergone less rigorous testing with child and youth trauma exposed populations. Though significantly present in adult literature, few studies have been completed to evaluate EMDR, DBT and SPARCS with child and youth trauma exposed populations. The research conducted suggests potential efficacy, but clearly require further evaluation. In contrast, yoga and art in therapy are less structured practices and do not require certification to implement. Though practiced regularly in the field, evaluation is more challenging to eliminate extraneous variables and implement treatment consistently. However, yoga and art in therapy can be adapted for children of all ages, ethnicity, and developmental stage. Both could be used as tools for emotional expression particularly where language is a barrier. At the least, both can be used to complement the interventions noted above.

With significant evidence to support several modalities, further research on specific modalities for varying traumatic experiences and ages could be beneficial. Though it is evident this work has been done, further research to support the efficacy of treatment specific to child and youth needs would be beneficial. For instance, much of the research for CBT focuses on child sexual abuse but limited research on additional forms of trauma, such as exposure to natural disasters. Analysis the components of evidence based treatments that make it effective for specific symptoms, could assist in tailoring treatment to child's developmental and trauma specific needs.

Given the results of this review, the identification and utilization of effective treatment components of evidence based treatment in collaboration with alternative modalities may ensure a holistic treatment approach that addresses all affected functioning domains of children and youth. Utilizing a collaborative model could ensure that traumatic processing could occur while simultaneously addressing mind body disconnects and struggles with emotional expressional. In addition, a stepped model could allow children and youth to follow their own processes and revisit stages as needed. Given the differences of child and youth trauma responses and interpretations compared to adults, further research on the collaboration of evidence based practices and alternative models of therapeutic treatment could expand treatment options specific for their diverse needs.

References

Ackerman, P. T., Newton, J. E., McPherson, W. B., Jones, J. G., & Dykman, R. A. (1998). Prevelance of post traumatic stress disorder and other psychiatric diagnoses in three groups of abused children (sexual, physical, and both). *Child Abuse and Neglect, 22*(8), 759–774.

Ahmad, A., Larsson, B., & Sundelin-Wahlsten, V. (2007). EMDR treatment for children with PTSD: Results of a randomized controlled trial. *Nordic Journal of Psychiatry, 61*(5), 349–354.

American Psychiatric Association. (2000). Diagnostic and statistical manual of mental disorders (4th ed., Text rev.). Washington, DC: Author.

Amir, N., Coles, M. E., & Foa, E. B. (2002). Automatic and strategic activation and inhibition of threat-relevant information in posttraumatic stress disorder. *Cognitive Therapy and Research, 26*, 645–655.

Brady, K. T., Killeen, T. K., Brewerton, T., & Lucerini, S. (2000). Comorbidity of psychiatric disorders and posttraumatic stress disorder. *Journal of Clinical Psychiatry, 61*, 22–32.

Bowen, S., Witkiewitz, K., Dillworth, T. M., & Marlatt, G. (2007). Short communication: The role of thought suppression in the relationship between mindfulness meditation and alcohol use. *Addictive Behaviors, 32*(10), 2324–2328. doi:10.1016/j.addbeh.2007.01.025.

Chapman, L., Morabito, D., Ladakakos, C., Schreier, H., & Knudson, M. M. (2001). The effectiveness of art therapy interventions in reducing post traumatic stress disorder (PTSD) symptoms in pediatric trauma patients. *Art Therapy, 18*(2), 100–104.

Chemtob, C. M., Nakashima, J., & Carlson, J. G. (2002). Brief treatment for elementary school children with disaster-related posttraumatic stress disorder: A field study. *Journal of Clinical Psychology, 58*(1), 99–112.

Cohen, J. A., Deblinger, E., Mannarino, A. P., & Steer, R. (2004). A multi-site, randomized controlled trial for children with abuse-related PTSD symptoms. *Journal of the American Academy of Child and Adolescent Psychiatry, 43*(4), 393–402.

Cohen, J. A., & Mannarino, A. P. (1996). A treatment outcome study for sexually abused preschool children: Initial findings. *Journal of the American Academy of Child and Adolescent Psychiatry, 35*(1), 42–50.

Cohen, J. A., & Mannarino, A. P. (2008). Trauma-focused cognitive behavioural therapy for children and parents. *Child and Adolescent Mental Health, 13*(4), 158–162.

Cohen, J. A., & Mannarino, A. P. (2010). Psychotherapeutic options for traumatized children. *Current Opinion in Pediatrics, 22*(5), 605–609.

Cohen, J. A., Mannarino, A. P., Kliethermes, M., & Murray, L. A. (2012). Trauma-focused CBT for youth with complex trauma. *Child Abuse and Neglect, 36*(6), 528–541.

Cook, A., Spinazzola, J., Ford, J., Lanktree, C., Blaustein, M., Cloitre, M., et al. (2005). Complex trauma in children and adolescents. *Psychiatric Annals, 35*(5), 390–398.

Courtois, C. A. (2008). Complex trauma, complex reactions: Assessment and treatment. *Psychological Trauma Theory, Research, Practice and Policy, 1*, 86–100.

Cukor, J., Spitalnick, J., Difede, J., Rizzo, A., & Rothbaum, B. O. (2009). Emerging treatments for PTSD. *Clinical Psychology Review, 29*(8), 715–726.

De Bellis, M. D., & Thomas, L. A. (2003). Biologic findings of post-traumatic stress disorder and child maltreatment. *Current Psychiatry Reports, 5*(2), 108–117.

Deblinger, E., Lippmann, J., & Steer, R. (1996). Sexually abused children suffering posttraumatic stress symptoms: Initial treatment outcome findings. *Child Maltreatment, 1*(4), 310–321.

Deblinger, E., Mannarino, A. P., Cohen, J. A., Runyon, M. K., & Steer, R. A. (2011). Trauma-focused cognitive behavioral therapy for children: Impact of the trauma narrative and treatment length. *Depression and Anxiety, 28*(1), 67–75.

Descilo, T., Vedamurtachar, A., Gerbarg, P. L., Nagaraja, D., Gangadhar, B. N., Damodaran, B., et al. (2010). Effects of a yoga breathe intervention alone and in combination with an exposure therapy for post-traumatic stress disorder and depression in survivors of the 2004 South-East Asia tsunami. *Acta PsychiatricaScandinavica, 121*(4), 289–300.

Dube, S. R., Anda, R. F., Whitfield, C. L., Brown, D. W., Felitti, V. J., Dong, M., et al. (2005). Long-term consequences of childhood sexual abuse by gender of victim. *American Journal of Preventive Medicine, 28*(5), 430–438.

Emerson, D., Sharma, R., Chaudhry, S., & Turner, J. (2009). Trauma-sensitive yoga: Principles, practice, and research. *International Journal of Yoga Therapy, 19*(1), 123–128.

Feldman, R., & Vengrober, A. (2011). Posttraumatic stress disorder in infants and young children exposed to war-related trauma. *Journal of the American Academy of Child and Adolescent Psychiatry, 50*(7), 645–658.

Foa, E. B., Chrestman, K. R., & Gilboa-Schechtman, E. (2009). *Prolonged exposure therapy for adolescents with PTSD: Emotional processing of traumatic experiences: Therapist guide*. New York: Oxford University Press.

Ford, J. D., Courtois, C. A., Steele, K., van der Hart, O., & Mijenhuis, E. R. (2005). Treatment of complex posttraumatic self-dysregulation. *Journal of Traumatic Stress, 18*(5), 437–447.

Gersch, I., & Sao Joao Goncalves, S. (2006). Creative arts therapies and educational psychology: Let's get together. *International Journal of Art Therapy, 11*(1), 22–32.

Gordon, J. S., Staples, J. K., Blyta, A., & Bytyqi, M. (2004). Treatment of posttraumatic stress disorder in postwar Kosovo high school students using mind–body skills groups: A pilot study. *Journal of Traumatic Stress, 17*(2), 143–147.

Granath, J., Ingvarsson, S., von Thiele, U., & Lundberg, U. (2006). Stress management: A randomized study of cognitive behavioural therapy and yoga. *Cognitive Behaviour Therapy, 35*(1), 3–10.

Gururaja, D., Harano, K., Toyotake, I., & Kobayashi, H. (2011). Effect of yoga on mental health: Comparative study between young and senior subjects in Japan. *International Journal of Yoga, 4*(1), 7–12.

Habib, M., Labruna, V., & Newman, J. (2013). Complex histories and complex presentations: Implementation of a manually-guided group treatment for traumatized adolescents. *Journal of family violence, 28*(7), 717–728.

Harmon, R. J., & Riggs, P. D. (1996). Clonidine for posttraumatic stress disorder in preschool children. *Journal of the American Academy of Child and Adolescent Psychiatry, 35*, 1247–1249.

Herman, J. L. (1992). Complex PTSD: A syndrome in survivors of prolonged and repeated trauma. *Journal of Traumatic Stress, 5*(3), 377–391.

Hubbard, J., Realmuto, G. M., Northwood, A. K., & Masten, A. S. (1995). Comorbidity of psychiatric diagnoses with posttraumatic stress disorder in survivors of childhood trauma. *Journal of the American Academy of Child and Adolescent Psychiatry, 34*, 1167–1173.

Jaberghaderi, N., Greenwald, R., Rubin, A., Zand, S. O., & Dolatabadi, S. (2004). A comparison of CBT and EMDR for sexually-abused Iranian girls. *Clinical Psychology and Psychotherapy, 11*(5), 358–368.

Jensen, P. S., Stevens, P. J., & Kenny, D. T. (2012). Respiratory patterns in students enrolled in schools for disruptive behaviour before, during, and after *Yoga Nidra* relaxation. *Journal of Child and Family Studies, 21*(4), 667–681.

Keeshin, B. R., & Strawn, J. R. (2012). Treatment of children and adolescents with posttraumatic stress disorder (PTSD): A review of current evidence. *Child and Adolescent Psychopharmacology News, 17*(2), 5–10.

Khalsa, S. B. S., Shorter, S. M., Cope, S., Wyshak, G., & Sklar, E. (2009). Yoga ameliorates performance, anxiety, and mood disturbance in young professional musicians. *Applied Psychophysiology And Biofeedback, 34*(4), 279–289.

Kowalik, J., Weller, J., Venter, J., & Drachman, D. (2011). Cognitive behavioral therapy for the treatment of pediatric posttraumatic stress disorder: A review and meta-analysis. *Journal of Behavior Therapy and Experimental Psychiatry, 42*(3), 405–413.

Lewis, C. C., Simons, A. D., Nguyen, L. J., Murakami, J. L., Reid, M. W., Silva, S. G., et al. (2010). Impact of childhood trauma on

treatment outcome in the treatment for adolescents with depression study (TADS). *Journal of the American Academy of Child and Adolescent Psychiatry y, 49*(2), 132–140.

Linehan, M. M. (1993). *Cognitive-behavioral treatment of borderline personality disorder*. New York, NY: Guilford Press.

Lyshak-Stelzer, F., Singer, P., Patricia, S. J., & Chemtob, C. M. (2007). Art therapy for adolescents with posttraumatic stress disorder symptoms: A pilot study. *Art Therapy, 24*(4), 163–169.

Malchiodi, C. A. (2001). Using drawing as intervention with traumatized children. *Trauma and Loss: Research and Interventions, 1*(1), 21–28.

Mannarino, A. P., Cohen, J. A., Deblinger, E., Runyon, M. K., & Steer, R. A. (2012). Trauma-focused cognitive-behavioral therapy for children sustained impact of treatment 6 and 12 months later. *Child Maltreatment, 17*(3), 231–241.

Murphy, J. (2001). Introduction. In J. Murphy (Ed.), *Art therapy with young survivors of sexual abuse: Lost for words* (pp. 1–15). Hove, East Sussex: Brunner-Routledge.

Najjar, F., Weller, R. A., Weisbrot, J., & Weller, E. B. (2008). Post-traumatic stress disorder and its treatment in children and adolescents. *Current Psychiatry Reports, 10*(2), 104–108.

Nikulina, V., Hergenrother, J. M., Brown, E. J., Doyle, M. E., Filton, B. J., & Carson, G. S. (2008). From efficacy to effectiveness: The trajectory of the treatment literature for children with PTSD. *Expert Review of Neurotherapeutics, 8*(8), 1233–1246.

NREPP: SAMHSA's National Registry of Evidence-based Programs and Practices. (2008). Trauma-focused cognitive behavioral therapy (TF-CBT). Retrieved from http://nrepp.samhsa.gov/ViewIntervention.aspx?id=135.

Pretorius, G., & Pfeifer, N. (2010). Group art therapy with sexually abused girls. *South African Journal of Psychology, 40*(1), 63.

Putnam, F. W. (2009). The impact of trauma on child development. *Juvenile and Family Court Journal, 57*(1), 1–11.

Rathus, J. H., & Miller, A. L. (2002). Dialectical behavior therapy adapted for suicidal adolescents. *Suicide and Life-threatening Behavior, 32*(2), 146–157.

Rodenburg, R., Benjamin, A., de Roos, C., Meijer, A. M., & Stams, G. J. (2009). Efficacy of EMDR in children: A meta-analysis. *Clinical Psychology Review, 29*(7), 599–606.

Sarid, O., & Huss, E. (2010). Trauma and acute stress disorder: A comparison between cognitive behavioral intervention and art therapy. *The Arts in Psychotherapy, 37*(1), 8–12.

Saul, A. L., Grant, K. E., & Carter, J. S. (2008). Post-traumatic reactions in adolescents: How well do the DSM-IV PTSD criteria fit the real life experience of trauma exposed youth? *Journal of Abnormal Child Psychology, 36*(6), 915–925.

Saunders, E. J., & Saunders, J. A. (2000). Evaluating the effectiveness of art therapy through a quantitative, outcomes-focused study. *The Arts in Psychotherapy, 27*(2), 99–106.

Scheck, M. M., Schaeffer, J. A., & Gillette, C. (1998). Brief psychological intervention with traumatized young women: The efficacy of eye movement desensitization and reprocessing. *Journal of Traumatic Stress, 11*(1), 25–44.

Seedat, S., Lockhat, R., Kaminer, D., Zungu-Dirwayi, N., & Stein, D. J. (2001). An open trial of citalopram in adolescents with post-traumatic stress disorder. *International Clinical Psychopharmacology, 16*(1), 21–25.

Seedat, S., Stein, D. J., Ziervogel, C., Middleton, T., Kaminer, D., Emsley, R. A., et al. (2002). Comparison of response to a selective serotonin reuptake inhibitor in children, adolescents, and adults with posttraumatic stress disorder. *Journal of Child and Adolescent Psychopharmacology, 12*(1), 37–46.

Shapiro, F. (1989). Efficacy of the eye movement desensitization procedure in the treatment of traumatic memories. *Journal of Traumatic Stress, 2*(2), 199–223.

Silverman, W. K., Ortiz, C. D., Viswesvaran, C., Burns, B. J., Kolko, D. J., Putnam, F. W., et al. (2008). Evidence-based psychosocial treatments for children and adolescents exposed to traumatic events. *Journal of Clinical Child and Adolescent Psychology, 37*(1), 156–183.

Spinazzola, J., Rhodes, A. M., Emerson, D., Earle, E., & Monroe, K. (2011). Application of yoga in residential treatment of traumatized youth. *Journal of the American Psychiatric Nurses Association, 17*(6), 431–444.

Steil, R., Dyer, A., Priebe, K., Kleindienst, N., & Bohus, M. (2011). Dialectical behavior therapy for posttraumatic stress disorder related to childhood sexual abuse: A pilot study of an intensive residential treatment program. *Journal of Traumatic Stress, 24*(1), 102–106.

Stronach-Buschel, B. (1990). Trauma, children, and art. *American Journal of Art Therapy, 29*(2), 48–52.

Van Ameringen, M., Mancini, C., Patterson, B., & Boyle, M. H. (2008). Post-traumatic stress disorder in Canada. *CNS Neuroscience and Therapeutics, 14*, 171–181.

van der Kolk, B. A. (2003). Neurobiology of childhood trauma and abuse. *Child and Adolescent Psychiatric Clinics, 12*, 293–317.

van der Kolk, B. A. (2005). Developmental trauma disorder. *Psychiatric Annals, 35*(5), 401–408.

van der Kolk, B. A. (2006). Clinical implications of neuroscience research in PTSD. *Annals of the New York Academy of Sciences, 1071*(1), 277–293.

van der Kolk, B. A., Pelcovitz, D., Roth, S., & Mandel, F. S. (1996). Dissociation, somatization, and affect dysregulation: The complexity of adaption to trauma. *The American Journal of Psychiatry, 153*, 83–93.

Weiner, D. A., Schneider, A., & Lyons, J. S. (2009). Evidence-based treatments for trauma among culturally diverse foster care youth: Treatment retention and outcomes. *Children and Youth Services Review, 31*(11), 1199–1205.

White, L. S. (2009). Yoga for children. *Pediatric Nursing, 35*(5), 277–295.

Wilson, S. A., Becker, L. A., & Tinker, R. H. (1997). Fifteen-month follow-up of eye movement desensitization and reprocessing (EMDR) treatment for posttraumatic stress disorder and psychological trauma. *Journal of Consulting and Clinical Psychology, 65*(6), 1047.